



**Teck Coal
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Technical Report Overview

Report: 2020 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Overview: This report presents the 2020 results of the regional groundwater monitoring program and the site-specific programs at Fording River Operations, Greenhills Operations, Line Creek Operations, Elkview Operations, and Coal Mountain mine required under Sections 8.2 and 9.4 of Permit 107517. This report summarizes the results of groundwater quality and quantity in 2020 and compares them to relevant screening values and historical data. It also compares groundwater chemistry to nearby surface water chemistry to understand groundwater transport pathways and groundwater/surface water interaction.

This report was prepared for Teck by SNC-Lavalin Inc.

For More Information

If you have questions regarding this report, please:

- Phone toll-free to 1.855.806.6854
- Email feedbackteckcoal@teck.com

Future studies will be made available at teck.com/elkvalley



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2020 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Fording River Operations

Greenhills Operations

Line Creek Operations

Elkview Operations

Coal Mountain Mine

Regional Groundwater Monitoring Program

VOLUME III OF III

Prepared for:

Teck Coal Limited

March 31, 2021

Internal Ref: 635544 › Final

Volume III – Appendix XII

Certificates of Analyses

- › Fording River Operations
- › Greenhills Operations
- › Line Creek Operations
- › Elkview Operations
- › Coal Mountain Mine



Fording River Operations





TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 22-JAN-20
Report Date: 30-DEC-20 09:38 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2408375
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 20200121
Legal Site Desc:

Comments: 12-30-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2408375-1	L2408375-2	L2408375-3	L2408375-4	
					L2408375-1 WG 21-JAN-20 11:40 FR_TB-1A-2020-01-21	L2408375-2 WG 21-JAN-20 12:55 FR_TB-1B-2020-01-21	L2408375-3 WG 21-JAN-20 14:10 FR_TBSSMW-1-2020-01-21	L2408375-4 WG 21-JAN-20 09:55 FR_TBSSMW-2-2020-01-21	
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	1100	591	335	608				
	Hardness (as CaCO3) (mg/L)	499	338	137	350				
	pH (pH)	7.54	8.01	8.23	8.00				
	ORP (mV)	407	412	452	480				
	Total Suspended Solids (mg/L)	20.0	<1.0	<1.0	31.6				
	Total Dissolved Solids (mg/L)	642 ^{DLHC}	413 ^{DLHC}	158 ^{DLHC}	424 ^{DLHC}				
	Turbidity (NTU)	49.4	0.13	1.22	2.51				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	46.6	1.6	<1.0	2.0				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	682	144	171	142				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	682	144	171	142				
	Ammonia as N (mg/L)	1.22 ^{DLHC}	0.0352	3.00 ^{DLHC}	0.0063				
	Bicarbonate (HCO3) (mg/L)	832	176	209	173				
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050				
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0				
	Chloride (Cl) (mg/L)	0.88	<0.50	0.51	<0.50				
	Fluoride (F) (mg/L)	0.477	0.225	0.436	0.231				
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0				
	Ion Balance (%)	98.8	103	95.2	104				
	Nitrate (as N) (mg/L)	<0.0050	4.10	<0.0050	4.49				
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	5.21 ^{DLHC}	0.112 ^{TKNI}	2.56 ^{DLM}	0.183 ^{TKNI}				
	Orthophosphate-Dissolved (as P) (mg/L)	0.0030	0.0023	0.0038	0.0012				
	Phosphorus (P)-Total (mg/L)	0.033 ^{DLM}	0.0029	0.0073 ^{DLM}	0.013 ^{DLM}				
	Sulfate (SO4) (mg/L)	<0.30	164	18.6	175				
	Anion Sum (meq/L)	13.7	6.60	3.84	6.81				
	Cation Sum (meq/L)	13.5	6.80	3.66	7.05				
	Cation - Anion Balance (%)	-0.6	1.5	-2.4	1.8				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.70	1.66	<0.50				
	Total Organic Carbon (mg/L)	0.67	0.87	1.44	<0.50				
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD				
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	0.120 ^{DLDS}	0.0012	0.0018	0.0012				
	Antimony (Sb)-Dissolved (mg/L)	<0.0020 ^{DLDS}	<0.00010	<0.00010	<0.00010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2408375-1	L2408375-2	L2408375-3	L2408375-4
					L2408375-1 WG 21-JAN-20 11:40 FR_TB-1A-2020-01-21	L2408375-2 WG 21-JAN-20 12:55 FR_TB-1B-2020-01-21	L2408375-3 WG 21-JAN-20 14:10 FR_TBSSMW-1-2020-01-21	L2408375-4 WG 21-JAN-20 09:55 FR_TBSSMW-2-2020-01-21
Grouping	Analyte							
WATER								
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)				DLDS <0.0020	<0.00010	0.00118	<0.00010
	Barium (Ba)-Dissolved (mg/L)				DLDS 17.9	0.0626	1.88 ^{RRV}	0.0804
	Beryllium (Be)-Dissolved (ug/L)				DLDS <0.40	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)				DLDS <0.0010	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)				DLDS <0.20	<0.010	0.012	<0.010
	Cadmium (Cd)-Dissolved (ug/L)				DLDS <0.10	0.0157	<0.0050	0.0114
	Calcium (Ca)-Dissolved (mg/L)				DLDS 125	84.1	11.8	86.9
	Chromium (Cr)-Dissolved (mg/L)				DLDS <0.0020	0.00013	<0.00010	0.00011
	Cobalt (Co)-Dissolved (ug/L)				DLDS 4.5	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)				DLDS <0.0040	0.00039	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)				DLDS 4.74	<0.010	0.237	<0.010
	Lead (Pb)-Dissolved (mg/L)				DLDS <0.0010	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)				DLDS 1.33	0.0096	0.195	0.0092
	Magnesium (Mg)-Dissolved (mg/L)				DLDS 45.2	31.0	26.0	32.4
	Manganese (Mn)-Dissolved (mg/L)				DLDS 0.0865	<0.00010	0.0389	0.00025
	Mercury (Hg)-Dissolved (mg/L)				<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)				DLDS 0.0036	0.000814	0.0146	0.000848
	Nickel (Ni)-Dissolved (mg/L)				DLDS <0.010	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)				DLDS 11.5	0.688	6.10	0.731
	Selenium (Se)-Dissolved (ug/L)				DLDS <1.0	27.9	<0.050	30.2
	Silicon (Si)-Dissolved (mg/L)				DLDS 3.6	1.63	2.47	1.53
	Silver (Ag)-Dissolved (mg/L)				DLDS <0.00020	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)				DLDS 66.4	0.831	17.4	0.803
	Strontium (Sr)-Dissolved (mg/L)				DLDS 1.33	0.150	0.223	0.155
	Thallium (Tl)-Dissolved (mg/L)				DLDS <0.00020	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)				DLDS <0.0020	0.00016	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)				DLDS <0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)				DLDS <0.00020	0.00132	0.000167	0.00142
	Vanadium (V)-Dissolved (mg/L)				DLDS <0.010	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)				DLDS 0.025	0.0014	0.0023	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2408375-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2408375-1, -2, -3, -4
Matrix Spike	Nitrate (as N)	MS-B	L2408375-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L2408375-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

20200121

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2408375

Report Date: 30-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4976661							
WG3262448-8	LCS							
Acidity (as CaCO3)			103.8		%		85-115	22-JAN-20
WG3262448-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	22-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4977087							
WG3262536-8	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	22-JAN-20
WG3262536-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-20
BE-D-L-CCMS-CL								
	Water							
Batch	R4977186							
WG3262509-3	DUP	L2408375-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-JAN-20
WG3262509-2	LCS	TMRM						
Beryllium (Be)-Dissolved			108.5		%		80-120	23-JAN-20
WG3262509-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-JAN-20
WG3262509-4	MS	L2408375-4						
Beryllium (Be)-Dissolved			121.1		%		70-130	23-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4976758							
WG3262500-10	LCS							
Bromide (Br)			99.7		%		85-115	22-JAN-20
WG3262500-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-2	LCS							
Dissolved Organic Carbon			112.7		%		80-120	24-JAN-20
WG3263672-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20

Quality Control Report

Workorder: L2408375

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R4976758							
WG3262500-10 LCS								
Chloride (Cl)			102.4		%		90-110	22-JAN-20
WG3262500-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	22-JAN-20
EC-L-PCT-CL	Water							
Batch	R4977087							
WG3262536-8 LCS								
Conductivity (@ 25C)			95.4		%		90-110	22-JAN-20
WG3262536-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JAN-20
F-IC-N-CL	Water							
Batch	R4976758							
WG3262500-10 LCS								
Fluoride (F)			104.2		%		90-110	22-JAN-20
WG3262500-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JAN-20
HG-D-CVAA-CL	Water							
Batch	R4977228							
WG3262630-3 DUP		L2408375-3						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	23-JAN-20
WG3262630-2 LCS								
Mercury (Hg)-Dissolved			104.0		%		80-120	23-JAN-20
WG3262630-1 MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	23-JAN-20
WG3262630-4 MS		L2408375-3						
Mercury (Hg)-Dissolved			113.0		%		70-130	23-JAN-20
Batch	R4980333							
WG3264508-2 LCS								
Mercury (Hg)-Dissolved			106.0		%		80-120	27-JAN-20
WG3264508-1 MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	27-JAN-20
HG-T-CVAA-CL	Water							
Batch	R4977228							
WG3262631-2 LCS								
Mercury (Hg)-Total			106.0		%		80-120	23-JAN-20
WG3262631-1 MB								
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	23-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R4980333							
WG3264509-2	LCS							
Mercury (Hg)-Total			107.0		%		80-120	27-JAN-20
WG3264509-1	MB							
Mercury (Hg)-Total			<0.000050		mg/L		0.000005	27-JAN-20
MET-D-CCMS-CL								
	Water							
Batch	R4977186							
WG3262509-3	DUP	L2408375-4						
Aluminum (Al)-Dissolved		0.0012	0.0011		mg/L	4.5	20	23-JAN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-20
Barium (Ba)-Dissolved		0.0804	0.0807		mg/L	0.4	20	23-JAN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-JAN-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JAN-20
Cadmium (Cd)-Dissolved		0.0000114	0.0000110		mg/L	3.5	20	23-JAN-20
Calcium (Ca)-Dissolved		86.9	87.1		mg/L	0.2	20	23-JAN-20
Chromium (Cr)-Dissolved		0.00011	0.00011		mg/L	0.1	20	23-JAN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-JAN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JAN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-JAN-20
Lithium (Li)-Dissolved		0.0092	0.0090		mg/L	2.2	20	23-JAN-20
Magnesium (Mg)-Dissolved		32.4	32.0		mg/L	1.1	20	23-JAN-20
Manganese (Mn)-Dissolved		0.00025	0.00025		mg/L	3.0	20	23-JAN-20
Molybdenum (Mo)-Dissolved		0.000848	0.000820		mg/L	3.3	20	23-JAN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-JAN-20
Potassium (K)-Dissolved		0.731	0.723		mg/L	1.1	20	23-JAN-20
Selenium (Se)-Dissolved		0.0302	0.0309		mg/L	2.1	20	23-JAN-20
Silicon (Si)-Dissolved		1.53	1.52		mg/L	0.5	20	23-JAN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-JAN-20
Sodium (Na)-Dissolved		0.803	0.788		mg/L	1.9	20	23-JAN-20
Strontium (Sr)-Dissolved		0.155	0.155		mg/L	0.3	20	23-JAN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-JAN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JAN-20
Uranium (U)-Dissolved		0.00142	0.00143		mg/L	0.6	20	23-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4977186							
WG3262509-3	DUP	L2408375-4						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-JAN-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-JAN-20
WG3262509-2	LCS	TMRM						
Aluminum (Al)-Dissolved			113.8		%		80-120	23-JAN-20
Antimony (Sb)-Dissolved			111.7		%		80-120	23-JAN-20
Arsenic (As)-Dissolved			106.6		%		80-120	23-JAN-20
Barium (Ba)-Dissolved			117.4		%		80-120	23-JAN-20
Bismuth (Bi)-Dissolved			102.5		%		80-120	23-JAN-20
Boron (B)-Dissolved			103.2		%		80-120	23-JAN-20
Cadmium (Cd)-Dissolved			107.5		%		80-120	23-JAN-20
Calcium (Ca)-Dissolved			106.7		%		80-120	23-JAN-20
Chromium (Cr)-Dissolved			102.9		%		80-120	23-JAN-20
Cobalt (Co)-Dissolved			104.8		%		80-120	23-JAN-20
Copper (Cu)-Dissolved			103.3		%		80-120	23-JAN-20
Iron (Fe)-Dissolved			99.3		%		80-120	23-JAN-20
Lead (Pb)-Dissolved			104.2		%		80-120	23-JAN-20
Lithium (Li)-Dissolved			104.4		%		80-120	23-JAN-20
Magnesium (Mg)-Dissolved			111.9		%		80-120	23-JAN-20
Manganese (Mn)-Dissolved			103.9		%		80-120	23-JAN-20
Molybdenum (Mo)-Dissolved			110.5		%		80-120	23-JAN-20
Nickel (Ni)-Dissolved			102.7		%		80-120	23-JAN-20
Potassium (K)-Dissolved			110.8		%		80-120	23-JAN-20
Selenium (Se)-Dissolved			103.1		%		80-120	23-JAN-20
Silicon (Si)-Dissolved			107.6		%		60-140	23-JAN-20
Silver (Ag)-Dissolved			107.1		%		80-120	23-JAN-20
Sodium (Na)-Dissolved			117.3		%		80-120	23-JAN-20
Strontium (Sr)-Dissolved			115.8		%		80-120	23-JAN-20
Thallium (Tl)-Dissolved			106.2		%		80-120	23-JAN-20
Tin (Sn)-Dissolved			106.0		%		80-120	23-JAN-20
Titanium (Ti)-Dissolved			103.1		%		80-120	23-JAN-20
Uranium (U)-Dissolved			99.5		%		80-120	23-JAN-20
Vanadium (V)-Dissolved			106.5		%		80-120	23-JAN-20
Zinc (Zn)-Dissolved			104.2		%		80-120	23-JAN-20
WG3262509-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4977186							
WG3262509-1	MB							
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-JAN-20
WG3262509-4	MS	L2408375-4						
Aluminum (Al)-Dissolved			115.8		%		70-130	23-JAN-20
Antimony (Sb)-Dissolved			112.7		%		70-130	23-JAN-20
Arsenic (As)-Dissolved			111.6		%		70-130	23-JAN-20
Barium (Ba)-Dissolved			110.3		%		70-130	23-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4977186							
WG3262509-4	MS	L2408375-4						
Bismuth (Bi)-Dissolved			110.9		%		70-130	23-JAN-20
Boron (B)-Dissolved			116.4		%		70-130	23-JAN-20
Cadmium (Cd)-Dissolved			113.7		%		70-130	23-JAN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-JAN-20
Chromium (Cr)-Dissolved			110.1		%		70-130	23-JAN-20
Cobalt (Co)-Dissolved			113.1		%		70-130	23-JAN-20
Copper (Cu)-Dissolved			111.3		%		70-130	23-JAN-20
Iron (Fe)-Dissolved			110.8		%		70-130	23-JAN-20
Lead (Pb)-Dissolved			113.8		%		70-130	23-JAN-20
Lithium (Li)-Dissolved			124.3		%		70-130	23-JAN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-JAN-20
Manganese (Mn)-Dissolved			114.6		%		70-130	23-JAN-20
Molybdenum (Mo)-Dissolved			113.0		%		70-130	23-JAN-20
Nickel (Ni)-Dissolved			111.8		%		70-130	23-JAN-20
Potassium (K)-Dissolved			117.7		%		70-130	23-JAN-20
Selenium (Se)-Dissolved			110.9		%		70-130	23-JAN-20
Silicon (Si)-Dissolved			105.7		%		70-130	23-JAN-20
Silver (Ag)-Dissolved			119.0		%		70-130	23-JAN-20
Sodium (Na)-Dissolved			117.1		%		70-130	23-JAN-20
Strontium (Sr)-Dissolved			112.3		%		70-130	23-JAN-20
Thallium (Tl)-Dissolved			114.4		%		70-130	23-JAN-20
Tin (Sn)-Dissolved			111.5		%		70-130	23-JAN-20
Titanium (Ti)-Dissolved			100.1		%		70-130	23-JAN-20
Uranium (U)-Dissolved			112.6		%		70-130	23-JAN-20
Vanadium (V)-Dissolved			112.3		%		70-130	23-JAN-20
Zinc (Zn)-Dissolved			109.0		%		70-130	23-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979931							
WG3263860-2	LCS							
Ammonia as N			108.9		%		85-115	25-JAN-20
WG3263860-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R4976758							
WG3262500-10	LCS							
Nitrite (as N)			97.9		%		90-110	22-JAN-20
WG3262500-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-20
NO3-L-IC-N-CL	Water							
Batch	R4976758							
WG3262500-10	LCS							
Nitrate (as N)			103.6		%		90-110	22-JAN-20
WG3262500-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-20
ORP-CL	Water							
Batch	R4979592							
WG3263467-1	CRM	CL-ORP						
ORP			227		mV		210-230	24-JAN-20
WG3263467-2	DUP	L2408375-4						
ORP		480	486	J	mV	6.3	15	24-JAN-20
P-T-L-COL-CL	Water							
Batch	R4978672							
WG3263143-2	LCS							
Phosphorus (P)-Total			104.1		%		80-120	24-JAN-20
WG3263143-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-JAN-20
PH-CL	Water							
Batch	R4977087							
WG3262536-8	LCS							
pH			7.02		pH		6.9-7.1	22-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4976234							
WG3261840-10	LCS							
Orthophosphate-Dissolved (as P)			109.1		%		80-120	22-JAN-20
WG3261840-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-20
SO4-IC-N-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch	R4976758							
WG3262500-10	LCS							
Sulfate (SO4)			101.4		%		90-110	22-JAN-20
WG3262500-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-20
SOLIDS-TDS-CL								
Batch	R4980015							
WG3263078-5	LCS							
Total Dissolved Solids			102.4		%		85-115	24-JAN-20
WG3263078-4	MB							
Total Dissolved Solids			<10		mg/L		10	24-JAN-20
TKN-L-F-CL								
Batch	R4978609							
WG3263076-3	DUP	L2408375-4						
Total Kjeldahl Nitrogen		0.183	0.173		mg/L	5.7	20	25-JAN-20
WG3263076-2	LCS							
Total Kjeldahl Nitrogen			95.8		%		75-125	24-JAN-20
WG3263076-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JAN-20
WG3263076-4	MS	L2408375-4						
Total Kjeldahl Nitrogen			122.1		%		70-130	25-JAN-20
TSS-L-CL								
Batch	R4977068							
WG3262389-11	LCS							
Total Suspended Solids			92.1		%		85-115	23-JAN-20
WG3262389-10	MB							
Total Suspended Solids			<1.0		mg/L		1	23-JAN-20
TURBIDITY-CL								
Batch	R4976908							
WG3262525-9	DUP	L2408375-4						
Turbidity		2.51	2.52		NTU	0.4	15	23-JAN-20
WG3262525-8	LCS							
Turbidity			101.5		%		85-115	23-JAN-20
WG3262525-7	MB							
Turbidity			<0.10		NTU		0.1	23-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	21-JAN-20 11:40	24-JAN-20 08:00	0.25	68	hours	EHTR-FM
	2	21-JAN-20 12:55	24-JAN-20 08:00	0.25	67	hours	EHTR-FM
	3	21-JAN-20 14:10	24-JAN-20 08:00	0.25	66	hours	EHTR-FM
	4	21-JAN-20 09:55	24-JAN-20 08:00	0.25	70	hours	EHTR-FM
pH							
	1	21-JAN-20 11:40	22-JAN-20 15:00	0.25	27	hours	EHTR-FM
	2	21-JAN-20 12:55	22-JAN-20 15:00	0.25	26	hours	EHTR-FM
	3	21-JAN-20 14:10	22-JAN-20 15:00	0.25	25	hours	EHTR-FM
	4	21-JAN-20 09:55	22-JAN-20 15:00	0.25	29	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2408375 were received on 22-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **2020 0121** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Teck Coal Fording River operations				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Tom Jeffery				Lab Contact Lyudmyla Shvets				Email 1:			
Email Tom.Jeffery@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: teckcoal@equisonline.com X X X			
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE				Email 3: gregory.jones@golder.com X X X			
City Calgary Province AB				City Calgary Province AB				Email 4: tom.jeffery@teck.com X X X			
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5: Scott.Roughhead@teck.com X X X			
Phone Number 1-250-433-6716				Phone Number 403 407 1794				PO number VPO00597209			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None	
FR_TB-1A_2020-01-21	FR_TB-1A	WG		2020/01/21	11:40	G	6	1	1	1	1	1	1	N	
FR_TB-1B_2020-01-21	FR_TB-1B	WG			12:55	G	6	1	1	1	1	1	1	N	
FR_TB-2A_2020	FR_TB-2A	WG				G	6	+	+	+	+	+	+		
FR_TB-2B_2020	FR_TB-2B	WG				G	6	+	+	+	+	+	+		
FR_TBSSMW-1_2020-01-21	FR_TBSSMW-1	WG			14:10	G	6	1	1	1	1	1	1	N	
FR_TBSSMW-2_2020-01-21	FR_TBSSMW-2	WG			9:55	G	6	1	1	1	1	1	1	N	
FR_PR-1A_2020	FR_PR-1A	WG				G	6	+	+	+	+	+	+		
FR_PR-2A_2020	FR_PR-2A	WG				G	6	+	+	+	+	+	+		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	2/22/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>Tyler Fother</i>	250 464 5914
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	Jan 21, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 23-JAN-20
Report Date: 21-DEC-20 17:14 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2409012
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 2020-01-22
Legal Site Desc:

Comments: 21-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2409012-1	L2409012-2	L2409012-3	L2409012-4
		Description	WG	WG	WG	WG
		Sampled Date	22-JAN-20	22-JAN-20	22-JAN-20	22-JAN-20
		Sampled Time	09:20	15:40	13:50	11:50
		Client ID	FR_LP-3B-2020-01-22	FR_CB-2A-2020-01-22	FR_GCMW-1A-2020-01-22	FR_GCMW-1B-2020-01-22
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		594	814	673	706
	Hardness (as CaCO3) (mg/L)		351	13.6	44.6	81.1
	pH (pH)		7.89	8.86	8.52	8.42
	ORP (mV)		370	288	299	280
	Total Suspended Solids (mg/L)		4.5	1.4	2.2	2.5
	Total Dissolved Solids (mg/L)		374 ^{DLHC}	522 ^{DLHC}	432 ^{DLHC}	475 ^{DLHC}
	Turbidity (NTU)		1.65	8.33	5.34	3.35
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		17.7	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		319	425	349	398
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	46.4	16.2	13.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		319	472 ^{DLHC}	365	411
	Ammonia as N (mg/L)		0.0329	0.623 ^{DLHC}	0.264	0.0878
	Bicarbonate (HCO3) (mg/L)		389	519	426	485
	Bromide (Br) (mg/L)		<0.050	0.066	0.089	0.088
	Carbonate (CO3) (mg/L)		<5.0	27.8	9.7	7.8
	Chloride (Cl) (mg/L)		0.65	12.6	16.6	12.4
	Fluoride (F) (mg/L)		0.212	1.50	1.72	1.50
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		95.2	90.4	91.4	92.6
	Nitrate (as N) (mg/L)		<0.0050	0.0113	0.715	<0.0050
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	0.0515	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.105	0.601	0.620	0.416
	Orthophosphate-Dissolved (as P) (mg/L)		0.0024	0.0162	0.0411	0.0111
	Phosphorus (P)-Total (mg/L)		0.0076	0.0194	0.0437	0.0167
	Sulfate (SO4) (mg/L)		52.5	<0.30	12.1	6.58
	Anion Sum (meq/L)		7.49	9.86	8.17	8.77
	Cation Sum (meq/L)		7.13	8.92	7.46	8.12
	Cation - Anion Balance (%)		-2.5	-5.0	-4.5	-3.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		1.45	0.91	3.65	9.30
	Total Organic Carbon (mg/L)		1.41	0.95	3.35	9.15
Total Metals	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0018	0.0060	0.0035	0.0101
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2409012-1	L2409012-2	L2409012-3	L2409012-4	
					L2409012-1 WG 22-JAN-20 09:20 FR_LP-3B -2020-01-22	L2409012-2 WG 22-JAN-20 15:40 FR_CB-2A-2020-01-22	L2409012-3 WG 22-JAN-20 13:50 FR_GCMW-1A-2020-01-22	L2409012-4 WG 22-JAN-20 11:50 FR_GCMW-1B-2020-01-22	
Grouping	Analyte								
WATER									
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00117	0.00054	0.00185	0.00222				
	Barium (Ba)-Dissolved (mg/L)	0.110	0.235	0.119	0.119				
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Boron (B)-Dissolved (mg/L)	<0.010	0.370	0.173	0.067				
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.0162	0.0090				
	Calcium (Ca)-Dissolved (mg/L)	92.9	3.12	11.1	22.4				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010				
	Cobalt (Co)-Dissolved (ug/L)	0.36	<0.10	<0.10	0.21				
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00022	<0.00020				
	Iron (Fe)-Dissolved (mg/L)	0.162	<0.010	0.047	0.239				
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0025	0.511	0.229	0.0764				
	Magnesium (Mg)-Dissolved (mg/L)	29.0	1.42	4.08	6.12				
	Manganese (Mn)-Dissolved (mg/L)	0.295	0.00745	0.0715	0.292				
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00225	0.000248	0.0425	0.0437				
	Nickel (Ni)-Dissolved (mg/L)	0.00090	<0.00050	0.00058	0.00172				
	Potassium (K)-Dissolved (mg/L)	1.02	1.10	1.32	1.60				
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	1.21	0.098				
	Silicon (Si)-Dissolved (mg/L)	4.88	2.97	2.80	3.87				
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	1.48	197	150	148				
	Strontium (Sr)-Dissolved (mg/L)	0.115	0.291	0.166	0.169				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00020				
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010				
	Uranium (U)-Dissolved (mg/L)	0.00115	0.000061	0.000533	0.000527				
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2409012-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2409012-1, -2, -3, -4
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L2409012-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are

Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-01-22

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2409012

Report Date: 21-DEC-20

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4979403							
WG3263280-2	LCS							
Acidity (as CaCO3)			104.3		%		85-115	23-JAN-20
WG3263280-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	23-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
Alkalinity, Total (as CaCO3)		411	407		mg/L	0.9	20	23-JAN-20
WG3263286-11	LCS							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	23-JAN-20
WG3263286-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-JAN-20
BE-D-L-CCMS-CL								
	Water							
Batch	R4979211							
WG3263244-3	DUP	L2409012-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263244-2	LCS							
Beryllium (Be)-Dissolved			102.8		%		80-120	24-JAN-20
WG3263244-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-JAN-20
WG3263244-4	MS	L2409012-4						
Beryllium (Be)-Dissolved			113.8		%		70-130	24-JAN-20
BIC-CL								
	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
Bicarbonate (HCO3)		485	480		mg/L	1.1	20	23-JAN-20
WG3263286-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Bromide (Br)			101.6		%		85-115	23-JAN-20
WG3265995-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-JAN-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2409012

Report Date: 21-DEC-20

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-2	LCS							
Dissolved Organic Carbon			112.7		%		80-120	24-JAN-20
WG3263672-6	LCS							
Dissolved Organic Carbon			112.2		%		80-120	24-JAN-20
WG3263672-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
WG3263672-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-6	LCS							
Total Organic Carbon			111.3		%		80-120	24-JAN-20
WG3263672-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
WG3263672-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
CL-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Chloride (Cl)			101.8		%		90-110	23-JAN-20
WG3265995-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	23-JAN-20
CO3-CL								
	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
Carbonate (CO3)		7.8	8.3		mg/L	6.0	20	23-JAN-20
WG3263286-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	23-JAN-20
EC-L-PCT-CL								
	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
Conductivity (@ 25C)		706	712		uS/cm	0.8	10	23-JAN-20
WG3263286-11	LCS							
Conductivity (@ 25C)			98.2		%		90-110	23-JAN-20
WG3263286-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-JAN-20
F-IC-N-CL								
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R4983287								
WG3265995-6	LCS							
Fluoride (F)			102.7		%		90-110	23-JAN-20
WG3265995-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	23-JAN-20
HG-D-CVAA-CL								
Batch R4979381								
WG3263500-3	DUP	L2409012-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263500-2	LCS							
Mercury (Hg)-Dissolved			112.0		%		80-120	24-JAN-20
WG3263500-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-JAN-20
WG3263500-4	MS	L2409012-4						
Mercury (Hg)-Dissolved			93.1		%		70-130	24-JAN-20
HG-T-CVAA-CL								
Batch R4979381								
WG3263501-3	DUP	L2409012-4						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263501-2	LCS							
Mercury (Hg)-Total			117.0		%		80-120	24-JAN-20
WG3263501-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	24-JAN-20
WG3263501-4	MS	L2409012-4						
Mercury (Hg)-Total			95.5		%		70-130	24-JAN-20
MET-D-CCMS-CL								
Batch R4979211								
WG3263244-3	DUP	L2409012-4						
Aluminum (Al)-Dissolved		0.0101	0.0100		mg/L	1.0	20	24-JAN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-20
Arsenic (As)-Dissolved		0.00222	0.00222		mg/L	0.1	20	24-JAN-20
Barium (Ba)-Dissolved		0.119	0.122		mg/L	2.6	20	24-JAN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-JAN-20
Boron (B)-Dissolved		0.067	0.067		mg/L	0.8	20	24-JAN-20
Cadmium (Cd)-Dissolved		0.0000090	0.0000074		mg/L	19	20	24-JAN-20
Calcium (Ca)-Dissolved		22.4	22.2		mg/L	1.1	20	24-JAN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-20
Cobalt (Co)-Dissolved		0.00021	0.00021		mg/L	1.3	20	24-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4979211							
WG3263244-3	DUP	L2409012-4						
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	24-JAN-20
Iron (Fe)-Dissolved		0.239	0.239		mg/L	0.3	20	24-JAN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-JAN-20
Lithium (Li)-Dissolved		0.0764	0.0793		mg/L	3.7	20	24-JAN-20
Magnesium (Mg)-Dissolved		6.12	6.03		mg/L	1.4	20	24-JAN-20
Manganese (Mn)-Dissolved		0.292	0.289		mg/L	1.0	20	24-JAN-20
Molybdenum (Mo)-Dissolved		0.0437	0.0445		mg/L	1.6	20	24-JAN-20
Nickel (Ni)-Dissolved		0.00172	0.00173		mg/L	0.6	20	24-JAN-20
Potassium (K)-Dissolved		1.60	1.59		mg/L	0.9	20	24-JAN-20
Selenium (Se)-Dissolved		0.000098	0.000092		mg/L	7.1	20	24-JAN-20
Silicon (Si)-Dissolved		3.87	3.91		mg/L	0.9	20	24-JAN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-JAN-20
Sodium (Na)-Dissolved		148	147		mg/L	0.2	20	24-JAN-20
Strontium (Sr)-Dissolved		0.169	0.172		mg/L	2.2	20	24-JAN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-JAN-20
Tin (Sn)-Dissolved		0.00020	0.00013	J	mg/L	0.00007	0.0002	24-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JAN-20
Uranium (U)-Dissolved		0.000527	0.000535		mg/L	1.6	20	24-JAN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JAN-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263244-2								
	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	24-JAN-20
Antimony (Sb)-Dissolved			105.0		%		80-120	24-JAN-20
Arsenic (As)-Dissolved			105.5		%		80-120	24-JAN-20
Barium (Ba)-Dissolved			102.9		%		80-120	24-JAN-20
Bismuth (Bi)-Dissolved			100.5		%		80-120	24-JAN-20
Boron (B)-Dissolved			99.97		%		80-120	24-JAN-20
Cadmium (Cd)-Dissolved			102.5		%		80-120	24-JAN-20
Calcium (Ca)-Dissolved			107.1		%		80-120	24-JAN-20
Chromium (Cr)-Dissolved			103.0		%		80-120	24-JAN-20
Cobalt (Co)-Dissolved			101.5		%		80-120	24-JAN-20
Copper (Cu)-Dissolved			101.0		%		80-120	24-JAN-20
Iron (Fe)-Dissolved			107.1		%		80-120	24-JAN-20
Lead (Pb)-Dissolved			105.7		%		80-120	24-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4979211							
WG3263244-2	LCS							
Lithium (Li)-Dissolved			102.3		%		80-120	24-JAN-20
Magnesium (Mg)-Dissolved			100.7		%		80-120	24-JAN-20
Manganese (Mn)-Dissolved			103.8		%		80-120	24-JAN-20
Molybdenum (Mo)-Dissolved			110.0		%		80-120	24-JAN-20
Nickel (Ni)-Dissolved			100.5		%		80-120	24-JAN-20
Potassium (K)-Dissolved			107.5		%		80-120	24-JAN-20
Selenium (Se)-Dissolved			105.6		%		80-120	24-JAN-20
Silicon (Si)-Dissolved			115.0		%		60-140	24-JAN-20
Silver (Ag)-Dissolved			108.9		%		80-120	24-JAN-20
Sodium (Na)-Dissolved			105.0		%		80-120	24-JAN-20
Strontium (Sr)-Dissolved			109.2		%		80-120	24-JAN-20
Thallium (Tl)-Dissolved			104.3		%		80-120	24-JAN-20
Tin (Sn)-Dissolved			104.2		%		80-120	24-JAN-20
Titanium (Ti)-Dissolved			95.2		%		80-120	24-JAN-20
Uranium (U)-Dissolved			106.0		%		80-120	24-JAN-20
Vanadium (V)-Dissolved			104.8		%		80-120	24-JAN-20
Zinc (Zn)-Dissolved			100.2		%		80-120	24-JAN-20
WG3263244-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4979211							
WG3263244-1	MB							
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
WG3263244-4	MS	L2409012-4						
Aluminum (Al)-Dissolved			116.0		%		70-130	24-JAN-20
Antimony (Sb)-Dissolved			113.3		%		70-130	24-JAN-20
Arsenic (As)-Dissolved			115.2		%		70-130	24-JAN-20
Barium (Ba)-Dissolved			112.9		%		70-130	24-JAN-20
Bismuth (Bi)-Dissolved			108.6		%		70-130	24-JAN-20
Boron (B)-Dissolved			112.5		%		70-130	24-JAN-20
Cadmium (Cd)-Dissolved			123.2		%		70-130	24-JAN-20
Calcium (Ca)-Dissolved			113.9		%		70-130	24-JAN-20
Chromium (Cr)-Dissolved			114.0		%		70-130	24-JAN-20
Cobalt (Co)-Dissolved			115.9		%		70-130	24-JAN-20
Copper (Cu)-Dissolved			114.8		%		70-130	24-JAN-20
Iron (Fe)-Dissolved			110.7		%		70-130	24-JAN-20
Lead (Pb)-Dissolved			113.6		%		70-130	24-JAN-20
Lithium (Li)-Dissolved			112.0		%		70-130	24-JAN-20
Magnesium (Mg)-Dissolved			109.7		%		70-130	24-JAN-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Molybdenum (Mo)-Dissolved			114.8		%		70-130	24-JAN-20
Nickel (Ni)-Dissolved			112.9		%		70-130	24-JAN-20
Potassium (K)-Dissolved			119.7		%		70-130	24-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4979211							
WG3263244-4	MS	L2409012-4						
Selenium (Se)-Dissolved			115.3		%		70-130	24-JAN-20
Silicon (Si)-Dissolved			104.7		%		70-130	24-JAN-20
Silver (Ag)-Dissolved			96.2		%		70-130	24-JAN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Strontium (Sr)-Dissolved			121.3		%		70-130	24-JAN-20
Thallium (Tl)-Dissolved			119.8		%		70-130	24-JAN-20
Tin (Sn)-Dissolved			111.9		%		70-130	24-JAN-20
Titanium (Ti)-Dissolved			106.4		%		70-130	24-JAN-20
Uranium (U)-Dissolved			117.4		%		70-130	24-JAN-20
Vanadium (V)-Dissolved			113.7		%		70-130	24-JAN-20
Zinc (Zn)-Dissolved			112.7		%		70-130	24-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979931							
WG3263860-10	LCS							
Ammonia as N			91.3		%		85-115	25-JAN-20
WG3263860-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Nitrite (as N)			99.3		%		90-110	23-JAN-20
WG3265995-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Nitrate (as N)			103.0		%		90-110	23-JAN-20
WG3265995-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-JAN-20
OH-CL								
	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	23-JAN-20
WG3263286-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	23-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R4981547							
WG3263751-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-JAN-20
P-T-L-COL-CL	Water							
Batch	R4980066							
WG3264299-2	LCS							
Phosphorus (P)-Total			99.0		%		80-120	27-JAN-20
WG3264299-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JAN-20
PH-CL	Water							
Batch	R4979409							
WG3263286-12	DUP	L2409012-4						
pH		8.42	8.44	J	pH	0.02	0.2	23-JAN-20
WG3263286-11	LCS							
pH			7.01		pH		6.9-7.1	23-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4978288							
WG3262611-2	LCS							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	23-JAN-20
WG3262611-6	LCS							
Orthophosphate-Dissolved (as P)			106.4		%		80-120	23-JAN-20
WG3262611-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	23-JAN-20
WG3262611-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	23-JAN-20
SO4-IC-N-CL	Water							
Batch	R4983287							
WG3265995-6	LCS							
Sulfate (SO4)			102.2		%		90-110	23-JAN-20
WG3265995-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-JAN-20
SOLIDS-TDS-CL	Water							
Batch	R4981936							
WG3264177-9	DUP	L2409012-4						
Total Dissolved Solids		475	459		mg/L	3.4	20	27-JAN-20
WG3264177-5	LCS							
Total Dissolved Solids			100.3		%		85-115	27-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R4981936							
WG3264177-8	LCS							
Total Dissolved Solids			99.4		%		85-115	27-JAN-20
WG3264177-4	MB							
Total Dissolved Solids			<10		mg/L		10	27-JAN-20
WG3264177-7	MB							
Total Dissolved Solids			<10		mg/L		10	27-JAN-20
TKN-L-F-CL		Water						
Batch	R4979597							
WG3263649-2	LCS							
Total Kjeldahl Nitrogen			95.0		%		75-125	25-JAN-20
WG3263649-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-JAN-20
TSS-L-CL		Water						
Batch	R4982648							
WG3264264-2	LCS							
Total Suspended Solids			88.5		%		85-115	27-JAN-20
WG3264264-4	LCS							
Total Suspended Solids			90.9		%		85-115	27-JAN-20
WG3264264-1	MB							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-20
WG3264264-3	MB							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-20
TURBIDITY-CL		Water						
Batch	R4979688							
WG3263446-2	LCS							
Turbidity			105.0		%		85-115	24-JAN-20
WG3263446-5	LCS							
Turbidity			102.5		%		85-115	24-JAN-20
WG3263446-1	MB							
Turbidity			<0.10		NTU		0.1	24-JAN-20
WG3263446-4	MB							
Turbidity			<0.10		NTU		0.1	24-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	22-JAN-20 09:20	25-JAN-20 07:00	0.25	70	hours	EHTR-FM
	2	22-JAN-20 15:40	25-JAN-20 07:00	0.25	63	hours	EHTR-FM
	3	22-JAN-20 13:50	25-JAN-20 07:00	0.25	65	hours	EHTR-FM
	4	22-JAN-20 11:50	25-JAN-20 07:00	0.25	67	hours	EHTR-FM
pH							
	1	22-JAN-20 09:20	23-JAN-20 15:00	0.25	30	hours	EHTR-FM
	2	22-JAN-20 15:40	23-JAN-20 15:00	0.25	23	hours	EHTR-FM
	3	22-JAN-20 13:50	23-JAN-20 15:00	0.25	25	hours	EHTR-FM
	4	22-JAN-20 11:50	23-JAN-20 15:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2409012 were received on 23-JAN-20 09:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-01-22

TURNAROUND TIME: Regular

RUSH:

OTHER INFO:

LABORATORY: ALS Calgary
 Lab Name: Lyndmyla Shvets
 Lab Contact: Lyndmyla.Shvets@ALSGlobal.com
 Email: Lyndmyla.Shvets@ALSGlobal.com
 Address: 2559 29 Street NE

CLIENT INFO: PR Fording River Operations

LABORATORY: ALS Calgary
 Lab Name: Lyndmyla Shvets
 Lab Contact: Lyndmyla.Shvets@ALSGlobal.com
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 Email 5: Scott.Roupphead@teck.com X X X

PO number: VPO00597209

ANALYSIS REQUESTED:

FILE	N	F	H2SO4	H2SO4	N	N	F	F	F	N
TECK COAL ROUTINE - CL	NONE	H2SO4	H2SO4	TOC/TKN	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HNO3	HNO3	HNO3
TECK COAL ROUTINE - CL										HG-T-CVAF-CL

SAMPLE DETAILS:

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com	# Of Cont.
FR_LP-2020-01-22	FR_LP-3B	WG		2020-01-22	9:20	G	6
FR_CB-2A_2020-01-22	FR_CB_2A	WG			15:40	G	6
FR_GCMW-1A_2020-01-22	FR_GCMW-1A	WG			13:50	G	6
FR_GCMW-1B_2020-01-22	FR_GCMW-1B	WG			11:50	G	6

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:

DATE/TIME: 10 10 10 10 10 10 10 10 10 10 10 10

ACCEPTED BY/AFFILIATION: [Signature]

DATE/TIME: 1/23/25

SERVICE REQUEST (rush - subject to availability):

Regular (default) X
 Priority (2-3 business days) - 50% surcharge
 Emergency (1 Business Day) - 100% surcharge
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Tyler Fortin

Sampler's Signature: [Signature]

Mobile #: 250 464-5914

Date/Time: 2020-01-22 16:30



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 07-FEB-20
Report Date: 29-DEC-20 16:06 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2414747
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 20200206
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2414747-1	L2414747-2	L2414747-3	L2414747-4	L2414747-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	06-FEB-20	06-FEB-20	06-FEB-20	06-FEB-20	06-FEB-20
		Sampled Time	09:35	12:55	13:00	08:55	12:50
		Client ID	FR_LP-1A-2020-02-06	FR_DC4-2020-02-06	FR_FLD4-2020-02-06	FR_LP-2A-2020-02-06	FR_KB-1-2020-02-06
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		1510	2230	<2.0	1000	2230
	Hardness (as CaCO3) (mg/L)		198	1490	<0.50	429	1470
	pH (pH)		8.33	7.81	5.33	7.67	7.77
	ORP (mV)		429	449	455	483	480
	Total Suspended Solids (mg/L)		27.6	2.2	<1.0	40.6	2.8
	Total Dissolved Solids (mg/L)		1180 ^{DLHC}	2050 ^{DLHC}	<10	688 ^{DLHC}	2190 ^{DLHC}
	Turbidity (NTU)		28.3	<0.10	<0.10	16.4	0.12
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		7.9	41.4	<1.0	52.9	42.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		471	440	<1.0	549	448
	Alkalinity, Carbonate (as CaCO3) (mg/L)		10.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		481	440	<1.0	549	448
	Ammonia as N (mg/L)		0.0417	<0.0050	<0.0050	0.0123	0.0519
	Bicarbonate (HCO3) (mg/L)		574 ^{DLHC}	537 ^{DLHC}	<5.0	669	546 ^{DLHC}
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	0.061	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)		6.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0	<5.0	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)		5.9 ^{DLHC}	<2.5 ^{DLHC}	<0.50	2.01	<2.5 ^{DLHC}
	Fluoride (F) (mg/L)		0.78 ^{DLHC}	0.14 ^{DLHC}	<0.020	0.283	0.14 ^{DLHC}
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		104	98.2	0.0	102	96.0
	Nitrate (as N) (mg/L)		0.165 ^{DLHC}	83.6 ^{DLHC}	<0.0050	0.692	84.3 ^{DLHC}
	Nitrite (as N) (mg/L)		<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010	0.0114	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)		0.448	<0.050 ^{TKNI}	<0.050	0.282	<0.050 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)		0.0048	0.0030	<0.0010	<0.0010	0.0037
	Phosphorus (P)-Total (mg/L)		0.0630 ^{DLHC}	0.0027 ^{DLHC}	<0.0020	0.0506	0.0034 ^{DLHC}
	Sulfate (SO4) (mg/L)		351	765	<0.30	62.7	765
	Anion Sum (meq/L)		17.1	30.7	<0.10	12.4	30.9
	Cation Sum (meq/L)		17.9	30.1	<0.10	12.6	29.6
	Cation - Anion Balance (%)		2.1	-0.9	0.0	0.8	-2.0
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		18.5	<0.50	<0.50	2.67
Total Organic Carbon (mg/L)			20.5	<0.50	<0.50	3.30	<0.50
Total Metals	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00015	0.00039	<0.00010	<0.00010	0.00035

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2414747-1	L2414747-2	L2414747-3	L2414747-4	L2414747-5
					WG	WG	WG	WG	WG
		06-FEB-20	09:35	FR_LP-1A-2020-02-06	06-FEB-20	06-FEB-20	06-FEB-20	06-FEB-20	06-FEB-20
					09:35	12:55	13:00	08:55	12:50
					FR_LP-1A-2020-02-06	FR_DC4-2020-02-06	FR_FLD4-2020-02-06	FR_LP-2A-2020-02-06	FR_KB-1-2020-02-06
Grouping	Analyte								
WATER									
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00402	<0.00020 ^{DLA}	<0.00010	0.00047	<0.00020 ^{DLA}			
	Barium (Ba)-Dissolved (mg/L)	0.0272	0.0634	<0.00010	0.164	0.0626			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.040 ^{DLA}	<0.020	<0.020	<0.040 ^{DLA}			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 ^{DLA}	<0.000050	<0.000050	<0.00010 ^{DLA}			
	Boron (B)-Dissolved (mg/L)	0.109	0.032	<0.010	0.048	0.031			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.428	<0.0050	0.0617	0.439			
	Calcium (Ca)-Dissolved (mg/L)	55.1	342	<0.050	134	332			
	Chromium (Cr)-Dissolved (mg/L)	0.00025	<0.00020 ^{DLA}	<0.00010	0.00023	<0.00020 ^{DLA}			
	Cobalt (Co)-Dissolved (ug/L)	0.33	0.71	<0.10	1.48	0.72			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00040 ^{DLA}	<0.00020	0.00196	<0.00040 ^{DLA}			
	Iron (Fe)-Dissolved (mg/L)	0.457	<0.020 ^{DLA}	<0.010	<0.010	<0.020 ^{DLA}			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 ^{DLA}	<0.000050	<0.000050	<0.00010 ^{DLA}			
	Lithium (Li)-Dissolved (mg/L)	0.0199	0.0997	<0.0010	0.0128	0.0973			
	Magnesium (Mg)-Dissolved (mg/L)	14.5	155	<0.10	23.0	155			
	Manganese (Mn)-Dissolved (mg/L)	0.893	<0.00020 ^{DLA}	<0.00010	1.31	<0.00020 ^{DLA}			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00382	0.00122	<0.000050	0.00140	0.00119			
	Nickel (Ni)-Dissolved (mg/L)	0.00077	0.0114	<0.00050	0.00538	0.0116			
	Potassium (K)-Dissolved (mg/L)	3.09	4.87	<0.050	2.87	4.87			
	Selenium (Se)-Dissolved (ug/L)	0.098	238	<0.050	0.135	244			
	Silicon (Si)-Dissolved (mg/L)	8.24	2.25	<0.050	9.47	2.26			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 ^{DLA}	<0.000010	<0.000010	<0.000020 ^{DLA}			
	Sodium (Na)-Dissolved (mg/L)	317	4.26	<0.050	90.0	4.51			
	Strontium (Sr)-Dissolved (mg/L)	0.323	0.300	<0.00020	4.65	0.288			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000020 ^{DLA}	<0.000010	0.000028	<0.000020 ^{DLA}			
	Tin (Sn)-Dissolved (mg/L)	0.00050	<0.00020 ^{DLA}	<0.00010	0.00033	<0.00020 ^{DLA}			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00618	0.0124	<0.000010	0.0183	0.0117			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 ^{DLA}	<0.00050	<0.00050	<0.0010 ^{DLA}			
	Zinc (Zn)-Dissolved (mg/L)	0.0018	0.0084	<0.0010	0.0051	0.0083			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLA	Detection Limit adjusted for required dilution		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200206

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2414747

Report Date: 29-DEC-20

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4991946							
WG3272153-2	LCS							
Acidity (as CaCO3)			102.3		%		85-115	07-FEB-20
WG3272153-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	07-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4991963							
WG3272155-11	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	07-FEB-20
WG3272155-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4996966							
WG3274696-3	DUP	L2414747-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3274696-2	LCS							
Beryllium (Be)-Dissolved			98.0		%		80-120	14-FEB-20
WG3274696-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
BIC-CL								
	Water							
Batch	R4991963							
WG3272155-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4992007							
WG3272208-6	LCS							
Bromide (Br)			101.4		%		85-115	07-FEB-20
WG3272208-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	07-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4995923							
WG3274431-15	DUP	L2414747-5						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3274431-14	LCS							
Dissolved Organic Carbon			94.9		%		80-120	12-FEB-20
WG3274431-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4995923							
WG3274431-16 MS		L2414747-5						
Dissolved Organic Carbon			91.1		%		70-130	12-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4995923							
WG3274431-15 DUP		L2414747-5						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3274431-14 LCS								
Total Organic Carbon			97.6		%		80-120	12-FEB-20
WG3274431-13 MB								
Total Organic Carbon			<0.50		mg/L		0.5	12-FEB-20
WG3274431-16 MS		L2414747-5						
Total Organic Carbon			95.2		%		70-130	13-FEB-20
CL-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6 LCS								
Chloride (Cl)			99.4		%		90-110	07-FEB-20
WG3272208-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	07-FEB-20
CO3-CL	Water							
Batch	R4991963							
WG3272155-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	07-FEB-20
EC-L-PCT-CL	Water							
Batch	R4991963							
WG3272155-11 LCS								
Conductivity (@ 25C)			97.2		%		90-110	07-FEB-20
WG3272155-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-FEB-20
F-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6 LCS								
Fluoride (F)			102.9		%		90-110	07-FEB-20
WG3272208-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	07-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4994872							
WG3273903-2	LCS							
Mercury (Hg)-Dissolved			94.9		%		80-120	12-FEB-20
WG3273903-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-FEB-20
HG-T-CVAA-VA								
Water								
Batch	R4994872							
WG3274067-3	DUP	L2414747-1						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3274067-2	LCS							
Mercury (Hg)-Total			95.9		%		80-120	12-FEB-20
WG3274067-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	12-FEB-20
WG3274067-4	MS	L2414747-2						
Mercury (Hg)-Total			94.7		%		70-130	12-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4996966							
WG3274696-3	DUP	L2414747-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	14-FEB-20
Antimony (Sb)-Dissolved		0.00015	0.00015		mg/L	3.5	20	14-FEB-20
Arsenic (As)-Dissolved		0.00402	0.00407		mg/L	1.3	20	14-FEB-20
Barium (Ba)-Dissolved		0.0272	0.0283		mg/L	3.9	20	14-FEB-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-FEB-20
Boron (B)-Dissolved		0.109	0.117		mg/L	7.1	20	14-FEB-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	14-FEB-20
Calcium (Ca)-Dissolved		55.1	59.3		mg/L	7.2	20	14-FEB-20
Chromium (Cr)-Dissolved		0.00025	0.00023		mg/L	10	20	14-FEB-20
Cobalt (Co)-Dissolved		0.00033	0.00034		mg/L	4.6	20	14-FEB-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-FEB-20
Iron (Fe)-Dissolved		0.457	0.482		mg/L	5.2	20	14-FEB-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-FEB-20
Lithium (Li)-Dissolved		0.0199	0.0216		mg/L	8.0	20	14-FEB-20
Magnesium (Mg)-Dissolved		14.5	14.5		mg/L	0.0	20	14-FEB-20
Manganese (Mn)-Dissolved		0.893	0.897		mg/L	0.4	20	14-FEB-20
Molybdenum (Mo)-Dissolved		0.00382	0.00390		mg/L	2.0	20	14-FEB-20
Nickel (Ni)-Dissolved		0.00077	0.00077		mg/L	0.1	20	14-FEB-20
Potassium (K)-Dissolved		3.09	3.18		mg/L	2.6	20	14-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996966							
WG3274696-3	DUP	L2414747-1						
Selenium (Se)-Dissolved		0.000098	0.000086		mg/L	13	20	14-FEB-20
Silicon (Si)-Dissolved		8.24	8.42		mg/L	2.1	20	14-FEB-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-FEB-20
Sodium (Na)-Dissolved		317	320		mg/L	1.0	20	14-FEB-20
Strontium (Sr)-Dissolved		0.323	0.332		mg/L	2.6	20	14-FEB-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-FEB-20
Tin (Sn)-Dissolved		0.00050	0.00052		mg/L	4.4	20	14-FEB-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	14-FEB-20
Uranium (U)-Dissolved		0.00618	0.00617		mg/L	0.2	20	14-FEB-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-FEB-20
Zinc (Zn)-Dissolved		0.0018	0.0017		mg/L	3.2	20	14-FEB-20
WG3274696-2	LCS							
Aluminum (Al)-Dissolved			99.1		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			102.1		%		80-120	14-FEB-20
Arsenic (As)-Dissolved			96.1		%		80-120	14-FEB-20
Barium (Ba)-Dissolved			98.0		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			103.3		%		80-120	14-FEB-20
Boron (B)-Dissolved			101.0		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			96.2		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			99.0		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			97.0		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			95.4		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			95.9		%		80-120	14-FEB-20
Iron (Fe)-Dissolved			97.8		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			99.8		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			96.3		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			98.7		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			100.5		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			96.6		%		80-120	14-FEB-20
Potassium (K)-Dissolved			103.0		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			92.7		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			100.7		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			99.0		%		80-120	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996966							
WG3274696-2	LCS							
Sodium (Na)-Dissolved			99.4		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			103.7		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			101.0		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			97.0		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			91.6		%		80-120	14-FEB-20
Uranium (U)-Dissolved			101.4		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			99.9		%		80-120	14-FEB-20
Zinc (Zn)-Dissolved			91.2		%		80-120	14-FEB-20
WG3274696-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch R4996966								
WG3274696-1	MB	NP						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
NH3-L-F-CL								
Water								
Batch R4993670								
WG3273075-34	LCS							
Ammonia as N			108.5		%		85-115	10-FEB-20
WG3273075-33	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-FEB-20
NO2-L-IC-N-CL								
Water								
Batch R4992007								
WG3272208-6	LCS							
Nitrite (as N)			97.6		%		90-110	07-FEB-20
WG3272208-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-FEB-20
NO3-L-IC-N-CL								
Water								
Batch R4992007								
WG3272208-6	LCS							
Nitrate (as N)			105.1		%		90-110	07-FEB-20
WG3272208-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-FEB-20
OH-CL								
Water								
Batch R4991963								
WG3272155-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-FEB-20
ORP-CL								
Water								
Batch R4993610								
WG3273663-1	CRM	CL-ORP						
ORP			223		mV		210-230	11-FEB-20
P-T-L-COL-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R4995417							
WG3274307-2 LCS								
Phosphorus (P)-Total			98.6		%		80-120	12-FEB-20
WG3274307-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-FEB-20
PH-CL	Water							
Batch	R4991963							
WG3272155-11 LCS								
pH			7.08		pH		6.9-7.1	07-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4991865							
WG3272007-3 LCS								
Orthophosphate-Dissolved (as P)			102.6		%		80-120	07-FEB-20
WG3272007-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-FEB-20
SO4-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6 LCS								
Sulfate (SO4)			93.6		%		90-110	07-FEB-20
WG3272208-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	07-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4996165							
WG3273894-11 LCS								
Total Dissolved Solids			106.3		%		85-115	12-FEB-20
WG3273894-10 MB								
Total Dissolved Solids			<10		mg/L		10	12-FEB-20
TKN-L-F-CL	Water							
Batch	R4993788							
WG3273524-11 DUP		L2414747-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-FEB-20
WG3273524-10 LCS								
Total Kjeldahl Nitrogen			94.1		%		75-125	11-FEB-20
WG3273524-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-FEB-20
WG3273524-12 MS		L2414747-3						
Total Kjeldahl Nitrogen			113.8		%		70-130	11-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL								
	Water							
Batch	R4996727							
WG3275002-2	LCS							
Total Suspended Solids			91.8		%		85-115	13-FEB-20
WG3275002-1	MB							
Total Suspended Solids			<1.0		mg/L		1	13-FEB-20
TURBIDITY-CL								
	Water							
Batch	R4992102							
WG3272290-3	DUP	L2414747-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	08-FEB-20
WG3272290-2	LCS							
Turbidity			104.5		%		85-115	08-FEB-20
WG3272290-1	MB							
Turbidity			<0.10		NTU		0.1	08-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	06-FEB-20 09:35	11-FEB-20 08:00	0.25	118	hours	EHTR-FM
	2	06-FEB-20 12:55	11-FEB-20 08:00	0.25	115	hours	EHTR-FM
	3	06-FEB-20 13:00	11-FEB-20 08:00	0.25	115	hours	EHTR-FM
	4	06-FEB-20 08:55	11-FEB-20 08:00	0.25	119	hours	EHTR-FM
	5	06-FEB-20 12:50	11-FEB-20 08:00	0.25	115	hours	EHTR-FM
pH	1	06-FEB-20 09:35	07-FEB-20 14:00	0.25	28	hours	EHTR-FM
	2	06-FEB-20 12:55	07-FEB-20 14:00	0.25	25	hours	EHTR-FM
	3	06-FEB-20 13:00	07-FEB-20 14:00	0.25	25	hours	EHTR-FM
	4	06-FEB-20 08:55	07-FEB-20 14:00	0.25	29	hours	EHTR-FM
	5	06-FEB-20 12:50	07-FEB-20 14:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2414747 were received on 07-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2414747-COFC

COC ID: 20200206

TURNAROUND 1

USH:

PROJECT/CLIENT INFO

OTHER INFO

Facility Name / Job#	Fording River Operations				Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery				Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	X	X	X
Email	Tom.Jeffery@teck.com				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.				Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
City	Calgary	Province	AB		City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3		Country	Canada		Postal Code	T1Y 7B5		Country	Canada			
Phone Number	250 433-6716				Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERVE	ANALYSIS REQUESTED								
									TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL			
FR_LP-1A-2020-02-06	FR_LP-1A	WG	N	2/6/2020	9:35	G	6		N	F	N	F	F	N			
FR_DC4-2020-02-06	FR_DC4	WG	N	2/6/2020	12:55	G	6		NONE	H2SO4	H2SO4	HNO3	HCL	HCL			
FR_FLD4-2020-02-06	FR_FLD4	WG	N	2/6/2020	13:00	G	6										
FR_LP-2A-2020-02-06	FR_LP-2A	WG	N	2/6/2020	8:55	G	6										
FR_KB-1-2020-02-06	FR_KB-1	WG	N	2/6/2020	12:50	G	6										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.				2/7 9:00

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin		Mobile #	250-464-5914	
Sampler's Signature			Date/Time	Feb 6 2020	

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TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 08-FEB-20
Report Date: 18-DEC-20 12:33 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2414912
Project P.O. #: VPO00610782
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200207-1300
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2414912-1	L2414912-2	L2414912-3	L2414912-4
		Description	WG	WG	WG	WG
		Sampled Date	07-FEB-20	07-FEB-20	07-FEB-20	07-FEB-20
		Sampled Time	12:30	09:30	09:45	11:53
		Client ID	FR_POTWELLS_Q TR_2020-01-06_N	FR_09-04- A_QTR_2020-01- 06_N	FR_09-04- B_QTR_2020-01- 06_N	FR_GH_WELL4_Q TR_2020-01-06_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	558	1150	1180	1280	
	Hardness (as CaCO3) (mg/L)	318	721	788	814	
	pH (pH)	8.01	7.69	7.79	7.86	
	ORP (mV)	516	318	308	325	
	Total Suspended Solids (mg/L)	<1.0	1.2	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	403 ^{DLHC}	876 ^{DLHC}	897 ^{DLHC}	1010 ^{DLHC}	
	Turbidity (NTU)	<0.10	<0.10	0.13	0.53	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.3	21.4	19.4	16.4	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	139	371	355	287	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	139	371	355	287	
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	0.0479	
	Bicarbonate (HCO3) (mg/L)	169	453	433	350	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.25	^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	<0.50	5.93	6.17	<2.5	^{DLHC}
	Fluoride (F) (mg/L)	0.230	0.369	0.266	0.10	^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Ion Balance (%)	101	101	110	108	
	Nitrate (as N) (mg/L)	3.83	0.187	0.213	40.8	^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050	^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	0.387	<0.050	<0.050	<0.050	^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019 ^{HTD}	0.0031 ^{HTD}	0.0034 ^{HTD}	<0.0010	^{HTD}
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020 ^{RRV}	<0.0020 ^{RRV}	<0.0020	^{DLHC}
	Sulfate (SO4) (mg/L)	159	342	358	314	
	Anion Sum (meq/L)	6.37	14.7	14.8	15.2	
Cation Sum (meq/L)	6.41	14.9	16.3	16.5		
Cation - Anion Balance (%)	0.3	0.5	4.9	4.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.56	<0.50	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00012	0.00011	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2414912-1	L2414912-2	L2414912-3	L2414912-4	
					L2414912-1 WG 07-FEB-20 12:30 FR_POTWELLS_Q TR_2020-01-06_N	L2414912-2 WG 07-FEB-20 09:30 FR_09-04- A_QTR_2020-01- 06_N	L2414912-3 WG 07-FEB-20 09:45 FR_09-04- B_QTR_2020-01- 06_N	L2414912-4 WG 07-FEB-20 11:53 FR_GH_WELL4_Q TR_2020-01-06_N	
Grouping	Analyte								
WATER									
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0785	0.101	0.105	0.101				
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Boron (B)-Dissolved (mg/L)	<0.010	0.031	0.031	0.012				
	Cadmium (Cd)-Dissolved (ug/L)	0.0101	1.09	1.10	0.0514				
	Calcium (Ca)-Dissolved (mg/L)	82.6	158	171	200				
	Chromium (Cr)-Dissolved (mg/L)	0.00013	<0.00010	<0.00010	0.00011				
	Cobalt (Co)-Dissolved (ug/L)	<0.10	1.24	1.29	0.14				
	Copper (Cu)-Dissolved (mg/L)	0.00080	0.00093	0.00051	0.00159				
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	0.015				
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0060	0.0939	0.0984	0.0344				
	Magnesium (Mg)-Dissolved (mg/L)	27.2	79.4	87.5	76.7				
	Manganese (Mn)-Dissolved (mg/L)	0.00048	1.32	1.44	0.00513				
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000651	0.00186	0.00187	0.000342				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00854	0.00926	<0.00050				
	Potassium (K)-Dissolved (mg/L)	0.643	5.79	6.20	1.75				
	Selenium (Se)-Dissolved (ug/L)	23.7	0.207	0.194	122				
	Silicon (Si)-Dissolved (mg/L)	1.50	2.60	2.65	2.75				
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	0.759	6.92	7.42	3.35				
	Strontium (Sr)-Dissolved (mg/L)	0.143	0.229	0.252	0.247				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000055	0.000063	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010				
	Uranium (U)-Dissolved (mg/L)	0.00110	0.00647	0.00649	0.00426				
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	0.0055	0.0040	0.0044	0.0334				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2414912-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L2414912-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200207-1300

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2414912

Report Date: 18-DEC-20

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4992179							
WG3272360-5	LCS							
Acidity (as CaCO3)			97.6		%		85-115	08-FEB-20
WG3272360-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	08-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4992167							
WG3272344-8	LCS							
Alkalinity, Total (as CaCO3)			99.5		%		85-115	08-FEB-20
WG3272344-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	14-FEB-20
WG3274694-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4992193							
WG3272378-10	LCS							
Bromide (Br)			100.9		%		85-115	08-FEB-20
WG3272378-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4997374							
WG3276700-2	LCS							
Dissolved Organic Carbon			101.0		%		80-120	16-FEB-20
WG3276700-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4997374							
WG3276700-2	LCS							
Total Organic Carbon			102.1		%		80-120	16-FEB-20
WG3276700-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-FEB-20
CL-IC-N-CL								
	Water							

Quality Control Report

Workorder: L2414912

Report Date: 18-DEC-20

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R4992193							
WG3272378-10	LCS							
Chloride (Cl)			103.4		%		90-110	08-FEB-20
WG3272378-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-FEB-20
EC-L-PCT-CL	Water							
Batch	R4992167							
WG3272344-8	LCS							
Conductivity (@ 25C)			96.3		%		90-110	08-FEB-20
WG3272344-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-FEB-20
F-IC-N-CL	Water							
Batch	R4992193							
WG3272378-10	LCS							
Fluoride (F)			103.8		%		90-110	08-FEB-20
WG3272378-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-FEB-20
HG-D-CVAA-VA	Water							
Batch	R4994872							
WG3273903-10	LCS							
Mercury (Hg)-Dissolved			95.8		%		80-120	12-FEB-20
WG3273903-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-FEB-20
MET-D-CCMS-VA	Water							
Batch	R4996890							
WG3274694-2	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			94.4		%		80-120	14-FEB-20
Arsenic (As)-Dissolved			100.3		%		80-120	14-FEB-20
Barium (Ba)-Dissolved			110.0		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			103.9		%		80-120	14-FEB-20
Boron (B)-Dissolved			100.4		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			104.4		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			101.2		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			101.8		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			96.4		%		80-120	14-FEB-20



Quality Control Report

Workorder: L2414912

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-2	LCS							
Iron (Fe)-Dissolved			99.2		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			99.9		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			97.1		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			98.6		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			101.5		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			100.8		%		80-120	14-FEB-20
Potassium (K)-Dissolved			105.0		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			96.3		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			102.6		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			97.2		%		80-120	14-FEB-20
Sodium (Na)-Dissolved			106.3		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			102.9		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			100.7		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			95.1		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			91.2		%		80-120	14-FEB-20
Uranium (U)-Dissolved			98.4		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			102.2		%		80-120	14-FEB-20
Zinc (Zn)-Dissolved			100.5		%		80-120	14-FEB-20
WG3274694-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20



Quality Control Report

Workorder: L2414912

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4995857							
WG3273769-30	LCS							
Ammonia as N			98.3		%		85-115	11-FEB-20
WG3273769-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4992193							
WG3272378-10	LCS							
Nitrite (as N)			101.1		%		90-110	08-FEB-20
WG3272378-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4992193							
WG3272378-10	LCS							
Nitrate (as N)			104.5		%		90-110	08-FEB-20
WG3272378-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-FEB-20
ORP-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL								
Water								
Batch	R4997214							
WG3276556-3	CRM	CL-ORP						
ORP			224		mV		210-230	15-FEB-20
WG3276556-4	DUP	L2414912-4						
ORP		325	324	J	mV	1.7	15	15-FEB-20
P-T-L-COL-CL								
Water								
Batch	R4996808							
WG3275940-2	LCS							
Phosphorus (P)-Total			99.7		%		80-120	14-FEB-20
WG3275940-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-FEB-20
PH-CL								
Water								
Batch	R4992167							
WG3272344-8	LCS							
pH			6.98		pH		6.9-7.1	08-FEB-20
PO4-DO-L-COL-CL								
Water								
Batch	R4992226							
WG3272358-2	LCS							
Orthophosphate-Dissolved (as P)			104.2		%		80-120	09-FEB-20
WG3272358-6	LCS							
Orthophosphate-Dissolved (as P)			106.3		%		80-120	09-FEB-20
WG3272358-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-FEB-20
WG3272358-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-FEB-20
SO4-IC-N-CL								
Water								
Batch	R4992193							
WG3272378-10	LCS							
Sulfate (SO4)			100.7		%		90-110	08-FEB-20
WG3272378-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-FEB-20
SOLIDS-TDS-CL								
Water								
Batch	R4997133							
WG3275777-5	LCS							
Total Dissolved Solids			102.0		%		85-115	14-FEB-20
WG3275777-4	MB							
Total Dissolved Solids			<10		mg/L		10	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R4995336							
WG3274326-13	LCS							
Total Kjeldahl Nitrogen			97.8		%		75-125	12-FEB-20
WG3274326-2	LCS							
Total Kjeldahl Nitrogen			102.8		%		75-125	12-FEB-20
WG3274326-5	LCS							
Total Kjeldahl Nitrogen			102.5		%		75-125	12-FEB-20
WG3274326-9	LCS							
Total Kjeldahl Nitrogen			99.6		%		75-125	12-FEB-20
WG3274326-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
TSS-L-CL		Water						
Batch	R4997135							
WG3275779-5	LCS							
Total Suspended Solids			95.2		%		85-115	14-FEB-20
WG3275779-4	MB							
Total Suspended Solids			<1.0		mg/L		1	14-FEB-20
TURBIDITY-CL		Water						
Batch	R4992102							
WG3272290-11	LCS							
Turbidity			104.5		%		85-115	08-FEB-20
WG3272290-10	MB							
Turbidity			<0.10		NTU		0.1	08-FEB-20

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	07-FEB-20 12:30	15-FEB-20 09:00	0.25	188	hours	EHTR-FM
	2	07-FEB-20 09:30	15-FEB-20 09:00	0.25	192	hours	EHTR-FM
	3	07-FEB-20 09:45	15-FEB-20 09:00	0.25	191	hours	EHTR-FM
	4	07-FEB-20 11:53	15-FEB-20 09:00	0.25	189	hours	EHTR-FM
pH							
	1	07-FEB-20 12:30	08-FEB-20 13:30	0.25	25	hours	EHTR-FM
	2	07-FEB-20 09:30	08-FEB-20 13:30	0.25	28	hours	EHTR-FM
	3	07-FEB-20 09:45	08-FEB-20 13:30	0.25	28	hours	EHTR-FM
	4	07-FEB-20 11:53	08-FEB-20 13:30	0.25	26	hours	EHTR-FM
Anions and Nutrients							
Orthophosphate-Dissolved (as P)							
	1	07-FEB-20 12:30	14-FEB-20 15:00	3	7	days	EHT
	2	07-FEB-20 09:30	14-FEB-20 15:00	3	7	days	EHT
	3	07-FEB-20 09:45	14-FEB-20 15:00	3	7	days	EHT
	4	07-FEB-20 11:53	14-FEB-20 15:00	3	7	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2414912 were received on 08-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

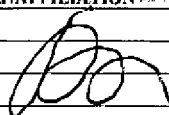
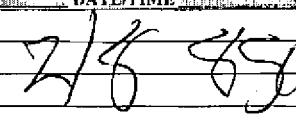
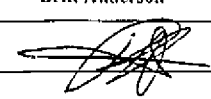
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 20200207-1300		TURNAROUND TIME:			RUSH:				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job#: Fording River Operation				Lab Name: ALS Calgary			Report Format / Distribution		
Project Manager: Scott Roughead				Lab Contact: Lyudmyla Shvets			Excel PDF EDD		
Email: scott.roughead@teck.com				Email: Lyudmyla.Shvets@ALSGlobal.com			Email 1: david.burroughs@teck.com X X X		
Address:				Address: 2559 29 Street NE			Email 2: britt.anderson@teck.com X X X		
City: Elkford Province: BC				City: Calgary Province: AB			Email 3: scott.roughead@teck.com X X X		
Postal Code: Country: Canada				Postal Code: T1Y 7B5 Country: Canada			Email 4: teckcoal@equisonline.com X X X		
Phone Number: 1-250-433-6976				Phone Number: 403 407 1794			Email 6: PO number:		

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - P: Field, L: Lab, FL: Field & Lab, N: None																						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	F	F	F	N	N																		
FR_POTWELLS_QTR_2020-01-06_N	FR_POTWELLS	WG		2/7/2020	12:30		5	1	1	1	1	1	1	1	1	1	1																		
FR_09-04-A_QTR_2020-01-06_N	FR_09-04-B	WG		2/7/2020	9:30		5	1	1	1	1	1	1	1	1	1	1																		
FR_09-04-B_QTR_2020-01-06_N	FR_09-04-A	WG		2/7/2020	9:45		5	1	1	1	1	1	1	1	1	1	1																		
FR_CH_WELLS_QTR_2020-01-06_N	FR_CH_WELLS4	WG		2/7/2020	11:53		5	1	1	1	1	1	1	1	1	1	1																		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME			ACCEPTED BY/AFFILIATION			DATE/TIME		
All samples specified above are filtered and preserved.			Britt Anderson			February 7, 2020								
SERVICE REQUEST (rush - subject to availability)														
Regular (default) X			Sampler's Name			Britt Anderson			Mobile #			250-425-5335		
Priority (2-3 business days) - 50% surcharge			Sampler's Signature						Date/Time			February 7, 2020		
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS														



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 11-FEB-20
Report Date: 21-DEC-20 17:36 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-6976

Certificate of Analysis

Lab Work Order #: L2415703
Project P.O. #: VPO00610782
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200210-1400
Legal Site Desc:

Comments: 21-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2415703-1	L2415703-2	L2415703-3	L2415703-4	L2415703-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	10-FEB-20	10-FEB-20	10-FEB-20	10-FEB-20	10-FEB-20
		Sampled Time	09:00	13:40	10:00	10:00	10:30
		Client ID	FR_POTABLE_MO N_2020-02-03_N	FR_NL1H_MON_2 020-02-03_N	FR_CC1_MON_20 20-02-03_N	FR_DC1_MON_20 20-02-03_N	FR_FRDSCC1_MO N_2020-02-03_NP
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		558	812	1940	1940	823
	Hardness (as CaCO3) (mg/L)		309	452	1240	1240	468
	pH (pH)		8.21	8.26	8.23	8.22	8.29
	ORP (mV)		455	478	434	531	452
	Total Suspended Solids (mg/L)		<1.0	13.5	<1.0	1.1	<1.0
	Total Dissolved Solids (mg/L)		412	586	1630	1610	611
	Turbidity (NTU)		0.26	4.72	0.36	0.31	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		1.5	1.1	3.3	4.4	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		144	190	250	257	177
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		144	190	250	257	177
	Ammonia as N (mg/L)		0.0078	0.327	0.0240	0.0321	0.0104
	Bicarbonate (HCO3) (mg/L)		176	231	305	313	216
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0
	Chloride (Cl) (mg/L)		0.55	14.8	<2.5 ^{DLHC}	<2.5 ^{DLHC}	0.52
	Fluoride (F) (mg/L)		0.154	0.199	0.17 ^{DLHC}	0.17 ^{DLHC}	0.130
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		98.2	100	103	101	99.4
	Nitrate (as N) (mg/L)		3.72	5.30	91.7 ^{DLHC}	94.0 ^{DLHC}	17.0
	Nitrite (as N) (mg/L)		<0.0010	0.128	0.0088 ^{DLHC}	0.0088 ^{DLHC}	0.0020
	Total Kjeldahl Nitrogen (mg/L)		0.134 ^{TKNI}	0.828	0.444 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)		0.0017	0.0341	0.0012	<0.0010	0.0017
	Phosphorus (P)-Total (mg/L)		<0.0020	0.0578	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}	<0.0020
	Sulfate (SO4) (mg/L)		153	235	621	627	228
	Anion Sum (meq/L)		6.35	9.49	24.5	24.9	9.51
	Cation Sum (meq/L)		6.24	9.51	25.2	25.3	9.45
	Cation - Anion Balance (%)		-0.9	0.1	1.4	0.7	-0.3
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		<0.50	1.19	0.68	<0.50
Total Organic Carbon (mg/L)			<0.50	1.63	1.53	0.70	0.67
Total Metals	Aluminum (Al)-Total (mg/L)		<0.0030	0.0088	0.0036	0.0045	<0.0030
	Antimony (Sb)-Total (mg/L)		<0.00010	0.00193	0.00077	0.00078	0.00017
	Arsenic (As)-Total (mg/L)		<0.00010	0.00030	0.00015	0.00013	<0.00010
	Barium (Ba)-Total (mg/L)		0.0698	0.0774	0.0376	0.0376	0.0866
	Beryllium (Be)-Total (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415703-6 WG 10-FEB-20 13:00 FR_GCMW- 2_QTR_2020-01- 06_N	L2415703-7 WG 10-FEB-20 13:00 FR_DC1_QTR_202 0-01-06_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1600	1600		
	Hardness (as CaCO3) (mg/L)	971	959		
	pH (pH)	8.05	7.99		
	ORP (mV)	309	496		
	Total Suspended Solids (mg/L)	<1.0	56.0		
	Total Dissolved Solids (mg/L)	1300	1300		
	Turbidity (NTU)	0.77	30.5		
	Anions and Nutrients	Acidity (as CaCO3) (mg/L)	8.4	8.5	
Alkalinity, Bicarbonate (as CaCO3) (mg/L)		229	237		
Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0		
Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0		
Alkalinity, Total (as CaCO3) (mg/L)		229	237		
Ammonia as N (mg/L)		<0.0050	<0.0050		
Bicarbonate (HCO3) (mg/L)		279	289		
Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.25 ^{DLHC}		
Carbonate (CO3) (mg/L)		<5.0	<5.0		
Chloride (Cl) (mg/L)		<2.5 ^{DLHC}	<2.5 ^{DLHC}		
Fluoride (F) (mg/L)		0.15 ^{DLHC}	0.15 ^{DLHC}		
Hydroxide (OH) (mg/L)		<5.0	<5.0		
Ion Balance (%)		101	97.1		
Nitrate (as N) (mg/L)		67.3 ^{DLHC}	68.3 ^{DLHC}		
Nitrite (as N) (mg/L)		<0.0050 ^{DLHC}	0.0077 ^{DLHC}		
Total Kjeldahl Nitrogen (mg/L)		<0.050 ^{TKNI}	<0.050 ^{TKNI}		
Orthophosphate-Dissolved (as P) (mg/L)		0.0052	0.0036		
Phosphorus (P)-Total (mg/L)		0.0724	0.0376		
Sulfate (SO4) (mg/L)		489 ^{DLHC}	501 ^{DLHC}		
Anion Sum (meq/L)		19.6	20.0		
Cation Sum (meq/L)		19.7	19.5		
Cation - Anion Balance (%)		0.3	-1.5		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.63	0.58		
	Total Organic Carbon (mg/L)	2.93	1.97		
Total Metals	Aluminum (Al)-Total (mg/L)				
	Antimony (Sb)-Total (mg/L)				
	Arsenic (As)-Total (mg/L)				
	Barium (Ba)-Total (mg/L)				
	Beryllium (Be)-Total (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

21-DEC-20 17:36 (MT)

Version: FINAL REV. 2

		Sample ID	L2415703-1	L2415703-2	L2415703-3	L2415703-4	L2415703-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	10-FEB-20	10-FEB-20	10-FEB-20	10-FEB-20	10-FEB-20
		Sampled Time	09:00	13:40	10:00	10:00	10:30
		Client ID	FR_POTABLE_MO N_2020-02-03_N	FR_NL1H_MON_2 020-02-03_N	FR_CC1_MON_20 20-02-03_N	FR_DC1_MON_20 20-02-03_N	FR_FRDSCC1_MO N_2020-02-03_NP
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		<0.010	0.018	0.028	0.028	<0.010
	Cadmium (Cd)-Total (ug/L)		0.0101	0.183	0.451	0.472	0.0633
	Calcium (Ca)-Total (mg/L)		83.2	105	265	265	113
	Chromium (Cr)-Total (mg/L)		0.00011	0.00012	<0.00010	<0.00010	0.00012
	Cobalt (Co)-Total (ug/L)		<0.10	1.02	0.19	0.18	<0.10
	Copper (Cu)-Total (mg/L)		0.0827	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)		0.071	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Total (mg/L)		0.000801	0.000114	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)		0.0064	0.0316	0.292	0.295	0.0472
	Magnesium (Mg)-Total (mg/L)		27.7	46.0	137	138	44.0
	Manganese (Mn)-Total (mg/L)		0.00392	0.0582	0.00292	0.00276	0.00047
	Mercury (Hg)-Total (mg/L)		<0.0000050				<0.0000050
	Mercury (Hg)-Total (ug/L)			<0.00050	<0.00050	<0.00050	
	Molybdenum (Mo)-Total (mg/L)		0.000691	0.00821	0.00376	0.00375	0.00102
	Nickel (Ni)-Total (mg/L)		<0.00050	0.00357	0.0588	0.0586	0.00688
	Potassium (K)-Total (mg/L)		0.639	2.79	5.84	6.02	1.44
	Selenium (Se)-Total (ug/L)		24.3	34.4	157	155	45.3
	Silicon (Si)-Total (mg/L)		1.48	2.23	1.77	1.74	1.72
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		0.786	8.92	5.67	5.79	1.50
	Strontium (Sr)-Total (mg/L)		0.146	0.189	0.406	0.416	0.178
	Thallium (Tl)-Total (mg/L)		<0.000010	0.000011	0.000036	0.000033	<0.000010
	Tin (Sn)-Total (mg/L)		0.00014	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.00107	0.00381	0.0138	0.0139	0.00293
	Vanadium (V)-Total (mg/L)		<0.00050	0.00097	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		0.129	0.0080	0.0200	0.0199	0.0051
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00180	0.00075	0.00074	0.00016
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00030	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0689	0.0772	0.0367	0.0362	0.0873
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	0.017	0.027	0.026	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415703-6 WG 10-FEB-20 13:00 FR_GCMW- 2_QTR_2020-01- 06_N	L2415703-7 WG 10-FEB-20 13:00 FR_DC1_QTR_202 0-01-06_N		
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)				
	Boron (B)-Total (mg/L)				
	Cadmium (Cd)-Total (ug/L)				
	Calcium (Ca)-Total (mg/L)				
	Chromium (Cr)-Total (mg/L)				
	Cobalt (Co)-Total (ug/L)				
	Copper (Cu)-Total (mg/L)				
	Iron (Fe)-Total (mg/L)				
	Lead (Pb)-Total (mg/L)				
	Lithium (Li)-Total (mg/L)				
	Magnesium (Mg)-Total (mg/L)				
	Manganese (Mn)-Total (mg/L)				
	Mercury (Hg)-Total (mg/L)				
	Mercury (Hg)-Total (ug/L)				
	Molybdenum (Mo)-Total (mg/L)				
	Nickel (Ni)-Total (mg/L)				
	Potassium (K)-Total (mg/L)				
	Selenium (Se)-Total (ug/L)				
	Silicon (Si)-Total (mg/L)				
	Silver (Ag)-Total (mg/L)				
	Sodium (Na)-Total (mg/L)				
	Strontium (Sr)-Total (mg/L)				
	Thallium (Tl)-Total (mg/L)				
	Tin (Sn)-Total (mg/L)				
	Titanium (Ti)-Total (mg/L)				
	Uranium (U)-Total (mg/L)				
	Vanadium (V)-Total (mg/L)				
	Zinc (Zn)-Total (mg/L)				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00037	0.00039		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0772	0.0793		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.016	0.016		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2415703-1	L2415703-2	L2415703-3	L2415703-4	L2415703-5
					L2415703-1 WS 10-FEB-20 09:00 FR_POTABLE_MON_2020-02-03_N	L2415703-2 WS 10-FEB-20 13:40 FR_NL1H_MON_2020-02-03_N	L2415703-3 WS 10-FEB-20 10:00 FR_CC1_MON_2020-02-03_N	L2415703-4 WS 10-FEB-20 10:00 FR_DC1_MON_2020-02-03_N	L2415703-5 WS 10-FEB-20 10:30 FR_FRDSCC1_MON_2020-02-03_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Cadmium (Cd)-Dissolved (ug/L)	0.0091	0.175	0.477	0.494	0.0646			
	Calcium (Ca)-Dissolved (mg/L)	77.5	103	265	267	113			
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00011	<0.00010	<0.00010	0.00014			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	1.01	0.19	0.20	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.0706	0.00041	0.00034	0.00037	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.024	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000214	0.000103	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0064	0.0321	0.306	0.297	0.0473			
	Magnesium (Mg)-Dissolved (mg/L)	28.1	46.9	140	140	44.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00334	0.0572	0.00287	0.00275	0.00047			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000656	0.00747	0.00350	0.00345	0.00101			
	Nickel (Ni)-Dissolved (mg/L)	0.00054	0.00381	0.0593	0.0602	0.00749			
	Potassium (K)-Dissolved (mg/L)	0.641	2.73	6.18	6.27	1.49			
	Selenium (Se)-Dissolved (ug/L)	25.2	38.5	177	168	49.8			
	Silicon (Si)-Dissolved (mg/L)	1.51	2.35	1.86	1.82	1.80			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.779	9.11	6.02	6.06	1.53			
	Strontium (Sr)-Dissolved (mg/L)	0.134	0.176	0.389	0.381	0.166			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000013	0.000040	0.000040	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00107	0.00388	0.0138	0.0140	0.00290			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00091	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.115	0.0072	0.0245	0.0224	0.0059			
Speciated Metals	Methylmercury (as MeHg)-Total (ug/L)		<0.000020						

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415703-6 WG 10-FEB-20 13:00 FR_GCMW- 2_QTR_2020-01- 06_N	L2415703-7 WG 10-FEB-20 13:00 FR_DC1_QTR_202 0-01-06_N		
Grouping	Analyte				
WATER					
Dissolved Metals	Cadmium (Cd)-Dissolved (ug/L)	0.0774	0.0688		
	Calcium (Ca)-Dissolved (mg/L)	212	208		
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00012		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00062	0.00028		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.000058	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.188	0.188		
	Magnesium (Mg)-Dissolved (mg/L)	107	107		
	Manganese (Mn)-Dissolved (mg/L)	0.00127	0.00121		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00181	0.00196		
	Nickel (Ni)-Dissolved (mg/L)	0.00348	0.00354		
	Potassium (K)-Dissolved (mg/L)	3.98	3.87		
	Selenium (Se)-Dissolved (ug/L)	134	137		
	Silicon (Si)-Dissolved (mg/L)	2.09	2.14		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.63	4.54		
	Strontium (Sr)-Dissolved (mg/L)	0.305	0.316		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	0.00017	0.00011		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00811	0.00810		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0025	0.0028		
Speciated Metals	Methylmercury (as MeHg)-Total (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2415703-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2415703-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2415703-3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2415703-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2415703-3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2415703-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2415703-3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2415703-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2415703-3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
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Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
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Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
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This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MEHG-T-GCAF-VA	Water	Total Methylmercury in Water by GCAFS	EPA 1630
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This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolyzed to elemental Hg and quantified by cold vapour atomic fluorescence spectroscopy. Results are reported "as MeHg".

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
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Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum

Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200210-1400

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2415703

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995579							
WG3274615-11	LCS							
Acidity (as CaCO3)			105.0		%		85-115	11-FEB-20
WG3274615-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	11-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995344							
WG3274378-11	LCS							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	11-FEB-20
WG3274378-14	LCS							
Alkalinity, Total (as CaCO3)			103.6		%		85-115	11-FEB-20
WG3274378-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-FEB-20
WG3274378-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997040							
WG3275433-2	LCS							
Beryllium (Be)-Dissolved			95.0		%		80-120	14-FEB-20
WG3275433-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4997560							
WG3275126-2	LCS							
Beryllium (Be)-Total			101.4		%		80-120	16-FEB-20
WG3275126-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-FEB-20
BIC-CL								
	Water							
Batch	R4995344							
WG3274378-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-6	LCS							
Bromide (Br)			104.2		%		85-115	11-FEB-20
WG3274649-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4997320							
WG3276670-10	LCS							
Dissolved Organic Carbon			101.4		%		80-120	17-FEB-20
WG3276670-14	LCS							
Dissolved Organic Carbon			103.0		%		80-120	17-FEB-20
WG3276670-6	LCS							
Dissolved Organic Carbon			100.4		%		80-120	17-FEB-20
WG3276670-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3276670-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
WG3276670-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4997320							
WG3276670-10	LCS							
Total Organic Carbon			104.5		%		80-120	17-FEB-20
WG3276670-14	LCS							
Total Organic Carbon			104.7		%		80-120	17-FEB-20
WG3276670-6	LCS							
Total Organic Carbon			103.6		%		80-120	17-FEB-20
WG3276670-13	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3276670-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
WG3276670-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
CL-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-6	LCS							
Chloride (Cl)			100.9		%		90-110	11-FEB-20
WG3274649-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	11-FEB-20
CO3-CL								
	Water							
Batch	R4995344							
WG3274378-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	11-FEB-20
EC-L-PCT-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R4995344							
WG3274378-11	LCS							
Conductivity (@ 25C)			97.8		%		90-110	11-FEB-20
WG3274378-14	LCS							
Conductivity (@ 25C)			97.7		%		90-110	11-FEB-20
WG3274378-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-FEB-20
WG3274378-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-FEB-20
F-IC-N-CL								
Water								
Batch	R4995596							
WG3274649-6	LCS							
Fluoride (F)			107.8		%		90-110	11-FEB-20
WG3274649-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	11-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4995743							
WG3275217-10	LCS							
Mercury (Hg)-Dissolved			93.6		%		80-120	13-FEB-20
WG3275217-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	13-FEB-20
HG-T-CVAA-VA								
Water								
Batch	R4996424							
WG3275678-2	LCS							
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-FEB-20
HG-T-U-CVAF-VA								
Water								
Batch	R4996777							
WG3276029-2	LCS							
Mercury (Hg)-Total			100.6		%		80-120	14-FEB-20
WG3276029-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	14-FEB-20
MEHG-T-GCAF-VA								
Water								
Batch	R5008706							
WG3282484-3	LCS							
Methylmercury (as MeHg)-Total			84.3		%		70-130	25-FEB-20
WG3282484-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MEHG-T-GCAF-VA		Water						
Batch	R5008706							
WG3282484-1	MB							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	25-FEB-20
MET-D-CCMS-VA		Water						
Batch	R4997040							
WG3275433-2	LCS							
Aluminum (Al)-Dissolved			98.4		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			95.3		%		80-120	14-FEB-20
Arsenic (As)-Dissolved			98.8		%		80-120	14-FEB-20
Barium (Ba)-Dissolved			98.9		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	14-FEB-20
Boron (B)-Dissolved			97.5		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			99.4		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			99.0		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			98.9		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			99.7		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			96.5		%		80-120	14-FEB-20
Iron (Fe)-Dissolved			103.6		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			98.4		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			93.6		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			95.6		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			98.4		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			96.9		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			101.1		%		80-120	14-FEB-20
Potassium (K)-Dissolved			97.8		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			99.2		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			106.9		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			93.4		%		80-120	14-FEB-20
Sodium (Na)-Dissolved			99.3		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			94.8		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			100.7		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			95.9		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			94.7		%		80-120	14-FEB-20
Uranium (U)-Dissolved			97.3		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			102.4		%		80-120	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997040							
WG3275433-2	LCS							
Zinc (Zn)-Dissolved			103.1		%		80-120	14-FEB-20
WG3275433-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997886							
WG3277184-3	DUP	L2415703-3						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-FEB-20
Antimony (Sb)-Dissolved		0.00075	0.00075		mg/L	3.6	20	18-FEB-20
Arsenic (As)-Dissolved		<0.00010	0.00012		mg/L	6.3	20	18-FEB-20
Barium (Ba)-Dissolved		0.0367	0.0380		mg/L	1.8	20	18-FEB-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-FEB-20
Boron (B)-Dissolved		0.027	0.026		mg/L	0.4	20	18-FEB-20
Cadmium (Cd)-Dissolved		0.000477	0.000433		mg/L	6.7	20	18-FEB-20
Calcium (Ca)-Dissolved		265	250		mg/L	0.7	20	18-FEB-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-FEB-20
Cobalt (Co)-Dissolved		0.00019	0.00018		mg/L	4.7	20	18-FEB-20
Copper (Cu)-Dissolved		0.00034	0.00037		mg/L	1.8	20	18-FEB-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-FEB-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-FEB-20
Lithium (Li)-Dissolved		0.306	0.287		mg/L	0.0	20	18-FEB-20
Magnesium (Mg)-Dissolved		140	135		mg/L	1.6	20	18-FEB-20
Manganese (Mn)-Dissolved		0.00287	0.00272		mg/L	2.3	20	18-FEB-20
Molybdenum (Mo)-Dissolved		0.00350	0.00342		mg/L	1.6	20	18-FEB-20
Nickel (Ni)-Dissolved		0.0593	0.0552		mg/L	1.8	20	18-FEB-20
Potassium (K)-Dissolved		6.18	5.63		mg/L	0.8	20	18-FEB-20
Selenium (Se)-Dissolved		0.177	0.177		mg/L	1.1	20	18-FEB-20
Silicon (Si)-Dissolved		1.86	1.71		mg/L	0.6	20	18-FEB-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-FEB-20
Sodium (Na)-Dissolved		6.02	5.34		mg/L	0.1	20	18-FEB-20
Strontium (Sr)-Dissolved		0.389	0.377		mg/L	1.3	20	18-FEB-20
Thallium (Tl)-Dissolved		0.000040	0.000039		mg/L	0.5	20	18-FEB-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-FEB-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-FEB-20
Uranium (U)-Dissolved		0.0138	0.0135		mg/L	0.4	20	18-FEB-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-FEB-20
Zinc (Zn)-Dissolved		0.0245	0.0248		mg/L	1.3	20	18-FEB-20
WG3277184-2		LCS						
Aluminum (Al)-Dissolved			97.5		%		80-120	18-FEB-20
Antimony (Sb)-Dissolved			95.4		%		80-120	18-FEB-20
Arsenic (As)-Dissolved			98.6		%		80-120	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997886							
WG3277184-2	LCS							
Barium (Ba)-Dissolved			103.7		%		80-120	18-FEB-20
Bismuth (Bi)-Dissolved			93.3		%		80-120	18-FEB-20
Boron (B)-Dissolved			96.6		%		80-120	18-FEB-20
Cadmium (Cd)-Dissolved			97.7		%		80-120	18-FEB-20
Calcium (Ca)-Dissolved			98.5		%		80-120	18-FEB-20
Chromium (Cr)-Dissolved			98.1		%		80-120	18-FEB-20
Cobalt (Co)-Dissolved			98.5		%		80-120	18-FEB-20
Copper (Cu)-Dissolved			97.3		%		80-120	18-FEB-20
Iron (Fe)-Dissolved			101.8		%		80-120	18-FEB-20
Lead (Pb)-Dissolved			96.7		%		80-120	18-FEB-20
Lithium (Li)-Dissolved			94.4		%		80-120	18-FEB-20
Magnesium (Mg)-Dissolved			99.9		%		80-120	18-FEB-20
Manganese (Mn)-Dissolved			100.1		%		80-120	18-FEB-20
Molybdenum (Mo)-Dissolved			95.5		%		80-120	18-FEB-20
Nickel (Ni)-Dissolved			98.6		%		80-120	18-FEB-20
Potassium (K)-Dissolved			100.2		%		80-120	18-FEB-20
Selenium (Se)-Dissolved			101.5		%		80-120	18-FEB-20
Silicon (Si)-Dissolved			99.4		%		60-140	18-FEB-20
Silver (Ag)-Dissolved			93.4		%		80-120	18-FEB-20
Sodium (Na)-Dissolved			98.1		%		80-120	18-FEB-20
Strontium (Sr)-Dissolved			97.7		%		80-120	18-FEB-20
Thallium (Tl)-Dissolved			96.7		%		80-120	18-FEB-20
Tin (Sn)-Dissolved			96.2		%		80-120	18-FEB-20
Titanium (Ti)-Dissolved			98.1		%		80-120	18-FEB-20
Uranium (U)-Dissolved			93.7		%		80-120	18-FEB-20
Vanadium (V)-Dissolved			99.4		%		80-120	18-FEB-20
Zinc (Zn)-Dissolved			97.2		%		80-120	18-FEB-20
WG3277184-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997886							
WG3277184-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275126-2	LCS							
Aluminum (Al)-Total			104.9		%		80-120	16-FEB-20
Antimony (Sb)-Total			100.1		%		80-120	16-FEB-20
Arsenic (As)-Total			98.1		%		80-120	16-FEB-20
Barium (Ba)-Total			104.7		%		80-120	16-FEB-20
Bismuth (Bi)-Total			101.9		%		80-120	16-FEB-20
Boron (B)-Total			100.2		%		80-120	16-FEB-20
Cadmium (Cd)-Total			103.2		%		80-120	16-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275126-2	LCS							
Calcium (Ca)-Total			105.6		%		80-120	16-FEB-20
Chromium (Cr)-Total			100.3		%		80-120	16-FEB-20
Cobalt (Co)-Total			101.1		%		80-120	16-FEB-20
Copper (Cu)-Total			102.1		%		80-120	16-FEB-20
Iron (Fe)-Total			98.8		%		80-120	16-FEB-20
Lead (Pb)-Total			102.1		%		80-120	16-FEB-20
Lithium (Li)-Total			100.6		%		80-120	16-FEB-20
Magnesium (Mg)-Total			101.4		%		80-120	16-FEB-20
Manganese (Mn)-Total			102.9		%		80-120	16-FEB-20
Molybdenum (Mo)-Total			105.9		%		80-120	16-FEB-20
Nickel (Ni)-Total			105.5		%		80-120	16-FEB-20
Potassium (K)-Total			107.1		%		80-120	16-FEB-20
Selenium (Se)-Total			95.0		%		80-120	16-FEB-20
Silicon (Si)-Total			95.0		%		80-120	16-FEB-20
Silver (Ag)-Total			102.5		%		80-120	16-FEB-20
Sodium (Na)-Total			103.8		%		80-120	16-FEB-20
Strontium (Sr)-Total			106.8		%		80-120	16-FEB-20
Thallium (Tl)-Total			101.8		%		80-120	16-FEB-20
Tin (Sn)-Total			99.3		%		80-120	16-FEB-20
Titanium (Ti)-Total			94.6		%		80-120	16-FEB-20
Uranium (U)-Total			98.7		%		80-120	16-FEB-20
Vanadium (V)-Total			103.4		%		80-120	16-FEB-20
Zinc (Zn)-Total			101.5		%		80-120	16-FEB-20
WG3275126-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4997560							
WG3275126-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-FEB-20
NH3-L-F-CL		Water						
Batch	R4996802							
WG3274428-10	LCS							
Ammonia as N			99.7		%		85-115	12-FEB-20
WG3274428-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-FEB-20
NO2-L-IC-N-CL		Water						
Batch	R4995596							
WG3274649-6	LCS							
Nitrite (as N)			102.2		%		90-110	11-FEB-20
WG3274649-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-FEB-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6	LCS							
Nitrate (as N)			102.8		%		90-110	11-FEB-20
WG3274649-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-FEB-20
OH-CL	Water							
Batch	R4995344							
WG3274378-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-FEB-20
ORP-CL	Water							
Batch	R4997929							
WG3277355-5	CRM	CL-ORP						
ORP			228		mV		210-230	18-FEB-20
P-T-L-COL-CL	Water							
Batch	R4997881							
WG3277143-10	LCS							
Phosphorus (P)-Total			110.2		%		80-120	18-FEB-20
WG3277143-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-FEB-20
PH-CL	Water							
Batch	R4995344							
WG3274378-11	LCS							
pH			7.05		pH		6.9-7.1	11-FEB-20
WG3274378-14	LCS							
pH			7.05		pH		6.9-7.1	11-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4994448							
WG3273573-8	LCS							
Orthophosphate-Dissolved (as P)			109.0		%		80-120	11-FEB-20
WG3273573-7	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6	LCS							
Sulfate (SO4)			102.8		%		90-110	11-FEB-20
WG3274649-5	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R4995596							
WG3274649-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4997726							
WG3276594-8 LCS								
Total Dissolved Solids			106.5		%		85-115	16-FEB-20
WG3276594-7 MB								
Total Dissolved Solids			<10		mg/L		10	16-FEB-20
TKN-L-F-CL	Water							
Batch	R4996729							
WG3275909-10 LCS								
Total Kjeldahl Nitrogen			99.9		%		75-125	14-FEB-20
WG3275909-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL	Water							
Batch	R4997794							
WG3276593-4 LCS								
Total Suspended Solids			87.6		%		85-115	16-FEB-20
WG3276593-3 MB								
Total Suspended Solids			<1.0		mg/L		1	16-FEB-20
TURBIDITY-CL	Water							
Batch	R4995869							
WG3275044-2 LCS								
Turbidity			105.0		%		85-115	13-FEB-20
WG3275044-1 MB								
Turbidity			<0.10		NTU		0.1	13-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	10-FEB-20 09:00	18-FEB-20 16:00	0.25	199	hours	EHTR-FM
	2	10-FEB-20 13:40	18-FEB-20 16:00	0.25	194	hours	EHTR-FM
	3	10-FEB-20 10:00	18-FEB-20 16:00	0.25	198	hours	EHTR-FM
	4	10-FEB-20 10:00	18-FEB-20 16:00	0.25	198	hours	EHTR-FM
	5	10-FEB-20 10:30	18-FEB-20 16:00	0.25	198	hours	EHTR-FM
	6	10-FEB-20 13:00	18-FEB-20 16:00	0.25	195	hours	EHTR-FM
	7	10-FEB-20 13:00	18-FEB-20 16:00	0.25	195	hours	EHTR-FM
pH							
	1	10-FEB-20 09:00	11-FEB-20 14:00	0.25	29	hours	EHTR-FM
	2	10-FEB-20 13:40	11-FEB-20 14:00	0.25	24	hours	EHTR-FM
	3	10-FEB-20 10:00	11-FEB-20 14:00	0.25	28	hours	EHTR-FM
	4	10-FEB-20 10:00	11-FEB-20 14:00	0.25	28	hours	EHTR-FM
	5	10-FEB-20 10:30	11-FEB-20 14:00	0.25	28	hours	EHTR-FM
	6	10-FEB-20 13:00	11-FEB-20 14:00	0.25	25	hours	EHTR-FM
	7	10-FEB-20 13:00	11-FEB-20 14:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2415703 were received on 11-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2415703-COFC

COC ID: 20200210-1400

TURNAROUND

RUSH:

PROJECT/CLIENT INFO

OTHER INFO

Facility Name / Job#	Fording River Operation				Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead				Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address					Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC		City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada		Postal Code	T1Y 7B5	Country	Canada	Email 5:	jared.cayenne@teck.com	X	X	X
Phone Number	1-250-433-6976				Phone Number	403 407 1794			Email 6:				
									PO number				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F; Field, L; Lab, F; Field & Lab, N; None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	N	Y	N	Y	N	N	N	N		
								ALS_Package-DOC	ALS_Package-TKN/TOC	EG-D-CVAF-VA	EG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	EG-T-CVAF-VA	Methyl Mercury		
FR_POTABLE_MON_2020-02-03_N	FR_POTABLE	WS		2/10/2020	9:00		7	1	1	1		1	1	1	1			
FR_NLIII_MON_2020-02-03_N	FR_NLIII	WS		2/10/2020	13:40		8	1	1	1	1	1	1	1		1		
FR_CC1_MON_2020-02-03_N	FR_CC1	WS		2/10/2020	10:00		7	1	1	1	1	1	1	1				
FR_DC1_MON_2020-02-03_N	FR_DC1	WS		2/10/2020	10:00		7	1	1	1	1	1	1	1				
FR_FRDSCC1_MON_2020-02-03_NP	FR_FRDSCC1	WS		2/10/2020	10:30		7	1	1	1		1	1	1	1			
FR_GCMW-2_QTR_2020-01-06_N	FR_GCMW-2	WG		2/10/2020	13:00		5	1	1	1		1		1				
FR_DC1_QTR_2020-01-06_N	FR_DC1	WG		2/10/2020	13:00		5	1	1	1		1		1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS All samples specified above are filtered and preserved.	RELINQUISHED BY/AFFILIATION Britt Anderson	DATE/TIME February 10, 2020	ACCEPTED BY/AFFILIATION 	DATE/TIME 2/11/20
--	--	---------------------------------------	------------------------------------	-----------------------------

SERVICE REQUEST (rush - subject to availability) Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name Britt Anderson	Mobile # 250-425-5335
	Sampler's Signature 	Date/Time February 10, 2020

g



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
SUITE 1000, 205-9TH AVE S.E.
CALGARY AB T2G 0R3

Date Received: 13-FEB-20
Report Date: 30-DEC-20 09:22 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2416829
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 20200212
Legal Site Desc:

Comments: 12-30-20: Bicarbonate, Carbonate and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416829-1 WG 12-FEB-20 13:00 FR_KB-3B-2020-02-12			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1790			
	Hardness (as CaCO3) (mg/L)	1120			
	pH (pH)	7.71			
	ORP (mV)	435			
	Total Suspended Solids (mg/L)	1.9			
	Total Dissolved Solids (mg/L)	1500	DLHC		
	Turbidity (NTU)	0.63			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	16.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	387			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	387			
	Ammonia as N (mg/L)	0.0223			
	Bicarbonate (HCO3) (mg/L)	472			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	<0.10	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.6			
	Nitrate (as N) (mg/L)	64.5	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0033			
	Phosphorus (P)-Total (mg/L)	0.0078			
	Sulfate (SO4) (mg/L)	505	DLHC		
	Anion Sum (meq/L)	22.8			
	Cation Sum (meq/L)	22.5			
	Cation - Anion Balance (%)	-0.7			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0050	DLDS		
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	DLDS		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2416829-1 WG 12-FEB-20 13:00 FR_KB-3B-2020-02-12				
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Be)-Dissolved (ug/L) Bismuth (Bi)-Dissolved (mg/L) Boron (B)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (ug/L) Calcium (Ca)-Dissolved (mg/L) Chromium (Cr)-Dissolved (mg/L) Cobalt (Co)-Dissolved (ug/L) Copper (Cu)-Dissolved (mg/L) Iron (Fe)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Lithium (Li)-Dissolved (mg/L) Magnesium (Mg)-Dissolved (mg/L) Manganese (Mn)-Dissolved (mg/L) Mercury (Hg)-Dissolved (mg/L) Molybdenum (Mo)-Dissolved (mg/L) Nickel (Ni)-Dissolved (mg/L) Potassium (K)-Dissolved (mg/L) Selenium (Se)-Dissolved (ug/L) Silicon (Si)-Dissolved (mg/L) Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (Tl)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L)	DLDS <0.00050 DLDS 0.0575 DLDS <0.10 DLDS <0.00025 DLDS <0.050 DLDS <0.025 DLDS 260 DLDS <0.00050 DLDS <0.50 DLDS <0.0010 DLDS <0.050 DLDS <0.00025 DLDS 0.0616 DLDS 114 DLDS 0.00107 <0.0000050 DLDS 0.00047 DLDS <0.0025 DLDS 2.78 DLDS 187 DLDS 2.57 DLDS <0.000050 DLDS 3.52 DLDS 0.262 DLDS <0.000050 DLDS <0.00050 DLDS <0.010 DLDS 0.00785 DLDS <0.0025 DLDS <0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416829-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416829-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2416829-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416829-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416829-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

20200212

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2416829

Report Date: 30-DEC-20

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 SUITE 1000, 205-9TH AVE S.E.
 CALGARY AB T2G 0R3

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4998255							
WG3277815-5	LCS							
Acidity (as CaCO3)			100.1		%		85-115	18-FEB-20
WG3277815-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	18-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4997062							
WG3276417-11	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	13-FEB-20
WG3276417-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-FEB-20
BE-D-L-CCMS-CL								
	Water							
Batch	R4999710							
WG3279604-2	LCS	TMRM						
Beryllium (Be)-Dissolved			101.2		%		80-120	21-FEB-20
WG3279604-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-FEB-20
BIC-CL								
	Water							
Batch	R4997062							
WG3276417-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4996956							
WG3276272-6	LCS							
Bromide (Br)			99.8		%		85-115	13-FEB-20
WG3276272-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4999363							
WG3279251-3	DUP	L2416829-1						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3279251-2	LCS							
Dissolved Organic Carbon			105.0		%		80-120	20-FEB-20
WG3279251-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3279251-4	MS	L2416829-1						
Dissolved Organic Carbon			112.4		%		70-130	20-FEB-20



Quality Control Report

Workorder: L2416829

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R4999363							
WG3279251-3	DUP	L2416829-1						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3279251-2	LCS							
Total Organic Carbon			105.7		%		80-120	20-FEB-20
WG3279251-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3279251-4	MS	L2416829-1						
Total Organic Carbon			116.7		%		70-130	20-FEB-20
CL-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Chloride (Cl)			99.7		%		90-110	13-FEB-20
WG3276272-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-FEB-20
CO3-CL								
Water								
Batch	R4997062							
WG3276417-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	13-FEB-20
EC-L-PCT-CL								
Water								
Batch	R4997062							
WG3276417-11	LCS							
Conductivity (@ 25C)			96.1		%		90-110	13-FEB-20
WG3276417-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-FEB-20
F-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Fluoride (F)			97.2		%		90-110	13-FEB-20
WG3276272-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-FEB-20
HG-D-CVAA-CL								
Water								
Batch	R4997925							
WG3277350-2	LCS							
Mercury (Hg)-Dissolved			107.0		%		80-120	18-FEB-20
WG3277350-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-FEB-20



Quality Control Report

Workorder: L2416829

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R4997925							
WG3277351-6	LCS							
Mercury (Hg)-Total			116.0		%		80-120	18-FEB-20
WG3277351-5	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-FEB-20
MET-D-CCMS-CL								
	Water							
Batch	R4999710							
WG3279604-2	LCS	TMRM						
Aluminum (Al)-Dissolved			101.8		%		80-120	21-FEB-20
Antimony (Sb)-Dissolved			102.0		%		80-120	21-FEB-20
Arsenic (As)-Dissolved			99.1		%		80-120	21-FEB-20
Barium (Ba)-Dissolved			97.2		%		80-120	21-FEB-20
Bismuth (Bi)-Dissolved			100.1		%		80-120	21-FEB-20
Boron (B)-Dissolved			101.1		%		80-120	21-FEB-20
Cadmium (Cd)-Dissolved			99.5		%		80-120	21-FEB-20
Calcium (Ca)-Dissolved			102.9		%		80-120	21-FEB-20
Chromium (Cr)-Dissolved			99.7		%		80-120	21-FEB-20
Cobalt (Co)-Dissolved			103.1		%		80-120	21-FEB-20
Copper (Cu)-Dissolved			99.0		%		80-120	21-FEB-20
Iron (Fe)-Dissolved			101.7		%		80-120	21-FEB-20
Lead (Pb)-Dissolved			102.6		%		80-120	21-FEB-20
Lithium (Li)-Dissolved			103.6		%		80-120	21-FEB-20
Magnesium (Mg)-Dissolved			101.0		%		80-120	21-FEB-20
Manganese (Mn)-Dissolved			101.6		%		80-120	21-FEB-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	21-FEB-20
Nickel (Ni)-Dissolved			98.4		%		80-120	21-FEB-20
Potassium (K)-Dissolved			99.9		%		80-120	21-FEB-20
Selenium (Se)-Dissolved			94.3		%		80-120	21-FEB-20
Silicon (Si)-Dissolved			108.0		%		60-140	21-FEB-20
Silver (Ag)-Dissolved			104.5		%		80-120	21-FEB-20
Sodium (Na)-Dissolved			102.3		%		80-120	21-FEB-20
Strontium (Sr)-Dissolved			106.7		%		80-120	21-FEB-20
Thallium (Tl)-Dissolved			102.7		%		80-120	21-FEB-20
Tin (Sn)-Dissolved			101.2		%		80-120	21-FEB-20
Titanium (Ti)-Dissolved			100.4		%		80-120	21-FEB-20
Uranium (U)-Dissolved			104.3		%		80-120	21-FEB-20



Quality Control Report

Workorder: L2416829

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4999710							
WG3279604-2	LCS	TMRM						
Vanadium (V)-Dissolved			102.3		%		80-120	21-FEB-20
Zinc (Zn)-Dissolved			100.4		%		80-120	21-FEB-20
WG3279604-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-FEB-20

NH3-L-F-CL

Water

Quality Control Report

Workorder: L2416829

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R4996855							
WG3276119-11	DUP	L2416829-1						
Ammonia as N		0.0223	0.0226		mg/L	1.3	20	14-FEB-20
WG3276119-10	LCS							
Ammonia as N			110.4		%		85-115	14-FEB-20
WG3276119-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-FEB-20
WG3276119-12	MS	L2416829-1						
Ammonia as N			124.0		%		75-125	14-FEB-20
NO2-L-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Nitrite (as N)			101.6		%		90-110	13-FEB-20
WG3276272-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-FEB-20
NO3-L-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Nitrate (as N)			100.9		%		90-110	13-FEB-20
WG3276272-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-FEB-20
OH-CL								
Water								
Batch	R4997062							
WG3276417-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-FEB-20
ORP-CL								
Water								
Batch	R4999104							
WG3278885-1	CRM	CL-ORP						
ORP			224		mV		210-230	20-FEB-20
WG3278885-2	DUP	L2416829-1						
ORP		435	431	J	mV	4.1	15	20-FEB-20
P-T-L-COL-CL								
Water								
Batch	R4999005							
WG3278655-2	LCS							
Phosphorus (P)-Total			107.2		%		80-120	20-FEB-20
WG3278655-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20

Quality Control Report

Workorder: L2416829

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R4997062							
WG3276417-11	LCS							
pH			7.01		pH		6.9-7.1	13-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4996493							
WG3275254-14	LCS							
Orthophosphate-Dissolved (as P)			105.2		%		80-120	13-FEB-20
WG3275254-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-FEB-20
SO4-IC-N-CL	Water							
Batch	R4996956							
WG3276272-6	LCS							
Sulfate (SO4)			101.2		%		90-110	13-FEB-20
WG3276272-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4998975							
WG3277691-8	LCS							
Total Dissolved Solids			100.6		%		85-115	19-FEB-20
WG3277691-7	MB							
Total Dissolved Solids			<10		mg/L		10	19-FEB-20
TKN-L-F-CL	Water							
Batch	R4997145							
WG3276459-6	LCS							
Total Kjeldahl Nitrogen			101.5		%		75-125	15-FEB-20
WG3276459-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-FEB-20
TSS-L-CL	Water							
Batch	R4998973							
WG3277646-2	LCS							
Total Suspended Solids			103.1		%		85-115	19-FEB-20
WG3277646-1	MB							
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
TURBIDITY-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4996916							
WG3276212-20	LCS							
Turbidity			104.0		%		85-115	14-FEB-20
WG3276212-19	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2416829

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	12-FEB-20 13:00	20-FEB-20 08:00	0.25	187	hours	EHTR-FM
pH	1	12-FEB-20 13:00	13-FEB-20 10:00	0.25	21	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416829 were received on 13-FEB-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2416829-COFC

COC ID: 20200212

TURN

RUSH:

PROJECT/CLIENT INFO

OTHER INFO

Facility Name / Job#	Fording Rver Operations			Lab Name	Teck Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughhead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250 433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL						
FR_KB-3B-2020-02-12	FR_KB-3B	WG	Z	2/12/2020	13:00	G	6	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS RELINQUISHED BY/AFFILIATION DATE/TIME ACCEPTED BY/AFFILIATION DATE/TIME

All samples are field filtered and preserved as required.			

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	KATIE PETERSON	Mobile #	250-946-5029
				Sampler's Signature		Date/Time	Feb 12 2020

Je



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

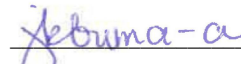
Date Received: 14-FEB-20
Report Date: 14-DEC-20 15:41 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-6976

Certificate of Analysis

Lab Work Order #: L2417211
Project P.O. #: VPO00610782
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200213-1300
Legal Site Desc:

Comments: 14-DEC-20: Bicarbonate, Carbonate and Hydroxide results added.



Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2417211-1	L2417211-2	L2417211-3	L2417211-4	L2417211-5
					WG	WG	WG	WG	WG
		13-FEB-20	12:50	FR_09-02-B_QTR_2020-01-06_N	13-FEB-20	12:40	13-FEB-20	12:00	13-FEB-20
					FR_09-02-B_QTR_2020-01-06_N	FR_09-02-A_QTR_2020-01-06_N	FR_FLD_QTR_2020-01-06_N	FR_09-01-B_QTR_2020-01-06_N	FR_TRP_QTR_2020-01-06_N
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	901	1070	<2.0	1070	<2.0			
	Hardness (as CaCO3) (mg/L)	532	680	<0.50	660	<0.50			
	pH (pH)	7.91	7.98	5.70	7.77	5.59			
	ORP (mV)	413	426	463	437	441			
	Total Suspended Solids (mg/L)	11.3	28.2	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	716 ^{DLHC}	911 ^{DLHC}	<10	810 ^{DLHC}	<10			
	Turbidity (NTU)	6.34	13.8	<0.10	0.29	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	1.8	2.1	1.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	219	215	<1.0	305	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	219	215	<1.0	305	<1.0			
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0411 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	267	262	<5.0	372	<5.0			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	1.31	1.85	<0.50	2.60	<0.50			
	Fluoride (F) (mg/L)	0.145	0.107	<0.020	0.128	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	97.7	106	0.0	99.8	0.0			
	Nitrate (as N) (mg/L)	16.3	17.7	<0.0050	14.8	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020	0.0026	<0.0010	0.0018	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0118	0.0391	<0.0020	0.0022	<0.0020			
	Sulfate (SO4) (mg/L)	261	354	<0.30	299	<0.30			
	Anion Sum (meq/L)	11.0	13.0	<0.10	13.5	<0.10			
Cation Sum (meq/L)	10.8	13.7	<0.10	13.4	<0.10				
Cation - Anion Balance (%)	-1.1	2.8	0.0	-0.1	0.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00015	<0.00010	0.00014	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2417211-6 WG 13-FEB-20 11:45 FR_09-01- A_QTR_2020-01- 06_N	L2417211-7 WG 13-FEB-20 11:45 FR_DC3_QTR_202 0-01-06_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1400	1430		
	Hardness (as CaCO3) (mg/L)	906	911		
	pH (pH)	7.75	7.79		
	ORP (mV)	460	428		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	1150 ^{DLHC}	1150 ^{DLHC}		
	Turbidity (NTU)	<0.10	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.5	1.9		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	339	340		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	339	340		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	413 ^{DLHC}	415 ^{DLHC}		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0 ^{DLHC}		
	Chloride (Cl) (mg/L)	3.0 ^{DLHC}	3.0 ^{DLHC}		
	Fluoride (F) (mg/L)	0.12 ^{DLHC}	<0.10 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	98.2	98.8		
	Nitrate (as N) (mg/L)	37.0 ^{DLHC}	37.2 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0024		
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}		
	Sulfate (SO4) (mg/L)	442	440		
	Anion Sum (meq/L)	18.7	18.7		
	Cation Sum (meq/L)	18.4	18.5		
	Cation - Anion Balance (%)	-0.9	-0.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00022	0.00021		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2417211-1	L2417211-2	L2417211-3	L2417211-4	L2417211-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	13-FEB-20	13-FEB-20	13-FEB-20	13-FEB-20	13-FEB-20
		Sampled Time	12:50	12:40	12:40	12:00	12:00
		Client ID	FR_09-02- B_QTR_2020-01- 06_N	FR_09-02- A_QTR_2020-01- 06_N	FR_FLD_QTR_202 0-01-06_N	FR_09-01- B_QTR_2020-01- 06_N	FR_TRP_QTR_202 0-01-06_N
Grouping	Analyte						
WATER							
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)		0.138	0.134	<0.00010	0.102	<0.00010
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	0.018	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0197	0.0363	<0.0050	0.0350	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		127	159	<0.050	157	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	0.34	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00029	<0.00020	0.00021	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0318	0.0425	<0.0010	0.0624	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		52.4	68.8	<0.10	64.9	<0.10
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	0.00015	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00101	0.00134	<0.000050	0.000828	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	0.00112	<0.00050
	Potassium (K)-Dissolved (mg/L)		1.81	1.87	<0.050	2.92	<0.050
	Selenium (Se)-Dissolved (ug/L)		50.6	87.7	<0.050	48.6	<0.050
	Silicon (Si)-Dissolved (mg/L)		1.80	1.67	<0.050	2.23	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.21	2.33	<0.050	3.73	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.179	0.209	<0.00020	0.185	<0.00020
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00280	0.00377	<0.000010	0.00403	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2417211-6 WG 13-FEB-20 11:45 FR_09-01- A_QTR_2020-01- 06_N	L2417211-7 WG 13-FEB-20 11:45 FR_DC3_QTR_202 0-01-06_N		
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0935	0.0942		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.022	0.023		
	Cadmium (Cd)-Dissolved (ug/L)	0.0612	0.0569		
	Calcium (Ca)-Dissolved (mg/L)	208	212		
	Chromium (Cr)-Dissolved (mg/L)	0.00015	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.36	0.33		
	Copper (Cu)-Dissolved (mg/L)	0.00023	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0752	0.0749		
	Magnesium (Mg)-Dissolved (mg/L)	93.6	93.0		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000664	0.000628		
	Nickel (Ni)-Dissolved (mg/L)	0.00142	0.00143		
	Potassium (K)-Dissolved (mg/L)	3.42	3.48		
	Selenium (Se)-Dissolved (ug/L)	119	123		
	Silicon (Si)-Dissolved (mg/L)	2.28	2.27		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.26	4.27		
	Strontium (Sr)-Dissolved (mg/L)	0.239	0.241		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00588	0.00570		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0047	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2417211-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200213-1300

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2417211

Report Date: 14-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4997256							
WG3276596-5	LCS							
Acidity (as CaCO3)			95.0		%		85-115	15-FEB-20
WG3276596-4	MB							
Acidity (as CaCO3)			1.6		mg/L		2	15-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4997065							
WG3276425-6	DUP	L2417211-7						
Alkalinity, Total (as CaCO3)		340	357		mg/L	5.0	20	14-FEB-20
WG3276425-5	LCS							
Alkalinity, Total (as CaCO3)			99.5		%		85-115	14-FEB-20
WG3276425-8	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	14-FEB-20
WG3276425-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-FEB-20
WG3276425-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997979							
WG3277262-3	DUP	L2417211-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	19-FEB-20
WG3277262-2	LCS							
Beryllium (Be)-Dissolved			98.2		%		80-120	19-FEB-20
WG3277262-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-FEB-20
WG3277262-4	MS	L2417211-2						
Beryllium (Be)-Dissolved			99.0		%		70-130	19-FEB-20
BIC-CL								
	Water							
Batch	R4997065							
WG3276425-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4997093							
WG3276446-6	LCS							
Bromide (Br)			103.2		%		85-115	15-FEB-20
WG3276446-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-FEB-20
	Water							

Quality Control Report

Workorder: L2417211

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5001010							
WG3280066-2	LCS							
Dissolved Organic Carbon			101.8		%		80-120	21-FEB-20
WG3280066-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5001010							
WG3280066-2	LCS							
Total Organic Carbon			103.8		%		80-120	21-FEB-20
WG3280066-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
CL-IC-N-CL	Water							
Batch	R4997093							
WG3276446-6	LCS							
Chloride (Cl)			101.2		%		90-110	15-FEB-20
WG3276446-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	15-FEB-20
CO3-CL	Water							
Batch	R4997065							
WG3276425-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-FEB-20
EC-L-PCT-CL	Water							
Batch	R4997065							
WG3276425-6	DUP	L2417211-7						
Conductivity (@ 25C)		1430	1420		uS/cm	0.8	10	14-FEB-20
WG3276425-5	LCS							
Conductivity (@ 25C)			100.1		%		90-110	14-FEB-20
WG3276425-8	LCS							
Conductivity (@ 25C)			100.7		%		90-110	14-FEB-20
WG3276425-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-FEB-20
WG3276425-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-FEB-20
F-IC-N-CL	Water							



Quality Control Report

Workorder: L2417211

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R4997093							
WG3276446-6	LCS							
Fluoride (F)			92.1		%		90-110	15-FEB-20
WG3276446-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	15-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4998481							
WG3277375-7	DUP	L2417211-5						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	19-FEB-20
WG3277375-2	LCS							
Mercury (Hg)-Dissolved			98.0		%		80-120	19-FEB-20
WG3277375-6	LCS							
Mercury (Hg)-Dissolved			102.7		%		80-120	19-FEB-20
WG3277375-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-20
WG3277375-5	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-20
WG3277375-8	MS	L2417211-6						
Mercury (Hg)-Dissolved			105.0		%		70-130	19-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4997979							
WG3277262-3	DUP	L2417211-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	19-FEB-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20
Barium (Ba)-Dissolved		0.138	0.135		mg/L	2.2	20	19-FEB-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-FEB-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-FEB-20
Cadmium (Cd)-Dissolved		0.0000197	0.0000243	J	mg/L	0.000004	0.00001	19-FEB-20
Calcium (Ca)-Dissolved		127	130		mg/L	2.9	20	19-FEB-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20
Copper (Cu)-Dissolved		<0.00020	0.00022	RPD-NA	mg/L	N/A	20	19-FEB-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-FEB-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-FEB-20
Lithium (Li)-Dissolved		0.0318	0.0355		mg/L	11	20	19-FEB-20
Magnesium (Mg)-Dissolved		52.4	53.1		mg/L	1.2	20	19-FEB-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997979							
WG3277262-3	DUP	L2417211-1						
Molybdenum (Mo)-Dissolved		0.00101	0.00102		mg/L	1.2	20	19-FEB-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-FEB-20
Potassium (K)-Dissolved		1.81	1.84		mg/L	1.6	20	19-FEB-20
Selenium (Se)-Dissolved		0.0506	0.0495		mg/L	2.0	20	19-FEB-20
Silicon (Si)-Dissolved		1.80	1.79		mg/L	0.6	20	19-FEB-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-FEB-20
Sodium (Na)-Dissolved		2.21	2.24		mg/L	1.7	20	19-FEB-20
Strontium (Sr)-Dissolved		0.179	0.179		mg/L	0.4	20	19-FEB-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-FEB-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-FEB-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-FEB-20
Uranium (U)-Dissolved		0.00280	0.00288		mg/L	3.0	20	19-FEB-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-FEB-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	19-FEB-20
WG3277262-2	LCS							
Aluminum (Al)-Dissolved			95.8		%		80-120	19-FEB-20
Antimony (Sb)-Dissolved			86.4		%		80-120	19-FEB-20
Arsenic (As)-Dissolved			95.8		%		80-120	19-FEB-20
Barium (Ba)-Dissolved			97.0		%		80-120	19-FEB-20
Bismuth (Bi)-Dissolved			98.8		%		80-120	19-FEB-20
Boron (B)-Dissolved			99.9		%		80-120	19-FEB-20
Cadmium (Cd)-Dissolved			96.7		%		80-120	19-FEB-20
Calcium (Ca)-Dissolved			101.8		%		80-120	19-FEB-20
Chromium (Cr)-Dissolved			101.3		%		80-120	19-FEB-20
Cobalt (Co)-Dissolved			97.1		%		80-120	19-FEB-20
Copper (Cu)-Dissolved			96.0		%		80-120	19-FEB-20
Iron (Fe)-Dissolved			96.4		%		80-120	19-FEB-20
Lead (Pb)-Dissolved			92.8		%		80-120	19-FEB-20
Lithium (Li)-Dissolved			97.4		%		80-120	19-FEB-20
Magnesium (Mg)-Dissolved			96.0		%		80-120	19-FEB-20
Manganese (Mn)-Dissolved			98.9		%		80-120	19-FEB-20
Molybdenum (Mo)-Dissolved			91.8		%		80-120	19-FEB-20
Nickel (Ni)-Dissolved			96.2		%		80-120	19-FEB-20
Potassium (K)-Dissolved			103.6		%		80-120	19-FEB-20



Quality Control Report

Workorder: L2417211

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997979							
WG3277262-2	LCS							
Selenium (Se)-Dissolved			99.0		%		80-120	19-FEB-20
Silicon (Si)-Dissolved			98.2		%		60-140	19-FEB-20
Silver (Ag)-Dissolved			89.7		%		80-120	19-FEB-20
Sodium (Na)-Dissolved			102.7		%		80-120	19-FEB-20
Strontium (Sr)-Dissolved			94.2		%		80-120	19-FEB-20
Thallium (Tl)-Dissolved			93.5		%		80-120	19-FEB-20
Tin (Sn)-Dissolved			87.3		%		80-120	19-FEB-20
Titanium (Ti)-Dissolved			95.1		%		80-120	19-FEB-20
Uranium (U)-Dissolved			91.6		%		80-120	19-FEB-20
Vanadium (V)-Dissolved			99.4		%		80-120	19-FEB-20
Zinc (Zn)-Dissolved			95.2		%		80-120	19-FEB-20
WG3277262-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20



Quality Control Report

Workorder: L2417211

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997979							
WG3277262-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
WG3277262-4	MS	L2417211-2						
Aluminum (Al)-Dissolved			94.0		%		70-130	19-FEB-20
Antimony (Sb)-Dissolved			94.6		%		70-130	19-FEB-20
Arsenic (As)-Dissolved			101.3		%		70-130	19-FEB-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Bismuth (Bi)-Dissolved			88.0		%		70-130	19-FEB-20
Boron (B)-Dissolved			96.8		%		70-130	19-FEB-20
Cadmium (Cd)-Dissolved			98.0		%		70-130	19-FEB-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Chromium (Cr)-Dissolved			97.4		%		70-130	19-FEB-20
Cobalt (Co)-Dissolved			92.0		%		70-130	19-FEB-20
Copper (Cu)-Dissolved			90.3		%		70-130	19-FEB-20
Iron (Fe)-Dissolved			96.3		%		70-130	19-FEB-20
Lead (Pb)-Dissolved			89.2		%		70-130	19-FEB-20
Lithium (Li)-Dissolved			100.0		%		70-130	19-FEB-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Manganese (Mn)-Dissolved			91.2		%		70-130	19-FEB-20
Molybdenum (Mo)-Dissolved			97.3		%		70-130	19-FEB-20
Nickel (Ni)-Dissolved			91.4		%		70-130	19-FEB-20
Potassium (K)-Dissolved			109.4		%		70-130	19-FEB-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Silicon (Si)-Dissolved			96.9		%		70-130	19-FEB-20
Silver (Ag)-Dissolved			92.9		%		70-130	19-FEB-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	19-FEB-20
Thallium (Tl)-Dissolved			91.5		%		70-130	19-FEB-20



Quality Control Report

Workorder: L2417211

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997979							
WG3277262-4	MS	L2417211-2						
Tin (Sn)-Dissolved			91.8		%		70-130	19-FEB-20
Titanium (Ti)-Dissolved			96.5		%		70-130	19-FEB-20
Uranium (U)-Dissolved			95.1		%		70-130	19-FEB-20
Vanadium (V)-Dissolved			99.7		%		70-130	19-FEB-20
Zinc (Zn)-Dissolved			95.5		%		70-130	19-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4999736							
WG3279649-10	LCS							
Ammonia as N			93.7		%		85-115	21-FEB-20
WG3279649-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4997093							
WG3276446-6	LCS							
Nitrite (as N)			97.1		%		90-110	15-FEB-20
WG3276446-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4997093							
WG3276446-6	LCS							
Nitrate (as N)			103.8		%		90-110	15-FEB-20
WG3276446-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-FEB-20
OH-CL								
	Water							
Batch	R4997065							
WG3276425-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-FEB-20
ORP-CL								
	Water							
Batch	R4999104							
WG3278885-7	CRM	CL-ORP						
ORP			221		mV		210-230	20-FEB-20
WG3278885-9	CRM	CL-ORP						
ORP			229		mV		210-230	20-FEB-20
WG3278885-10	DUP	L2417211-1						
ORP		413	408	J	mV	4.8	15	20-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R4999005							
WG3278655-6	LCS							
Phosphorus (P)-Total			109.2		%		80-120	20-FEB-20
WG3278655-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20
PH-CL Water								
Batch	R4997065							
WG3276425-6	DUP	L2417211-7						
pH		7.79	7.78	J	pH	0.01	0.2	14-FEB-20
WG3276425-5	LCS							
pH			7.03		pH		6.9-7.1	14-FEB-20
WG3276425-8	LCS							
pH			7.03		pH		6.9-7.1	14-FEB-20
PO4-DO-L-COL-CL Water								
Batch	R4997023							
WG3276063-10	LCS							
Orthophosphate-Dissolved (as P)			106.4		%		80-120	14-FEB-20
WG3276063-6	LCS							
Orthophosphate-Dissolved (as P)			103.5		%		80-120	14-FEB-20
WG3276063-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-FEB-20
WG3276063-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-FEB-20
SO4-IC-N-CL Water								
Batch	R4997093							
WG3276446-6	LCS							
Sulfate (SO4)			98.2		%		90-110	15-FEB-20
WG3276446-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-FEB-20
SOLIDS-TDS-CL Water								
Batch	R4999686							
WG3278357-9	DUP	L2417211-4						
Total Dissolved Solids		810	781		mg/L	3.6	20	20-FEB-20
WG3278357-5	LCS							
Total Dissolved Solids			100.6		%		85-115	20-FEB-20
WG3278357-8	LCS							
Total Dissolved Solids			101.2		%		85-115	20-FEB-20
WG3278357-4	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R4999686							
WG3278357-4 MB								
Total Dissolved Solids			<10		mg/L		10	20-FEB-20
WG3278357-7 MB								
Total Dissolved Solids			<10		mg/L		10	20-FEB-20
TKN-L-F-CL								
Water								
Batch	R4997661							
WG3276904-3 DUP		L2417211-5						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-FEB-20
WG3276904-2 LCS								
Total Kjeldahl Nitrogen			93.6		%		75-125	18-FEB-20
WG3276904-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-FEB-20
WG3276904-4 MS		L2417211-5						
Total Kjeldahl Nitrogen			106.4		%		70-130	18-FEB-20
TSS-L-CL								
Water								
Batch	R4998973							
WG3277646-6 LCS								
Total Suspended Solids			92.2		%		85-115	19-FEB-20
WG3277646-8 LCS								
Total Suspended Solids			91.8		%		85-115	19-FEB-20
WG3277646-5 MB								
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
WG3277646-7 MB								
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
TURBIDITY-CL								
Water								
Batch	R4996916							
WG3276212-30 DUP		L2417211-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	14-FEB-20
WG3276212-29 LCS								
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-28 MB								
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	13-FEB-20 12:50	20-FEB-20 09:00	0.25	164	hours	EHTR-FM
	2	13-FEB-20 12:40	20-FEB-20 10:00	0.25	165	hours	EHTR-FM
	3	13-FEB-20 12:40	20-FEB-20 10:00	0.25	165	hours	EHTR-FM
	4	13-FEB-20 12:00	20-FEB-20 10:00	0.25	166	hours	EHTR-FM
	5	13-FEB-20 12:00	20-FEB-20 10:00	0.25	166	hours	EHTR-FM
	6	13-FEB-20 11:45	20-FEB-20 10:00	0.25	166	hours	EHTR-FM
	7	13-FEB-20 11:45	20-FEB-20 10:00	0.25	166	hours	EHTR-FM
pH							
	1	13-FEB-20 12:50	14-FEB-20 15:00	0.25	26	hours	EHTR-FM
	2	13-FEB-20 12:40	14-FEB-20 15:00	0.25	26	hours	EHTR-FM
	3	13-FEB-20 12:40	14-FEB-20 15:00	0.25	26	hours	EHTR-FM
	4	13-FEB-20 12:00	14-FEB-20 15:00	0.25	27	hours	EHTR-FM
	5	13-FEB-20 12:00	14-FEB-20 15:00	0.25	27	hours	EHTR-FM
	6	13-FEB-20 11:45	14-FEB-20 15:00	0.25	27	hours	EHTR-FM
	7	13-FEB-20 11:45	14-FEB-20 15:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2417211 were received on 14-FEB-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200213-1300** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	brjt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered? F; Field, L; Lab, FL; Field & Lab, N; None



L2417211-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC									
FR_09-02-B_QTR_2020-01-06_N	FR_09-02-B	WG		2/13/2020	12:50		5	1	1	1	1	1									
FR_09-02-A_QTR_2020-01-06_N	FR_09-02-A	WG		2/13/2020	12:40		5	1	1	1	1	1									
FR_FLD_QTR_2020-01-06_N	FR_FLD	WG		2/13/2020	12:40		5	1	1	1	1	1									
FR_09-01-B_QTR_2020-01-06_N	FR_09-01-B	WG		2/13/2020	12:00		5	1	1	1	1	1									
FR_TRP_QTR_2020-01-06_N	FR_TRP	WG		2/13/2020	12:00		5	1	1	1	1	1									
FR_09-01-A_QTR_2020-01-06_N	FR_09-01-A	WG		2/13/2020	11:45		5	1	1	1	1	1									
FR_DC3_QTR_2020-01-06_N	FR_DC3	WG		2/13/2020	11:45		5	1	1	1	1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples specified above are filtered and preserved.	Britt Anderson	February 13, 2020		2/14 890

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Britt Anderson	Mobile #	250-425-5335
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	February 13, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 14-FEB-20
Report Date: 29-DEC-20 16:15 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2417253
Project P.O. #: VPO00683840
Job Reference: Fording River Operations
C of C Numbers: 20200213
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2417253-1	L2417253-2	L2417253-3	L2417253-4
		Description	WG	WG	WG	WG
		Sampled Date	13-FEB-20	13-FEB-20	13-FEB-20	13-FEB-20
		Sampled Time	13:05	11:25	08:35	15:00
		Client ID	FR_KB-2-2020-02-13	FR_KB-3A-2020-02-13	FR_LP-3A-2020-02-13	FR_TRP_2020_02_13
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		2110	1750	565	<2.0
	Hardness (as CaCO3) (mg/L)		1360	1080	301	<0.50
	pH (pH)		7.75	7.86	8.04	5.79
	ORP (mV)		477	428	403	469
	Total Suspended Solids (mg/L)		<1.0	<1.0	21.3	<1.0
	Total Dissolved Solids (mg/L)		1870 ^{DLHC}	1440 ^{DLHC}	355 ^{DLHC}	<10
	Turbidity (NTU)		0.64	0.19	14.7	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		15.8	15.4	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		416	396	320	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		416	396	320	<1.0
	Ammonia as N (mg/L)		<0.0050	<0.0050	0.0388	0.0445 ^{RRV}
	Bicarbonate (HCO3) (mg/L)		507 ^{DLHC}	483 ^{DLHC}	390	<5.0
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	<0.050
	Carbonate (CO3) (mg/L)		<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0	<5.0
	Chloride (Cl) (mg/L)		<2.5 ^{DLHC}	<2.5 ^{DLHC}	1.10	<0.50
	Fluoride (F) (mg/L)		0.12 ^{DLHC}	<0.10 ^{DLHC}	0.238	<0.020
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		98.2	97.6	93.3	0.0
	Nitrate (as N) (mg/L)		84.7 ^{DLHC}	58.3 ^{DLHC}	0.0068	<0.0050
	Nitrite (as N) (mg/L)		<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.050	<0.050	0.156	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)		0.0012	0.0012	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0030 ^{DLHC}	<0.0020 ^{DLHC}	0.0150	<0.0020
	Sulfate (SO4) (mg/L)		654	493	34.3	<0.30
	Anion Sum (meq/L)		28.0	22.3	7.15	<0.10
	Cation Sum (meq/L)		27.5	21.8	6.67	<0.10
	Cation - Anion Balance (%)		-0.9	-1.2	-3.5	0.0
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	0.90
Total Organic Carbon (mg/L)			<0.50	<0.50	2.53	<0.50
Total Metals	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)		<0.0050 ^{DLDS}	<0.0050 ^{DLDS}	0.0011	
	Antimony (Sb)-Dissolved (mg/L)		<0.00050 ^{DLDS}	<0.00050 ^{DLDS}	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2417253-1 WG 13-FEB-20 13:05 FR_KB-2-2020-02-13	L2417253-2 WG 13-FEB-20 11:25 FR_KB-3A-2020-02-13	L2417253-3 WG 13-FEB-20 08:35 FR_LP-3A-2020-02-13	L2417253-4 WG 13-FEB-20 15:00 FR_TRP_2020_02_13	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050	0.00179	
	Barium (Ba)-Dissolved (mg/L)	DLDS 0.0693	DLDS 0.0529	0.175	
	Beryllium (Be)-Dissolved (ug/L)	DLDS <0.10	DLDS <0.10	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	DLDS <0.00025	DLDS <0.00025	<0.000050	
	Boron (B)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050	0.014	
	Cadmium (Cd)-Dissolved (ug/L)	DLDS 0.183	DLDS 0.025	0.0143	
	Calcium (Ca)-Dissolved (mg/L)	DLDS 300	DLDS 260	73.2	<0.050
	Chromium (Cr)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050	0.00012	
	Cobalt (Co)-Dissolved (ug/L)	DLDS <0.50	DLDS 1.60	0.37	
	Copper (Cu)-Dissolved (mg/L)	DLDS <0.0010	DLDS <0.0010	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050	1.09	
	Lead (Pb)-Dissolved (mg/L)	DLDS <0.00025	DLDS <0.00025	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	DLDS 0.0897	DLDS 0.0327	0.0040	
	Magnesium (Mg)-Dissolved (mg/L)	DLDS 148	DLDS 105	28.7	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	DLDS 0.00063	DLDS 0.00082	0.578	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	DLDS 0.00112	DLDS 0.00028	0.00208	
	Nickel (Ni)-Dissolved (mg/L)	DLDS 0.0067	DLDS <0.0025	0.00083	
	Potassium (K)-Dissolved (mg/L)	DLDS 4.52	DLDS 2.02	1.46	<0.050
	Selenium (Se)-Dissolved (ug/L)	DLDS 245	DLDS 161	<0.050	
	Silicon (Si)-Dissolved (mg/L)	DLDS 2.13	DLDS 3.06	5.96	
	Silver (Ag)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	DLDS 4.10	DLDS 3.80	12.6	<0.050
	Strontium (Sr)-Dissolved (mg/L)	DLDS 0.293	DLDS 0.304	0.152	
	Thallium (Tl)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	DLDS <0.010	DLDS <0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	DLDS 0.0107	DLDS 0.00524	0.00151	
	Vanadium (V)-Dissolved (mg/L)	DLDS <0.0025	DLDS <0.0025	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	DLDS <0.0050	DLDS <0.0050	0.0020	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2417253-4	FR_TRP_2020_02_13	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low. - TOTAL METALS BOTTLE SUBMITTED FOR TOTAL MERCURY

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2417253-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2417253-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2417253-1, -2, -3
Matrix Spike	Nitrate (as N)	MS-B	L2417253-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L2417253-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

20200213

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2417253

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4997256							
WG3276596-8	LCS							
Acidity (as CaCO3)			100.1		%		85-115	15-FEB-20
WG3276596-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	15-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4997065							
WG3276425-8	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	14-FEB-20
WG3276425-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-FEB-20
BE-D-L-CCMS-CL								
	Water							
Batch	R4999074							
WG3278779-3	DUP	L2417253-1						
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3278779-2	LCS	TMRM						
Beryllium (Be)-Dissolved			104.5		%		80-120	20-FEB-20
WG3278779-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-FEB-20
WG3278779-4	MS	L2417253-1						
Beryllium (Be)-Dissolved			96.2		%		70-130	20-FEB-20
BIC-CL								
	Water							
Batch	R4997065							
WG3276425-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4998549							
WG3278141-2	LCS							
Bromide (Br)			98.5		%		85-115	14-FEB-20
WG3278141-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5001010							
WG3280066-2	LCS							
Dissolved Organic Carbon			101.8		%		80-120	21-FEB-20
WG3280066-6	LCS							
Dissolved Organic Carbon			94.4		%		80-120	21-FEB-20

Quality Control Report

Workorder: L2417253

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch R5001010								
WG3280066-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
WG3280066-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
C-TOT-ORG-LOW-CL Water								
Batch R5001010								
WG3280066-7 DUP								
Total Organic Carbon		L2417253-4 <0.50	<0.50	RPD-NA	mg/L	N/A	20	21-FEB-20
WG3280066-2 LCS								
Total Organic Carbon			103.8		%		80-120	21-FEB-20
WG3280066-6 LCS								
Total Organic Carbon			97.8		%		80-120	21-FEB-20
WG3280066-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
WG3280066-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
WG3280066-8 MS								
Total Organic Carbon		L2417253-4	91.4		%		70-130	21-FEB-20
CL-IC-N-CL Water								
Batch R4998549								
WG3278141-2 LCS								
Chloride (Cl)			101.9		%		90-110	14-FEB-20
WG3278141-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	14-FEB-20
CO3-CL Water								
Batch R4997065								
WG3276425-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-FEB-20
EC-L-PCT-CL Water								
Batch R4997065								
WG3276425-8 LCS								
Conductivity (@ 25C)			100.7		%		90-110	14-FEB-20
WG3276425-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-FEB-20
F-IC-N-CL Water								

Quality Control Report

Workorder: L2417253

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R4998549								
WG3278141-2	LCS							
Fluoride (F)			108.9		%		90-110	14-FEB-20
WG3278141-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-FEB-20
HG-D-CVAA-CL								
Batch R4997925								
WG3277350-2	LCS							
Mercury (Hg)-Dissolved			107.0		%		80-120	18-FEB-20
WG3277350-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-FEB-20
HG-T-CVAA-CL								
Batch R4997925								
WG3277351-6	LCS							
Mercury (Hg)-Total			116.0		%		80-120	18-FEB-20
WG3277351-5	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-FEB-20
Batch R4999809								
WG3279689-2	LCS							
Mercury (Hg)-Total			105.0		%		80-120	21-FEB-20
WG3279689-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	21-FEB-20
MET-D-CCMS-CL								
Batch R4998414								
WG3277929-3	DUP	L2417253-4						
Calcium (Ca)-Dissolved			<0.050	RPD-NA	mg/L	N/A	20	19-FEB-20
Magnesium (Mg)-Dissolved			<0.0050	RPD-NA	mg/L	N/A	20	19-FEB-20
Potassium (K)-Dissolved			<0.050	RPD-NA	mg/L	N/A	20	19-FEB-20
Sodium (Na)-Dissolved			<0.050	RPD-NA	mg/L	N/A	20	19-FEB-20
WG3277929-2	LCS	TMRM						
Calcium (Ca)-Dissolved			97.8		%		80-120	19-FEB-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	19-FEB-20
Potassium (K)-Dissolved			105.8		%		80-120	19-FEB-20
Sodium (Na)-Dissolved			104.8		%		80-120	19-FEB-20
WG3277929-1	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-FEB-20



Quality Control Report

Workorder: L2417253

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4998414							
WG3277929-1	MB							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
WG3277929-4	MS	L2417253-4						
Calcium (Ca)-Dissolved			96.7		%		70-130	19-FEB-20
Magnesium (Mg)-Dissolved			106.1		%		70-130	19-FEB-20
Potassium (K)-Dissolved			102.8		%		70-130	19-FEB-20
Sodium (Na)-Dissolved			100.6		%		70-130	19-FEB-20
Batch	R4999074							
WG3278779-3	DUP	L2417253-1						
Aluminum (Al)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-FEB-20
Antimony (Sb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Arsenic (As)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Barium (Ba)-Dissolved		0.0693	0.0680		mg/L	1.8	20	20-FEB-20
Bismuth (Bi)-Dissolved		<0.00025	<0.00025	RPD-NA	mg/L	N/A	20	20-FEB-20
Boron (B)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-FEB-20
Cadmium (Cd)-Dissolved		0.000183	0.000169		mg/L	7.6	20	20-FEB-20
Calcium (Ca)-Dissolved		300	298		mg/L	0.7	20	20-FEB-20
Chromium (Cr)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Cobalt (Co)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Copper (Cu)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-FEB-20
Iron (Fe)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-FEB-20
Lead (Pb)-Dissolved		<0.00025	<0.00025	RPD-NA	mg/L	N/A	20	20-FEB-20
Lithium (Li)-Dissolved		0.0897	0.0892		mg/L	0.6	20	20-FEB-20
Magnesium (Mg)-Dissolved		148	146		mg/L	1.5	20	20-FEB-20
Manganese (Mn)-Dissolved		0.00063	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Molybdenum (Mo)-Dissolved		0.00112	0.00109		mg/L	3.2	20	20-FEB-20
Nickel (Ni)-Dissolved		0.0067	0.0066		mg/L	1.8	20	20-FEB-20
Potassium (K)-Dissolved		4.52	4.48		mg/L	0.9	20	20-FEB-20
Selenium (Se)-Dissolved		0.245	0.248		mg/L	1.5	20	20-FEB-20
Silicon (Si)-Dissolved		2.13	2.18		mg/L	2.1	20	20-FEB-20
Silver (Ag)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-FEB-20
Sodium (Na)-Dissolved		4.10	3.96		mg/L	3.6	20	20-FEB-20
Strontium (Sr)-Dissolved		0.293	0.292		mg/L	0.3	20	20-FEB-20
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-FEB-20
Tin (Sn)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-FEB-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-FEB-20



Quality Control Report

Workorder: L2417253

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4999074							
WG3278779-3	DUP	L2417253-1						
Uranium (U)-Dissolved		0.0107	0.0108		mg/L	1.7	20	20-FEB-20
Vanadium (V)-Dissolved		<0.0025	<0.0025	RPD-NA	mg/L	N/A	20	20-FEB-20
Zinc (Zn)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3278779-2	LCS	TMRM						
Aluminum (Al)-Dissolved			105.3		%		80-120	20-FEB-20
Antimony (Sb)-Dissolved			100.1		%		80-120	20-FEB-20
Arsenic (As)-Dissolved			102.9		%		80-120	20-FEB-20
Barium (Ba)-Dissolved			99.8		%		80-120	20-FEB-20
Bismuth (Bi)-Dissolved			94.9		%		80-120	20-FEB-20
Boron (B)-Dissolved			92.7		%		80-120	20-FEB-20
Cadmium (Cd)-Dissolved			105.5		%		80-120	20-FEB-20
Calcium (Ca)-Dissolved			98.6		%		80-120	20-FEB-20
Chromium (Cr)-Dissolved			103.4		%		80-120	20-FEB-20
Cobalt (Co)-Dissolved			96.8		%		80-120	20-FEB-20
Copper (Cu)-Dissolved			98.7		%		80-120	20-FEB-20
Iron (Fe)-Dissolved			101.4		%		80-120	20-FEB-20
Lead (Pb)-Dissolved			99.9		%		80-120	20-FEB-20
Lithium (Li)-Dissolved			97.6		%		80-120	20-FEB-20
Magnesium (Mg)-Dissolved			106.6		%		80-120	20-FEB-20
Manganese (Mn)-Dissolved			103.1		%		80-120	20-FEB-20
Molybdenum (Mo)-Dissolved			96.9		%		80-120	20-FEB-20
Nickel (Ni)-Dissolved			101.5		%		80-120	20-FEB-20
Potassium (K)-Dissolved			105.9		%		80-120	20-FEB-20
Selenium (Se)-Dissolved			92.4		%		80-120	20-FEB-20
Silicon (Si)-Dissolved			106.6		%		60-140	20-FEB-20
Silver (Ag)-Dissolved			96.9		%		80-120	20-FEB-20
Sodium (Na)-Dissolved			100.3		%		80-120	20-FEB-20
Strontium (Sr)-Dissolved			104.9		%		80-120	20-FEB-20
Thallium (Tl)-Dissolved			96.5		%		80-120	20-FEB-20
Tin (Sn)-Dissolved			105.4		%		80-120	20-FEB-20
Titanium (Ti)-Dissolved			101.5		%		80-120	20-FEB-20
Uranium (U)-Dissolved			93.6		%		80-120	20-FEB-20
Vanadium (V)-Dissolved			104.0		%		80-120	20-FEB-20
Zinc (Zn)-Dissolved			103.3		%		80-120	20-FEB-20
WG3278779-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4999074							
WG3278779-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-FEB-20
WG3278779-4	MS	L2417253-1						
Aluminum (Al)-Dissolved			102.7		%		70-130	20-FEB-20
Antimony (Sb)-Dissolved			102.5		%		70-130	20-FEB-20
Arsenic (As)-Dissolved			106.1		%		70-130	20-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R4999074							
WG3278779-4	MS	L2417253-1						
Barium (Ba)-Dissolved			95.1		%		70-130	20-FEB-20
Bismuth (Bi)-Dissolved			97.2		%		70-130	20-FEB-20
Boron (B)-Dissolved			98.0		%		70-130	20-FEB-20
Cadmium (Cd)-Dissolved			104.0		%		70-130	20-FEB-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	20-FEB-20
Chromium (Cr)-Dissolved			103.1		%		70-130	20-FEB-20
Cobalt (Co)-Dissolved			97.8		%		70-130	20-FEB-20
Copper (Cu)-Dissolved			98.9		%		70-130	20-FEB-20
Iron (Fe)-Dissolved			101.7		%		70-130	20-FEB-20
Lead (Pb)-Dissolved			97.7		%		70-130	20-FEB-20
Lithium (Li)-Dissolved			94.9		%		70-130	20-FEB-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	20-FEB-20
Manganese (Mn)-Dissolved			102.8		%		70-130	20-FEB-20
Molybdenum (Mo)-Dissolved			90.6		%		70-130	20-FEB-20
Nickel (Ni)-Dissolved			100.6		%		70-130	20-FEB-20
Potassium (K)-Dissolved			104.2		%		70-130	20-FEB-20
Selenium (Se)-Dissolved			104.8		%		70-130	20-FEB-20
Silicon (Si)-Dissolved			94.0		%		70-130	20-FEB-20
Silver (Ag)-Dissolved			97.4		%		70-130	20-FEB-20
Sodium (Na)-Dissolved			99.6		%		70-130	20-FEB-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	20-FEB-20
Thallium (Tl)-Dissolved			95.2		%		70-130	20-FEB-20
Tin (Sn)-Dissolved			102.4		%		70-130	20-FEB-20
Titanium (Ti)-Dissolved			103.1		%		70-130	20-FEB-20
Uranium (U)-Dissolved			104.8		%		70-130	20-FEB-20
Vanadium (V)-Dissolved			108.3		%		70-130	20-FEB-20
Zinc (Zn)-Dissolved			103.1		%		70-130	20-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4999736							
WG3279649-6	LCS							
Ammonia as N			91.5		%		85-115	21-FEB-20
WG3279649-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-20
NO2-L-IC-N-CL								
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R4998549							
WG3278141-2	LCS							
Nitrite (as N)			102.7		%		90-110	14-FEB-20
WG3278141-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-FEB-20
NO3-L-IC-N-CL	Water							
Batch	R4998549							
WG3278141-2	LCS							
Nitrate (as N)			102.6		%		90-110	14-FEB-20
WG3278141-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-FEB-20
OH-CL	Water							
Batch	R4997065							
WG3276425-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-FEB-20
ORP-CL	Water							
Batch	R4999104							
WG3278885-9	CRM	CL-ORP						
ORP			229		mV		210-230	20-FEB-20
P-T-L-COL-CL	Water							
Batch	R4999005							
WG3278655-10	LCS							
Phosphorus (P)-Total			110.7		%		80-120	20-FEB-20
WG3278655-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20
PH-CL	Water							
Batch	R4997065							
WG3276425-8	LCS							
pH			7.03		pH		6.9-7.1	14-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4997023							
WG3276063-10	LCS							
Orthophosphate-Dissolved (as P)			106.4		%		80-120	14-FEB-20
WG3276063-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R4998549							
WG3278141-2	LCS							
Sulfate (SO4)			103.1		%		90-110	14-FEB-20
WG3278141-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4999686							
WG3278357-5	LCS							
Total Dissolved Solids			100.6		%		85-115	20-FEB-20
WG3278357-4	MB							
Total Dissolved Solids			<10		mg/L		10	20-FEB-20
TKN-L-F-CL	Water							
Batch	R4997661							
WG3276904-2	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	18-FEB-20
WG3276904-6	LCS							
Total Kjeldahl Nitrogen			92.5		%		75-125	18-FEB-20
WG3276904-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-FEB-20
WG3276904-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-FEB-20
TSS-L-CL	Water							
Batch	R4998973							
WG3277646-8	LCS							
Total Suspended Solids			91.8		%		85-115	19-FEB-20
WG3277646-7	MB							
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
TURBIDITY-CL	Water							
Batch	R4996916							
WG3276212-32	LCS							
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-31	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	13-FEB-20 13:05	20-FEB-20 10:00	0.25	165	hours	EHTR-FM
	2	13-FEB-20 11:25	20-FEB-20 10:00	0.25	167	hours	EHTR-FM
	3	13-FEB-20 08:35	20-FEB-20 10:00	0.25	169	hours	EHTR-FM
	4	13-FEB-20 15:00	20-FEB-20 10:00	0.25	163	hours	EHTR-FM
pH	1	13-FEB-20 13:05	14-FEB-20 15:00	0.25	26	hours	EHTR-FM
	2	13-FEB-20 11:25	14-FEB-20 15:00	0.25	28	hours	EHTR-FM
	3	13-FEB-20 08:35	14-FEB-20 15:00	0.25	30	hours	EHTR-FM
	4	13-FEB-20 15:00	14-FEB-20 15:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2417253 were received on 14-FEB-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200213

TURNAROUND TIME: Regular

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Fording Rver Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250 433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERVATION						
									N	F	N	F	F	N	
								TECK COAL ROUTINE - CL	NONE	H2SO4	H2SO4	HNO3	HCL	HCL	
								TECK COAL DOC							
								TECK COAL TOC/TKN							
								TECKCOAL-MET-D-CL							
								HG-D-CVAF-CL							
								HG-T-CVAF-CL							
FR_KB-2-2020-02-13	FR_KB-2	WG	N	2/13/2020	13:05	G	6	1	1	1	1	1	1		
FR_KB-3A-2020-02-13	FR_KB-3A	WG	N	2/13/2020	11:25	G	6	1	1	1	1	1	1		
FR_LP-3A-2020-02-13	FR_LP-3A	WG	N	2/13/2020	8:35	G	6	1	1	1	1	1	1		
FR_TRP_2020_02_13	FR_TRP	WG	N	2/13/2020	15:00	G	3	1					1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>[Signature]</i>	2/14/20

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>	
Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	KATIE PETERSON		Mobile #
Sampler's Signature	<i>[Signature]</i>		Date/Time
			250-946-5029
			Feb 13 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 28-FEB-20
Report Date: 30-DEC-20 09:32 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2422246
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200227-1600
Legal Site Desc:

Comments: 12-30-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2422246-1	L2422246-2	L2422246-3		
		Description	WG	WG	WS		
		Sampled Date	27-FEB-20	27-FEB-20	27-FEB-20		
		Sampled Time	12:00	12:00	09:30		
		Client ID	FR_DC2_QTR_202 0-01-06_N	FR_MW- 1B_QTR_2020-01- 06_N	GH_PC1_MON_20 20-02-03_N		
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		873	883	1030		
	Hardness (as CaCO3) (mg/L)		466	476	607		
	pH (pH)		8.32	8.29	8.49		
	ORP (mV)		364	345	351		
	Total Suspended Solids (mg/L)		<1.0	1.2	1.1		
	Total Dissolved Solids (mg/L)		672 ^{DLHC}	661 ^{DLHC}	815 ^{DLHC}		
	Turbidity (NTU)		0.54	0.51	0.15		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		5.7	5.6	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		169	176	178		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		6.8	2.0	13.8		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		176	178	191		
	Ammonia as N (mg/L)		<0.0050	<0.0050	0.0164		
	Bicarbonate (HCO3) (mg/L)		207	214	217		
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050		
	Carbonate (CO3) (mg/L)		<5.0	<5.0	8.3		
	Chloride (Cl) (mg/L)		0.78	0.73	1.01		
	Fluoride (F) (mg/L)		0.136	0.133	0.361		
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0		
	Ion Balance (%)		94.3	96.7	97.8		
	Nitrate (as N) (mg/L)		20.4	19.8	1.82		
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)		<0.25 ^{TKNI}	<0.25 ^{TKNI}	0.249		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0024	0.0021 ^{HTD}	0.0034		
	Phosphorus (P)-Total (mg/L)		<0.0020	<0.0020	0.0032		
	Sulfate (SO4) (mg/L)		239	238	407		
	Anion Sum (meq/L)		9.99	9.96	12.5		
Cation Sum (meq/L)		9.42	9.62	12.2			
Cation - Anion Balance (%)		-2.9	-1.7	-1.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		0.76	0.66	0.83		
	Total Organic Carbon (mg/L)		0.71	0.58	0.92		
Total Metals	Aluminum (Al)-Total (mg/L)				<0.0030		
	Antimony (Sb)-Total (mg/L)				<0.00010		
	Arsenic (As)-Total (mg/L)				0.00024		
	Barium (Ba)-Total (mg/L)				0.0794		
	Beryllium (Be)-Total (ug/L)				<0.020		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2422246-1 WG 27-FEB-20 12:00 FR_DC2_QTR_202 0-01-06_N	L2422246-2 WG 27-FEB-20 12:00 FR_MW- 1B_QTR_2020-01- 06_N	L2422246-3 WS 27-FEB-20 09:30 GH_PC1_MON_20 20-02-03_N	
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)			<0.000050	
	Boron (B)-Total (mg/L)			<0.010	
	Cadmium (Cd)-Total (ug/L)			0.0168	
	Calcium (Ca)-Total (mg/L)			109	
	Chromium (Cr)-Total (mg/L)			0.00023	
	Cobalt (Co)-Total (ug/L)			<0.10	
	Copper (Cu)-Total (mg/L)			<0.00050	
	Iron (Fe)-Total (mg/L)			<0.010	
	Lead (Pb)-Total (mg/L)			<0.000050	
	Lithium (Li)-Total (mg/L)			0.0083	
	Magnesium (Mg)-Total (mg/L)			85.9	
	Manganese (Mn)-Total (mg/L)			0.00051	
	Mercury (Hg)-Total (ug/L)			<0.00050	
	Molybdenum (Mo)-Total (mg/L)			0.00326	
	Nickel (Ni)-Total (mg/L)			0.00110	
	Potassium (K)-Total (mg/L)			1.04	
	Selenium (Se)-Total (ug/L)			58.6	
	Silicon (Si)-Total (mg/L)			2.63	
	Silver (Ag)-Total (mg/L)			<0.000010	
	Sodium (Na)-Total (mg/L)			0.966	
	Strontium (Sr)-Total (mg/L)			0.139	
	Thallium (Tl)-Total (mg/L)			<0.000010	
	Tin (Sn)-Total (mg/L)			<0.00010	
	Titanium (Ti)-Total (mg/L)			<0.010	
	Uranium (U)-Total (mg/L)			0.00543	
	Vanadium (V)-Total (mg/L)			<0.00050	
	Zinc (Zn)-Total (mg/L)			0.0052	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00017	0.00018	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00020	
	Barium (Ba)-Dissolved (mg/L)	0.138	0.138	0.0800	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.0134	0.0148	0.0232	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2422246-1 WG 27-FEB-20 12:00 FR_DC2_QTR_202 0-01-06_N	L2422246-2 WG 27-FEB-20 12:00 FR_MW- 1B_QTR_2020-01- 06_N	L2422246-3 WS 27-FEB-20 09:30 GH_PC1_MON_20 20-02-03_N	
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	115	118	109	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00021	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	0.00022	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0400	0.0424	0.0074	
	Magnesium (Mg)-Dissolved (mg/L)	43.5	44.3	81.4	
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00040	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00120	0.00123	0.00314	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00101	
	Potassium (K)-Dissolved (mg/L)	1.31	1.32	1.04	
	Selenium (Se)-Dissolved (ug/L)	49.1	51.1	60.8	
	Silicon (Si)-Dissolved (mg/L)	1.76	1.77	2.44	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	1.66	1.72	0.931	
	Strontium (Sr)-Dissolved (mg/L)	0.181	0.189	0.136	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00271	0.00276	0.00508	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0061	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Iron (Fe)-Total	B	L2422246-3
Method Blank	Alkalinity, Total (as CaCO3)	MB-LOR	L2422246-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2422246-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L2422246-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The			

Reference Information

carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2422246

Report Date: 30-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5012065							
WG3284769-2	LCS							
Acidity (as CaCO3)			104.4		%		85-115	28-FEB-20
WG3284769-5	LCS							
Acidity (as CaCO3)			97.3		%		85-115	28-FEB-20
WG3284769-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-FEB-20
WG3284769-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-FEB-20
ALK-MAN-CL		Water						
Batch	R5012139							
WG3284823-14	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	28-FEB-20
WG3284823-13	MB							
Alkalinity, Total (as CaCO3)			2.6	MB-LOR	mg/L		1	28-FEB-20
BE-D-L-CCMS-VA		Water						
Batch	R5012438							
WG3284948-2	LCS							
Beryllium (Be)-Dissolved			105.5		%		80-120	02-MAR-20
WG3284948-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-MAR-20
BE-T-L-CCMS-VA		Water						
Batch	R5012438							
WG3284837-2	LCS							
Beryllium (Be)-Total			109.9		%		80-120	02-MAR-20
WG3284837-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	02-MAR-20
BIC-CL		Water						
Batch	R5012139							
WG3284823-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-FEB-20
BR-L-IC-N-CL		Water						
Batch	R5012214							
WG3284922-2	LCS							
Bromide (Br)			96.9		%		85-115	28-FEB-20
WG3284922-6	LCS							
Bromide (Br)			97.5		%		85-115	28-FEB-20

Quality Control Report

Workorder: L2422246

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL	Water							
Batch	R5012214							
WG3284922-1 MB								
Bromide (Br)			<0.050		mg/L		0.05	28-FEB-20
WG3284922-5 MB								
Bromide (Br)			<0.050		mg/L		0.05	28-FEB-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5018125							
WG3287695-2 LCS								
Dissolved Organic Carbon			100.3		%		80-120	05-MAR-20
WG3287695-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5018125							
WG3287695-2 LCS								
Total Organic Carbon			102.1		%		80-120	05-MAR-20
WG3287695-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	05-MAR-20
CL-IC-N-CL	Water							
Batch	R5012214							
WG3284922-2 LCS								
Chloride (Cl)			101.3		%		90-110	28-FEB-20
WG3284922-6 LCS								
Chloride (Cl)			100.1		%		90-110	28-FEB-20
WG3284922-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	28-FEB-20
WG3284922-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	28-FEB-20
CO3-CL	Water							
Batch	R5012139							
WG3284823-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	28-FEB-20
EC-L-PCT-CL	Water							
Batch	R5012139							
WG3284823-14 LCS								
Conductivity (@ 25C)			98.4		%		90-110	28-FEB-20
WG3284823-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-20

Quality Control Report

Workorder: L2422246

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5012214							
WG3284922-2	LCS							
Fluoride (F)			93.8		%		90-110	28-FEB-20
WG3284922-6	LCS							
Fluoride (F)			101.3		%		90-110	28-FEB-20
WG3284922-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-FEB-20
WG3284922-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R5012633							
WG3285250-2	LCS							
Mercury (Hg)-Dissolved			96.0		%		80-120	03-MAR-20
WG3285250-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-MAR-20
HG-T-U-CVAF-VA								
Water								
Batch	R5015472							
WG3285531-2	LCS							
Mercury (Hg)-Total			93.6		%		80-120	04-MAR-20
WG3285531-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-MAR-20
MET-D-CCMS-VA								
Water								
Batch	R5012438							
WG3284948-2	LCS							
Aluminum (Al)-Dissolved			103.4		%		80-120	02-MAR-20
Antimony (Sb)-Dissolved			96.9		%		80-120	02-MAR-20
Arsenic (As)-Dissolved			93.7		%		80-120	02-MAR-20
Barium (Ba)-Dissolved			95.7		%		80-120	02-MAR-20
Bismuth (Bi)-Dissolved			96.6		%		80-120	02-MAR-20
Boron (B)-Dissolved			105.3		%		80-120	02-MAR-20
Cadmium (Cd)-Dissolved			96.1		%		80-120	02-MAR-20
Calcium (Ca)-Dissolved			100.1		%		80-120	02-MAR-20
Chromium (Cr)-Dissolved			96.0		%		80-120	02-MAR-20
Cobalt (Co)-Dissolved			93.4		%		80-120	02-MAR-20
Copper (Cu)-Dissolved			91.8		%		80-120	02-MAR-20
Iron (Fe)-Dissolved			98.0		%		80-120	02-MAR-20
Lead (Pb)-Dissolved			96.0		%		80-120	02-MAR-20

Quality Control Report

Workorder: L2422246

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5012438							
WG3284948-2	LCS							
Lithium (Li)-Dissolved			103.6		%		80-120	02-MAR-20
Magnesium (Mg)-Dissolved			97.6		%		80-120	02-MAR-20
Manganese (Mn)-Dissolved			96.6		%		80-120	02-MAR-20
Molybdenum (Mo)-Dissolved			101.8		%		80-120	02-MAR-20
Nickel (Ni)-Dissolved			93.3		%		80-120	02-MAR-20
Potassium (K)-Dissolved			104.6		%		80-120	02-MAR-20
Selenium (Se)-Dissolved			97.1		%		80-120	02-MAR-20
Silicon (Si)-Dissolved			102.2		%		60-140	02-MAR-20
Silver (Ag)-Dissolved			98.0		%		80-120	02-MAR-20
Sodium (Na)-Dissolved			103.8		%		80-120	02-MAR-20
Strontium (Sr)-Dissolved			100.7		%		80-120	02-MAR-20
Thallium (Tl)-Dissolved			96.8		%		80-120	02-MAR-20
Tin (Sn)-Dissolved			91.8		%		80-120	02-MAR-20
Titanium (Ti)-Dissolved			96.2		%		80-120	02-MAR-20
Uranium (U)-Dissolved			97.8		%		80-120	02-MAR-20
Vanadium (V)-Dissolved			97.0		%		80-120	02-MAR-20
Zinc (Zn)-Dissolved			97.9		%		80-120	02-MAR-20
WG3284948-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5012438							
WG3284948-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5012438							
WG3284837-2	LCS							
Aluminum (Al)-Total			103.9		%		80-120	02-MAR-20
Antimony (Sb)-Total			105.9		%		80-120	02-MAR-20
Arsenic (As)-Total			98.7		%		80-120	02-MAR-20
Barium (Ba)-Total			97.1		%		80-120	02-MAR-20
Bismuth (Bi)-Total			98.8		%		80-120	02-MAR-20
Boron (B)-Total			109.1		%		80-120	02-MAR-20
Cadmium (Cd)-Total			100.6		%		80-120	02-MAR-20
Calcium (Ca)-Total			102.8		%		80-120	02-MAR-20
Chromium (Cr)-Total			100.3		%		80-120	02-MAR-20
Cobalt (Co)-Total			99.4		%		80-120	02-MAR-20
Copper (Cu)-Total			99.7		%		80-120	02-MAR-20
Iron (Fe)-Total			101.2		%		80-120	02-MAR-20
Lead (Pb)-Total			99.5		%		80-120	02-MAR-20
Lithium (Li)-Total			110.5		%		80-120	02-MAR-20
Magnesium (Mg)-Total			102.3		%		80-120	02-MAR-20
Molybdenum (Mo)-Total			105.4		%		80-120	02-MAR-20
Nickel (Ni)-Total			99.7		%		80-120	02-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5012438							
WG3284837-2	LCS							
Potassium (K)-Total			103.4		%		80-120	02-MAR-20
Selenium (Se)-Total			98.5		%		80-120	02-MAR-20
Silicon (Si)-Total			101.7		%		80-120	02-MAR-20
Silver (Ag)-Total			104.0		%		80-120	02-MAR-20
Sodium (Na)-Total			107.3		%		80-120	02-MAR-20
Strontium (Sr)-Total			102.6		%		80-120	02-MAR-20
Thallium (Tl)-Total			99.3		%		80-120	02-MAR-20
Tin (Sn)-Total			99.2		%		80-120	02-MAR-20
Titanium (Ti)-Total			100.4		%		80-120	02-MAR-20
Uranium (U)-Total			102.1		%		80-120	02-MAR-20
Vanadium (V)-Total			99.2		%		80-120	02-MAR-20
Zinc (Zn)-Total			103.0		%		80-120	02-MAR-20
WG3284837-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	02-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	02-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	02-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Iron (Fe)-Total			0.045	B	mg/L		0.01	02-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	02-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	02-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5012438							
WG3284837-1	MB							
Sodium (Na)-Total			<0.050		mg/L		0.05	02-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	02-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	02-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	02-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-MAR-20
Batch	R5014407							
WG3285813-2	LCS							
Aluminum (Al)-Total			104.0		%		80-120	03-MAR-20
Antimony (Sb)-Total			113.6		%		80-120	03-MAR-20
Arsenic (As)-Total			99.95		%		80-120	03-MAR-20
Barium (Ba)-Total			99.0		%		80-120	03-MAR-20
Bismuth (Bi)-Total			101.5		%		80-120	03-MAR-20
Boron (B)-Total			99.1		%		80-120	03-MAR-20
Cadmium (Cd)-Total			100.8		%		80-120	03-MAR-20
Calcium (Ca)-Total			101.1		%		80-120	03-MAR-20
Chromium (Cr)-Total			104.6		%		80-120	03-MAR-20
Cobalt (Co)-Total			102.9		%		80-120	03-MAR-20
Copper (Cu)-Total			100.3		%		80-120	03-MAR-20
Iron (Fe)-Total			98.2		%		80-120	03-MAR-20
Lead (Pb)-Total			101.2		%		80-120	03-MAR-20
Lithium (Li)-Total			99.4		%		80-120	03-MAR-20
Magnesium (Mg)-Total			110.8		%		80-120	03-MAR-20
Manganese (Mn)-Total			103.4		%		80-120	03-MAR-20
Molybdenum (Mo)-Total			101.4		%		80-120	03-MAR-20
Nickel (Ni)-Total			103.9		%		80-120	03-MAR-20
Potassium (K)-Total			96.1		%		80-120	03-MAR-20
Selenium (Se)-Total			109.6		%		80-120	03-MAR-20
Silicon (Si)-Total			102.4		%		80-120	03-MAR-20
Silver (Ag)-Total			108.5		%		80-120	03-MAR-20
Sodium (Na)-Total			114.2		%		80-120	03-MAR-20
Strontium (Sr)-Total			114.3		%		80-120	03-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5014407							
WG3285813-2	LCS							
Thallium (Tl)-Total			103.1		%		80-120	03-MAR-20
Tin (Sn)-Total			104.3		%		80-120	03-MAR-20
Titanium (Ti)-Total			96.7		%		80-120	03-MAR-20
Uranium (U)-Total			104.9		%		80-120	03-MAR-20
Vanadium (V)-Total			101.6		%		80-120	03-MAR-20
Zinc (Zn)-Total			105.1		%		80-120	03-MAR-20
WG3285813-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	03-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	03-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	03-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	03-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	03-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch	R5014407							
WG3285813-1 MB								
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-MAR-20
NH3-L-F-CL	Water							
Batch	R5013870							
WG3285100-10 LCS								
Ammonia as N			104.0		%		85-115	02-MAR-20
WG3285100-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	02-MAR-20
NO2-L-IC-N-CL	Water							
Batch	R5012214							
WG3284922-2 LCS								
Nitrite (as N)			92.1		%		90-110	28-FEB-20
WG3284922-6 LCS								
Nitrite (as N)			98.1		%		90-110	28-FEB-20
WG3284922-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	28-FEB-20
WG3284922-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	28-FEB-20
NO3-L-IC-N-CL	Water							
Batch	R5012214							
WG3284922-2 LCS								
Nitrate (as N)			105.3		%		90-110	28-FEB-20
WG3284922-6 LCS								
Nitrate (as N)			103.4		%		90-110	28-FEB-20
WG3284922-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	28-FEB-20
WG3284922-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	28-FEB-20
OH-CL	Water							
Batch	R5012139							
WG3284823-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-FEB-20
ORP-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5017821							
WG3287281-1	CRM	CL-ORP						
ORP			228		mV		210-230	05-MAR-20
P-T-L-COL-CL	Water							
Batch	R5012378							
WG3285009-26	LCS							
Phosphorus (P)-Total			103.6		%		80-120	02-MAR-20
WG3285009-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-MAR-20
PH-CL	Water							
Batch	R5012139							
WG3284823-14	LCS							
pH			7.07		pH		6.9-7.1	28-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R5011486							
WG3283942-2	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	28-FEB-20
WG3283942-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-FEB-20
SO4-IC-N-CL	Water							
Batch	R5012214							
WG3284922-2	LCS							
Sulfate (SO4)			106.8		%		90-110	28-FEB-20
WG3284922-6	LCS							
Sulfate (SO4)			99.3		%		90-110	28-FEB-20
WG3284922-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-FEB-20
WG3284922-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R5017743							
WG3286323-2	LCS							
Total Dissolved Solids			100.8		%		85-115	04-MAR-20
WG3286323-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-MAR-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5011718							
WG3284263-10	LCS							
Total Kjeldahl Nitrogen			90.5		%		75-125	29-FEB-20
WG3284263-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-FEB-20
TSS-L-CL	Water							
Batch	R5017747							
WG3286324-2	LCS							
Total Suspended Solids			88.2		%		85-115	04-MAR-20
WG3286324-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-20
TURBIDITY-CL	Water							
Batch	R5011666							
WG3284082-8	LCS							
Turbidity			104.5		%		85-115	28-FEB-20
WG3284082-7	MB							
Turbidity			<0.10		NTU		0.1	28-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	27-FEB-20 12:00	05-MAR-20 08:30	0.25	164	hours	EHTR-FM
	2	27-FEB-20 12:00	05-MAR-20 08:30	0.25	164	hours	EHTR-FM
	3	27-FEB-20 09:30	05-MAR-20 08:30	0.25	167	hours	EHTR-FM
pH							
	1	27-FEB-20 12:00	28-FEB-20 15:00	0.25	27	hours	EHTR-FM
	2	27-FEB-20 12:00	28-FEB-20 15:00	0.25	27	hours	EHTR-FM
	3	27-FEB-20 09:30	28-FEB-20 15:00	0.25	30	hours	EHTR-FM
Anions and Nutrients							
Orthophosphate-Dissolved (as P)							
	2	27-FEB-20 12:00	03-MAR-20 13:00	3	5	days	EHT

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2422246 were received on 28-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200227-1600** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	David.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	jared.cayenne@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered By: Field, Lab, etc. Field & Lab, N: None			
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC				
FR_DC2_QTR_2020-01-06_N	FR_DC2	WG	NO	2/27/2020	12:00	G	5	1	1		1		1	1				
FR_MW-1B_QTR_2020-01-06_N	FR_MW-1B	WG	NO	2/27/2020	12:00	G	5	1	1		1		1	1				
GH_PCI_MON_2020-02-03_N	GH_PCI	WS	NO	2/27/2020	9:30	G	7	1	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Samples specified above are preserved and field filtered.	Jared Cayenne	February 27, 2020	<i>[Signature]</i>	2/28/2020

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jared Cayenne	250-421-9457
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	February 27, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

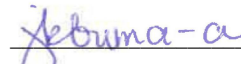
Date Received: 03-MAR-20
Report Date: 21-DEC-20 17:40 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2423574
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200302-1500
Legal Site Desc:

Comments: 21-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.



Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2423574-1 WG 02-MAR-20 14:15 FR_HMW3_QTR_2 020-01-06_N	L2423574-2 WG 02-MAR-20 13:15 HMW1S_QTR_202 0-01-06_N	L2423574-3 WG 02-MAR-20 12:30 HMW1D_QTR_202 0-01-06_N	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	862	3470	3490	
	Hardness (as CaCO3) (mg/L)	502	2580	2710	
	pH (pH)	8.07	8.01	7.90	
	ORP (mV)	475	342	374	
	Total Suspended Solids (mg/L)	6.7	2.4	4.1	
	Total Dissolved Solids (mg/L)	716 ^{DLHC}	3770 ^{DLHC}	3930 ^{DLHC}	
	Turbidity (NTU)	6.55	0.48	0.65	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.2	43.7	58.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	213	396	417	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	213	396	417	
	Ammonia as N (mg/L)	0.136	0.753 ^{DLHC}	0.0185	
	Bicarbonate (HCO3) (mg/L)	260	483	508	
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.61	4.0 ^{DLHC}	2.5 ^{DLHC}	
	Fluoride (F) (mg/L)	0.196	0.18 ^{DLHC}	0.16 ^{DLHC}	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	94.0	96.2	99.1	
	Nitrate (as N) (mg/L)	8.50	110 ^{DLHC}	105 ^{DLHC}	
	Nitrite (as N) (mg/L)	0.0090	<0.0050 ^{DLHC}	0.0194 ^{DLHC}	
	Total Kjeldahl Nitrogen (mg/L)	0.179 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0127 ^{RRV}	0.0035	
	Phosphorus (P)-Total (mg/L)	0.022 ^{DLM}	0.0056 ^{RRV}	0.0052 ^{DLM}	
	Sulfate (SO4) (mg/L)	285	1830 ^{DLHC}	1870 ^{DLHC}	
	Anion Sum (meq/L)	10.8	54.0	54.9	
	Cation Sum (meq/L)	10.2	51.9	54.4	
	Cation - Anion Balance (%)	-3.1	-1.9	-0.4	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.69	1.31	1.33	
	Total Organic Carbon (mg/L)	0.95	1.20	1.29	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0032	0.0042	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00015	0.00034	0.00037	
	Arsenic (As)-Dissolved (mg/L)	0.00019	<0.00020 ^{DLA}	<0.00020 ^{DLA}	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2423574-1 WG 02-MAR-20 14:15 FR_HMW3_QTR_2 020-01-06_N	L2423574-2 WG 02-MAR-20 13:15 HMW1S_QTR_202 0-01-06_N	L2423574-3 WG 02-MAR-20 12:30 HMW1D_QTR_202 0-01-06_N	
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0411	0.0104	0.0119	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.040 ^{DLA}	<0.040 ^{DLA}	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 ^{DLA}	<0.00010 ^{DLA}	
	Boron (B)-Dissolved (mg/L)	0.015	0.046	0.050	
	Cadmium (Cd)-Dissolved (ug/L)	0.0354	0.113	0.095	
	Calcium (Ca)-Dissolved (mg/L)	115	512	552	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00020 ^{DLA}	<0.00020 ^{DLA}	
	Cobalt (Co)-Dissolved (ug/L)	0.18	4.21	4.84	
	Copper (Cu)-Dissolved (mg/L)	0.00360	0.00051 ^{DLA}	0.00138 ^{DLA}	
	Iron (Fe)-Dissolved (mg/L)	0.392	<0.020 ^{DLA}	<0.020 ^{DLA}	
	Lead (Pb)-Dissolved (mg/L)	0.000075	<0.00010 ^{DLA}	<0.00010 ^{DLA}	
	Lithium (Li)-Dissolved (mg/L)	0.0261	0.0874	0.0853	
	Magnesium (Mg)-Dissolved (mg/L)	52.2	316	323	
	Manganese (Mn)-Dissolved (mg/L)	0.114	0.354	0.743	
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000867	0.00090	0.00067	
	Nickel (Ni)-Dissolved (mg/L)	0.00135	0.0407	0.0316	
	Potassium (K)-Dissolved (mg/L)	1.96	7.70	6.63	
	Selenium (Se)-Dissolved (ug/L)	59.9	218	14.5	
	Silicon (Si)-Dissolved (mg/L)	1.50	2.33	2.79	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 ^{DLA}	<0.000020 ^{DLA}	
	Sodium (Na)-Dissolved (mg/L)	1.43	2.33	2.37	
	Strontium (Sr)-Dissolved (mg/L)	0.124	0.311	0.333	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000031 ^{DLA}	<0.000020 ^{DLA}	
	Tin (Sn)-Dissolved (mg/L)	0.00013	<0.00020 ^{DLA}	<0.00020 ^{DLA}	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00203	0.0124	0.0132	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 ^{DLA}	<0.0010 ^{DLA}	
	Zinc (Zn)-Dissolved (mg/L)	0.0028	0.0063	0.0083	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2423574-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2423574-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200302-1500

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2423574

Report Date: 21-DEC-20

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5017686							
WG3287142-5	LCS							
Acidity (as CaCO3)			100.7		%		85-115	04-MAR-20
WG3287142-4	MB							
Acidity (as CaCO3)			1.0		mg/L		2	04-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5018771							
WG3287981-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	05-MAR-20
WG3287981-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5019317							
WG3287613-2	LCS							
Beryllium (Be)-Dissolved			94.0		%		80-120	06-MAR-20
WG3287613-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-MAR-20
BIC-CL								
	Water							
Batch	R5018771							
WG3287981-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	05-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5015186							
WG3286260-10	LCS							
Bromide (Br)			112.2		%		85-115	03-MAR-20
WG3286260-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	03-MAR-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5019419							
WG3288357-6	LCS							
Dissolved Organic Carbon			100.0		%		80-120	06-MAR-20
WG3288357-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-MAR-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2423574

Report Date: 21-DEC-20

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5019419							
WG3288357-6	LCS							
Total Organic Carbon			103.2		%		80-120	06-MAR-20
WG3288357-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	06-MAR-20
CL-IC-N-CL	Water							
Batch	R5015186							
WG3286260-10	LCS							
Chloride (Cl)			103.2		%		90-110	03-MAR-20
WG3286260-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	03-MAR-20
CO3-CL	Water							
Batch	R5018771							
WG3287981-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	05-MAR-20
EC-L-PCT-CL	Water							
Batch	R5018771							
WG3287981-5	LCS							
Conductivity (@ 25C)			96.1		%		90-110	05-MAR-20
WG3287981-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-MAR-20
F-IC-N-CL	Water							
Batch	R5015186							
WG3286260-10	LCS							
Fluoride (F)			102.0		%		90-110	03-MAR-20
WG3286260-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	03-MAR-20
HG-D-CVAA-VA	Water							
Batch	R5018094							
WG3287555-2	LCS							
Mercury (Hg)-Dissolved			100.2		%		80-120	06-MAR-20
WG3287555-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-MAR-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2423574

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5019317							
WG3287613-2	LCS							
Aluminum (Al)-Dissolved			102.4		%		80-120	06-MAR-20
Antimony (Sb)-Dissolved			95.1		%		80-120	06-MAR-20
Arsenic (As)-Dissolved			96.1		%		80-120	06-MAR-20
Barium (Ba)-Dissolved			103.6		%		80-120	06-MAR-20
Bismuth (Bi)-Dissolved			95.2		%		80-120	06-MAR-20
Boron (B)-Dissolved			95.5		%		80-120	06-MAR-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	06-MAR-20
Calcium (Ca)-Dissolved			98.6		%		80-120	06-MAR-20
Chromium (Cr)-Dissolved			104.3		%		80-120	06-MAR-20
Cobalt (Co)-Dissolved			99.6		%		80-120	06-MAR-20
Copper (Cu)-Dissolved			97.6		%		80-120	06-MAR-20
Iron (Fe)-Dissolved			102.9		%		80-120	06-MAR-20
Lead (Pb)-Dissolved			95.4		%		80-120	06-MAR-20
Lithium (Li)-Dissolved			91.5		%		80-120	06-MAR-20
Magnesium (Mg)-Dissolved			106.7		%		80-120	06-MAR-20
Manganese (Mn)-Dissolved			101.8		%		80-120	06-MAR-20
Molybdenum (Mo)-Dissolved			93.2		%		80-120	06-MAR-20
Nickel (Ni)-Dissolved			99.1		%		80-120	06-MAR-20
Potassium (K)-Dissolved			103.9		%		80-120	06-MAR-20
Selenium (Se)-Dissolved			97.9		%		80-120	06-MAR-20
Silicon (Si)-Dissolved			104.2		%		60-140	06-MAR-20
Silver (Ag)-Dissolved			95.5		%		80-120	06-MAR-20
Sodium (Na)-Dissolved			108.6		%		80-120	06-MAR-20
Strontium (Sr)-Dissolved			95.0		%		80-120	06-MAR-20
Thallium (Tl)-Dissolved			95.2		%		80-120	06-MAR-20
Tin (Sn)-Dissolved			95.0		%		80-120	06-MAR-20
Titanium (Ti)-Dissolved			97.3		%		80-120	06-MAR-20
Uranium (U)-Dissolved			95.5		%		80-120	06-MAR-20
Vanadium (V)-Dissolved			102.6		%		80-120	06-MAR-20
Zinc (Zn)-Dissolved			96.7		%		80-120	06-MAR-20
WG3287613-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5019317							
WG3287613-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5017839							
WG3286389-6	LCS							
Ammonia as N			103.9		%		85-115	04-MAR-20
WG3286389-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-20
NO2-L-IC-N-CL								
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5015186							
WG3286260-10 LCS								
Nitrite (as N)			107.5		%		90-110	03-MAR-20
WG3286260-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-MAR-20
NO3-L-IC-N-CL	Water							
Batch	R5015186							
WG3286260-10 LCS								
Nitrate (as N)			103.8		%		90-110	03-MAR-20
WG3286260-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-MAR-20
OH-CL	Water							
Batch	R5018771							
WG3287981-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	05-MAR-20
ORP-CL	Water							
Batch	R5019442							
WG3288389-3 CRM		CL-ORP						
ORP			221		mV		210-230	06-MAR-20
P-T-L-COL-CL	Water							
Batch	R5015766							
WG3286416-18 LCS								
Phosphorus (P)-Total			105.5		%		80-120	04-MAR-20
WG3286416-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-20
PH-CL	Water							
Batch	R5018771							
WG3287981-5 LCS								
pH			7.04		pH		6.9-7.1	05-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5015115							
WG3285775-19 DUP		L2423574-2						
Orthophosphate-Dissolved (as P)		0.0127	0.0124		mg/L	2.1	20	03-MAR-20
WG3285775-18 LCS								
Orthophosphate-Dissolved (as P)			102.3		%		80-120	03-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5015115							
WG3285775-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-MAR-20
SO4-IC-N-CL	Water							
Batch	R5015186							
WG3286260-10 LCS								
Sulfate (SO4)			101.3		%		90-110	03-MAR-20
WG3286260-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5019505							
WG3287668-5 LCS								
Total Dissolved Solids			103.8		%		85-115	06-MAR-20
WG3287668-4 MB								
Total Dissolved Solids			<10		mg/L		10	06-MAR-20
TKN-L-F-CL	Water							
Batch	R5018675							
WG3287812-2 LCS								
Total Kjeldahl Nitrogen			89.5		%		75-125	06-MAR-20
WG3287812-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-MAR-20
TSS-L-CL	Water							
Batch	R5019490							
WG3287682-4 LCS								
Total Suspended Solids			105.6		%		85-115	06-MAR-20
WG3287682-3 MB								
Total Suspended Solids			<1.0		mg/L		1	06-MAR-20
TURBIDITY-CL	Water							
Batch	R5018210							
WG3287289-2 LCS								
Turbidity			104.5		%		85-115	05-MAR-20
WG3287289-1 MB								
Turbidity			<0.10		NTU		0.1	05-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	02-MAR-20 14:15	06-MAR-20 12:00	0.25	94	hours	EHTR-FM
	2	02-MAR-20 13:15	06-MAR-20 12:00	0.25	95	hours	EHTR-FM
	3	02-MAR-20 12:30	06-MAR-20 12:00	0.25	96	hours	EHTR-FM
pH	1	02-MAR-20 14:15	05-MAR-20 15:30	0.25	73	hours	EHTR-FM
	2	02-MAR-20 13:15	05-MAR-20 15:30	0.25	74	hours	EHTR-FM
	3	02-MAR-20 12:30	05-MAR-20 15:30	0.25	75	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2423574 were received on 03-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200302-1500** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	jared.czyenne@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F; Field, L; Lab, FL; Field & Lab, N; None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERV	ANALYSIS REQUESTED										
									F	F	F	N	N						
									H2SO4	HCL	HNO3	NONE	H2SO4						
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
FR_HMW3_QTR_2020-01-06_N	FR_HMW3	WG	No	3/2/2020	14:15	G	5		1	1	1	1	1						
HMWIS_QTR_2020-01-06_N	FR_HMWIS	WG	No	3/2/2020	13:15	G	5		1	1	1	1	1						
HMWID_QTR_2020-01-06_N	FR_HMWID	WG	No	3/2/2020	12:30	G	5		1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples specified above are filtered and preserved.	Britt Anderson	March 2, 2020	<i>pk</i>	3/3 0850

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Britt Anderson	250-425-5335
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	March 2, 2020

pk



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 04-MAR-20
Report Date: 29-DEC-20 15:36 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2424094
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200303-1600
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2424094-1 WS 03-MAR-20 13:30 FR_FRRD_MON_2 020-03-02_N	L2424094-2 WP 03-MAR-20 14:30 FR_POTABLE_MO N_2020-03-02_N	L2424094-3 WG 03-MAR-20 12:30 FR_HMW2_QTR_2 020-01-06_N	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1280	565	3120	
	Hardness (as CaCO3) (mg/L)	775	312	2270	
	pH (pH)	8.18	8.13	7.65	
	ORP (mV)	412	415	449	
	Total Suspended Solids (mg/L)	1.4	<1.0	27.0	
	Total Dissolved Solids (mg/L)	1060 ^{DLHC}	396 ^{DLHC}	3220 ^{DLHC}	
	Turbidity (NTU)	0.14	0.35	12.6	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.6	2.5	40.3	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	289	146	405	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	289	146	405	
	Ammonia as N (mg/L)	0.0145	0.0128	<0.0050	
	Bicarbonate (HCO3) (mg/L)	352	178	494	
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050	<0.25 ^{DLHC}	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	3.7 ^{DLHC}	<0.50	3.6 ^{DLHC}	
	Fluoride (F) (mg/L)	<0.10 ^{DLHC}	0.212	0.15 ^{DLHC}	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	96.8	96.5	98.9	
	Nitrate (as N) (mg/L)	37.1 ^{DLHC}	3.90	80.5 ^{DLHC}	
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010	<0.0050 ^{DLHC}	
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	0.211 ^{TKNI}	<0.050 ^{TKNI}	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0024	0.0011	0.0108	
	Phosphorus (P)-Total (mg/L)	0.0127	<0.0020	0.0329	
	Sulfate (SO4) (mg/L)	369 ^{DLHC}	159	1550 ^{DLHC}	
	Anion Sum (meq/L)	16.2	6.51	46.2	
	Cation Sum (meq/L)	15.7	6.29	45.6	
	Cation - Anion Balance (%)	-1.6	-1.8	-0.6	
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.02	0.88	1.91
Total Organic Carbon (mg/L)		0.92	0.91	1.71	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0037	<0.0030		
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Total (mg/L)	0.00011	<0.00010		
	Barium (Ba)-Total (mg/L)	0.122	0.0740		
	Beryllium (Be)-Total (ug/L)	<0.020	<0.020		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2424094-1 WS 03-MAR-20 13:30 FR_FRRD_MON_2 020-03-02_N	L2424094-2 WP 03-MAR-20 14:30 FR_POTABLE_MO N_2020-03-02_N	L2424094-3 WG 03-MAR-20 12:30 FR_HMW2_QTR_2 020-01-06_N	
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	0.014	<0.010		
	Cadmium (Cd)-Total (ug/L)	0.0428	0.010		
	Calcium (Ca)-Total (mg/L)	184	85.2		
	Chromium (Cr)-Total (mg/L)	0.00016	<0.00010		
	Cobalt (Co)-Total (ug/L)	0.15	<0.10		
	Copper (Cu)-Total (mg/L)	<0.00050	0.0342		
	Iron (Fe)-Total (mg/L)	<0.010	0.027		
	Lead (Pb)-Total (mg/L)	<0.000050	0.000246		
	Lithium (Li)-Total (mg/L)	0.0415	0.0066		
	Magnesium (Mg)-Total (mg/L)	84.3	30.3		
	Manganese (Mn)-Total (mg/L)	0.00077	0.00227		
	Mercury (Hg)-Total (mg/L)		<0.0000050		
	Mercury (Hg)-Total (ug/L)	<0.00050			
	Molybdenum (Mo)-Total (mg/L)	0.000565	0.000630		
	Nickel (Ni)-Total (mg/L)	0.00056	<0.00050		
	Potassium (K)-Total (mg/L)	2.32	0.620		
	Selenium (Se)-Total (ug/L)	117	25.2		
	Silicon (Si)-Total (mg/L)	2.35	1.54		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	3.40	0.743		
	Strontium (Sr)-Total (mg/L)	0.213	0.149		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	0.00459	0.00112		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0642		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	
	Barium (Ba)-Dissolved (mg/L)	0.124	0.0707	0.0120	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.014	<0.010	0.050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2424094-1 WS 03-MAR-20 13:30 FR_FRRD_MON_2 020-03-02_N	L2424094-2 WP 03-MAR-20 14:30 FR_POTABLE_MO N_2020-03-02_N	L2424094-3 WG 03-MAR-20 12:30 FR_HMW2_QTR_2 020-01-06_N		
Grouping	Analyte					
WATER						
Dissolved Metals	Cadmium (Cd)-Dissolved (ug/L)	0.0419	0.0084	0.239		
	Calcium (Ca)-Dissolved (mg/L)	174	77.9	459		
	Chromium (Cr)-Dissolved (mg/L)	0.00014	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.13	<0.10	0.15		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.0357	0.00024		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.021	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000171	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0446	0.0062	0.140		
	Magnesium (Mg)-Dissolved (mg/L)	82.3	28.5	273		
	Manganese (Mn)-Dissolved (mg/L)	0.00050	0.00237	0.0593		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00116 ^{DTMF}	0.000590	0.000465		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0140		
	Potassium (K)-Dissolved (mg/L)	2.38	0.602	7.43		
	Selenium (Se)-Dissolved (ug/L)	124	25.0	607		
	Silicon (Si)-Dissolved (mg/L)	2.20	1.50	1.79		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	3.41	0.729	3.03		
	Strontium (Sr)-Dissolved (mg/L)	0.204	0.137	0.257		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000051		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00454	0.00107	0.00949		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0604	0.0082		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Mercury (Hg)-Total	MS-B	L2424094-2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2424094-1, -2, -3
Matrix Spike	Ammonia as N	MS-B	L2424094-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

Reference Information

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200303-1600

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2424094

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5017686							
WG3287142-5	LCS							
Acidity (as CaCO3)			100.7		%		85-115	04-MAR-20
WG3287142-4	MB							
Acidity (as CaCO3)			1.0		mg/L		2	04-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5019616							
WG3288554-5	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	07-MAR-20
WG3288554-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5019317							
WG3287961-2	LCS							
Beryllium (Be)-Dissolved			95.8		%		80-120	06-MAR-20
WG3287961-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5019317							
WG3287809-2	LCS							
Beryllium (Be)-Total			98.5		%		80-120	06-MAR-20
WG3287809-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	06-MAR-20
BIC-CL								
	Water							
Batch	R5019616							
WG3288554-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5017938							
WG3287402-6	LCS							
Bromide (Br)			91.3		%		85-115	04-MAR-20
WG3287402-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-MAR-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2424094

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5019813							
WG3288581-2	LCS							
Dissolved Organic Carbon			104.5		%		80-120	08-MAR-20
WG3288581-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5019813							
WG3288581-2	LCS							
Total Organic Carbon			107.4		%		80-120	08-MAR-20
WG3288581-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-MAR-20
CL-IC-N-CL	Water							
Batch	R5017938							
WG3287402-6	LCS							
Chloride (Cl)			99.7		%		90-110	04-MAR-20
WG3287402-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	04-MAR-20
CO3-CL	Water							
Batch	R5019616							
WG3288554-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	07-MAR-20
EC-L-PCT-CL	Water							
Batch	R5019616							
WG3288554-5	LCS							
Conductivity (@ 25C)			96.5		%		90-110	07-MAR-20
WG3288554-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-MAR-20
F-IC-N-CL	Water							
Batch	R5017938							
WG3287402-6	LCS							
Fluoride (F)			102.9		%		90-110	04-MAR-20
WG3287402-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-MAR-20
HG-D-CVAA-VA	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Batch R5018094								
WG3287555-6	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	06-MAR-20
WG3287555-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-MAR-20
HG-T-CVAA-VA								
Batch R5018094								
WG3287549-2	LCS							
Mercury (Hg)-Total			99.4		%		80-120	06-MAR-20
WG3287549-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	06-MAR-20
HG-T-U-CVAF-VA								
Batch R5019583								
WG3288452-2	LCS							
Mercury (Hg)-Total			91.6		%		80-120	07-MAR-20
WG3288452-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	07-MAR-20
MET-D-CCMS-VA								
Batch R5019317								
WG3287961-2	LCS							
Aluminum (Al)-Dissolved			96.4		%		80-120	06-MAR-20
Antimony (Sb)-Dissolved			91.8		%		80-120	06-MAR-20
Arsenic (As)-Dissolved			95.6		%		80-120	06-MAR-20
Barium (Ba)-Dissolved			100.1		%		80-120	06-MAR-20
Bismuth (Bi)-Dissolved			103.2		%		80-120	06-MAR-20
Boron (B)-Dissolved			95.6		%		80-120	06-MAR-20
Cadmium (Cd)-Dissolved			97.1		%		80-120	06-MAR-20
Calcium (Ca)-Dissolved			94.7		%		80-120	06-MAR-20
Chromium (Cr)-Dissolved			97.6		%		80-120	06-MAR-20
Cobalt (Co)-Dissolved			96.8		%		80-120	06-MAR-20
Copper (Cu)-Dissolved			95.7		%		80-120	06-MAR-20
Iron (Fe)-Dissolved			95.6		%		80-120	06-MAR-20
Lead (Pb)-Dissolved			98.2		%		80-120	06-MAR-20
Lithium (Li)-Dissolved			95.0		%		80-120	06-MAR-20
Magnesium (Mg)-Dissolved			99.9		%		80-120	06-MAR-20
Manganese (Mn)-Dissolved			99.0		%		80-120	06-MAR-20
Molybdenum (Mo)-Dissolved			96.0		%		80-120	06-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5019317							
WG3287961-2	LCS							
Nickel (Ni)-Dissolved			97.3		%		80-120	06-MAR-20
Potassium (K)-Dissolved			100.3		%		80-120	06-MAR-20
Selenium (Se)-Dissolved			94.7		%		80-120	06-MAR-20
Silicon (Si)-Dissolved			97.9		%		60-140	06-MAR-20
Silver (Ag)-Dissolved			93.5		%		80-120	06-MAR-20
Sodium (Na)-Dissolved			106.8		%		80-120	06-MAR-20
Strontium (Sr)-Dissolved			95.5		%		80-120	06-MAR-20
Thallium (Tl)-Dissolved			101.3		%		80-120	06-MAR-20
Tin (Sn)-Dissolved			95.4		%		80-120	06-MAR-20
Titanium (Ti)-Dissolved			95.9		%		80-120	06-MAR-20
Uranium (U)-Dissolved			98.1		%		80-120	06-MAR-20
Vanadium (V)-Dissolved			98.3		%		80-120	06-MAR-20
Zinc (Zn)-Dissolved			95.2		%		80-120	06-MAR-20
WG3287961-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5019317							
WG3287961-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5019317							
WG3287809-2	LCS							
Aluminum (Al)-Total			101.2		%		80-120	06-MAR-20
Antimony (Sb)-Total			94.7		%		80-120	06-MAR-20
Arsenic (As)-Total			94.3		%		80-120	06-MAR-20
Barium (Ba)-Total			97.2		%		80-120	06-MAR-20
Bismuth (Bi)-Total			108.2		%		80-120	06-MAR-20
Boron (B)-Total			98.7		%		80-120	06-MAR-20
Cadmium (Cd)-Total			97.7		%		80-120	06-MAR-20
Calcium (Ca)-Total			98.2		%		80-120	06-MAR-20
Chromium (Cr)-Total			100.4		%		80-120	06-MAR-20
Cobalt (Co)-Total			99.2		%		80-120	06-MAR-20
Copper (Cu)-Total			96.0		%		80-120	06-MAR-20
Iron (Fe)-Total			90.3		%		80-120	06-MAR-20
Lead (Pb)-Total			96.2		%		80-120	06-MAR-20
Lithium (Li)-Total			96.1		%		80-120	06-MAR-20
Magnesium (Mg)-Total			105.7		%		80-120	06-MAR-20
Manganese (Mn)-Total			101.8		%		80-120	06-MAR-20
Molybdenum (Mo)-Total			92.5		%		80-120	06-MAR-20
Nickel (Ni)-Total			99.8		%		80-120	06-MAR-20
Potassium (K)-Total			101.8		%		80-120	06-MAR-20
Selenium (Se)-Total			95.0		%		80-120	06-MAR-20
Silicon (Si)-Total			103.6		%		80-120	06-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5019317							
WG3287809-2 LCS								
Silver (Ag)-Total			95.9		%		80-120	06-MAR-20
Sodium (Na)-Total			102.3		%		80-120	06-MAR-20
Strontium (Sr)-Total			94.4		%		80-120	06-MAR-20
Thallium (Tl)-Total			97.6		%		80-120	06-MAR-20
Tin (Sn)-Total			96.7		%		80-120	06-MAR-20
Titanium (Ti)-Total			98.1		%		80-120	06-MAR-20
Uranium (U)-Total			97.1		%		80-120	06-MAR-20
Vanadium (V)-Total			101.4		%		80-120	06-MAR-20
Zinc (Zn)-Total			99.0		%		80-120	06-MAR-20
WG3287809-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	06-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	06-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	06-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	06-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	06-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	06-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5019317							
WG3287809-1	MB							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	06-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	06-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	06-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5018148							
WG3287329-6	LCS							
Ammonia as N			109.3		%		85-115	05-MAR-20
WG3287329-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5017938							
WG3287402-6	LCS							
Nitrite (as N)			97.1		%		90-110	04-MAR-20
WG3287402-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-MAR-20
NO3-L-IC-N-CL								
	Water							
Batch	R5017938							
WG3287402-6	LCS							
Nitrate (as N)			103.4		%		90-110	04-MAR-20
WG3287402-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-MAR-20
OH-CL								
	Water							
Batch	R5019616							
WG3288554-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-MAR-20
ORP-CL								
	Water							
Batch	R5020998							
WG3290313-3	CRM	CL-ORP						
ORP			228		mV		210-230	10-MAR-20
WG3290313-5	CRM	CL-ORP						
ORP			228		mV		210-230	10-MAR-20
WG3290313-6	DUP	L2424094-2						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5020998							
WG3290313-6	DUP	L2424094-2						
ORP		415	413	J	mV	2.0	15	10-MAR-20
P-T-L-COL-CL	Water							
Batch	R5019610							
WG3288376-4	LCS							
Phosphorus (P)-Total			97.5		%		80-120	07-MAR-20
WG3288376-3	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-MAR-20
PH-CL	Water							
Batch	R5019616							
WG3288554-5	LCS							
pH			7.05		pH		6.9-7.1	07-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5017368							
WG3286570-13	LCS							
Orthophosphate-Dissolved (as P)			106.7		%		80-120	04-MAR-20
WG3286570-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-MAR-20
SO4-IC-N-CL	Water							
Batch	R5017938							
WG3287402-6	LCS							
Sulfate (SO4)			96.6		%		90-110	04-MAR-20
WG3287402-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5021271							
WG3289474-5	LCS							
Total Dissolved Solids			105.3		%		85-115	10-MAR-20
WG3289474-4	MB							
Total Dissolved Solids			<10		mg/L		10	10-MAR-20
TKN-L-F-CL	Water							
Batch	R5018675							
WG3287812-14	LCS							
Total Kjeldahl Nitrogen			97.0		%		75-125	06-MAR-20
WG3287812-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5018675							
WG3287812-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-MAR-20
TSS-L-CL	Water							
Batch	R5021122							
WG3289191-4 LCS								
Total Suspended Solids			104.6		%		85-115	10-MAR-20
WG3289191-3 MB								
Total Suspended Solids			<1.0		mg/L		1	10-MAR-20
TURBIDITY-CL	Water							
Batch	R5018210							
WG3287289-8 LCS								
Turbidity			103.5		%		85-115	05-MAR-20
WG3287289-7 MB								
Turbidity			<0.10		NTU		0.1	05-MAR-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	03-MAR-20 13:30	10-MAR-20 11:30	0.25	166	hours	EHTR-FM
	2	03-MAR-20 14:30	10-MAR-20 12:15	0.25	166	hours	EHTR-FM
	3	03-MAR-20 12:30	10-MAR-20 12:15	0.25	168	hours	EHTR-FM
pH	1	03-MAR-20 13:30	07-MAR-20 14:00	0.25	96	hours	EHTR-FM
	2	03-MAR-20 14:30	07-MAR-20 14:00	0.25	96	hours	EHTR-FM
	3	03-MAR-20 12:30	07-MAR-20 14:00	0.25	97	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2424094 were received on 04-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200303-1600** TURNAROUND TIME: RUSH:

PROJECT/CUSTOMER INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Forcing River Operation				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Scott Roughhead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com			
Email scott.roughhead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: britt.anderson@teck.com			
Address				Address 2559 29 Street NE				Email 3: scott.roughhead@teck.com			
City Elkford				City Calgary				Email 4: teckcoal@equilonfina.com			
Province BC				Province AB				Email 5: Jared.Cayenne@teck.com			
Postal Code				Postal Code T1Y 7B5				Email 6:			
Country Canada				Country Canada				PO number			
Phone Number 1-250-433-6976				Phone Number 403 407 1794				VPO00680583			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	N	Y	N	Y	N	N	N
FR_FRRD_MON_2020-03-02_N	FR_FRRD	WS	No	3/3/2020	13:30	G	7	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	HCL
FR_POTABLE_MON_2020-03-02_N	FR_POTABLE	WP	No	3/3/2020	14:30	G	7	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/HG-T-CL	TECKCOAL-ROUTINE-VA	HG-T-CVAF-VA
FR_HMW2_QTR_2020-01-06_N	FR_HMW2	WG	No	3/3/200	12:30	G	5								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/APPLICATION	DATE/TIME	ACCEPTED BY/APPLICATION	DATE/TIME
Samples specified above are preserved and field filtered.	Britt Anderson	March 3, 2020	<i>[Signature]</i>	3/3/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Britt Anderson	250-425-5335
Priority (2-3 business days) - 50% surcharge	Sampler's Signature <i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge		March 3, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

[Signature]

[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 15-MAY-20
Report Date: 14-DEC-20 15:55 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2448283
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200514 - 1521
Legal Site Desc:

Comments: 14-DEC-20: Bicarbonate, Carbonate and Hydroxide results added.

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

14-DEC-20 15:55 (MT)

Version: FINAL REV. 2

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2448283-1	L2448283-2	L2448283-3	L2448283-4	L2448283-5
					WS	WS	WS	WS	WS
		14-MAY-20	12:00		14-MAY-20	14-MAY-20	14-MAY-20	14-MAY-20	14-MAY-20
					12:00	14:24	14:40	11:14	11:25
					FR_TRP_QTR_2020-04-06_N	FR_HMW1S_QTR_2020-04-06_N	FR_HMW1D_QTR_2020-04-06_N	FR_09-01-A_QTR_2020-04-06_N	FR_09-01-B_QTR_2020-04-06_N
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0	2440	2390	1120	833			
	Hardness (as CaCO3) (mg/L)	<0.50	2580	2760	895	647			
	pH (pH)	5.65	7.93	7.90	8.16	8.05			
	ORP (mV)	492	461	361	299	463			
	Total Suspended Solids (mg/L)	<1.0	4.5	4.5	1.1	4.9			
	Total Dissolved Solids (mg/L)	<10	3710 ^{DLHC}	3960 ^{DLHC}	1390 ^{DLHC}	846 ^{DLHC}			
	Turbidity (NTU)	<0.10	0.24	0.63	<0.10	0.74			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.3	10.4	12.1	2.1	2.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	210	209	185	228			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	210	209	185	228			
	Ammonia as N (mg/L)	0.0176 ^{RRV}	0.692 ^{DLHC}	0.0319	0.0089	0.0315			
	Bicarbonate (HCO3) (mg/L)	<5.0	256 ^{DLDS}	254 ^{DLDS}	226 ^{DLDS}	177			
	Bromide (Br) (mg/L)	<0.050	<0.25	<0.25	<0.25	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	<0.50	<2.5 ^{DLDS}	2.8 ^{DLDS}	<2.5 ^{DLDS}	1.93			
	Fluoride (F) (mg/L)	<0.020	0.24 ^{DLDS}	0.22 ^{DLDS}	0.16 ^{DLDS}	0.157			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	0.0	107	112	113	107			
	Nitrate (as N) (mg/L)	<0.0050	116 ^{DLDS}	113 ^{DLDS}	52.4 ^{DLDS}	21.2			
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLDS}	0.0275 ^{DLDS}	<0.0050 ^{DLDS}	0.0072 ^{TKNI}			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0018	0.0025 ^{RRV}	0.0024			
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020 ^{RRV}	0.0035 ^{DLDS}			
	Sulfate (SO4) (mg/L)	<0.30	1720 ^{DLDS}	1790 ^{DLDS}	415 ^{DLDS}	294			
	Anion Sum (meq/L)	<0.10	48.3	49.6	16.1	12.2			
	Cation Sum (meq/L)	<0.10	51.9	55.4	18.1	13.1			
	Cation - Anion Balance (%)	0.0	3.5	5.5	5.9	3.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.95	1.03	0.51	0.57			
	Total Organic Carbon (mg/L)	<0.50	0.83	0.90	0.57	0.83			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00032	0.00039	0.00022	0.00012			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00020 ^{DLM}	<0.00020 ^{DLM}	<0.00010	<0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2448283-6 WS 14-MAY-20 12:18 FR_09-02- A_QTR_2020-04- 06_N	L2448283-7 WS 14-MAY-20 12:29 FR_09-02- B_QTR_2020-04- 06_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	965	701		
	Hardness (as CaCO3) (mg/L)	764	490		
	pH (pH)	8.04	8.15		
	ORP (mV)	353	454		
	Total Suspended Solids (mg/L)	2.3	1.5		
	Total Dissolved Solids (mg/L)	1030 ^{DLHC}	647 ^{DLHC}		
	Turbidity (NTU)	1.41	0.66		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.6	2.4		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	145	134		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	145	134		
	Ammonia as N (mg/L)	0.0262	<0.0050		
	Bicarbonate (HCO3) (mg/L)	177	163		
	Bromide (Br) (mg/L)	<0.25 ^{DLDS}	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<2.5 ^{DLDS}	1.01		
	Fluoride (F) (mg/L)	0.18 ^{DLDS}	0.165		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	116	114		
	Nitrate (as N) (mg/L)	42.4 ^{DLDS}	15.1		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLDS}	<0.0010 ^{TKNI}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	<0.050 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0036	0.0025		
	Phosphorus (P)-Total (mg/L)	0.0036	0.0021		
	Sulfate (SO4) (mg/L)	354 ^{DLDS}	237		
	Anion Sum (meq/L)	13.3	8.73		
	Cation Sum (meq/L)	15.4	9.93		
	Cation - Anion Balance (%)	7.4	6.5		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.77	0.62		
	Total Organic Carbon (mg/L)	0.89	0.76		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00019	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2448283-1	L2448283-2	L2448283-3	L2448283-4	L2448283-5
					WS	WS	WS	WS	WS
		14-MAY-20	12:00	FR_TRP_QTR_2020-04-06_N	14-MAY-20	14-MAY-20	14-MAY-20	14-MAY-20	14-MAY-20
					12:00	14:24	14:40	11:14	11:25
					FR_TRP_QTR_2020-04-06_N	FR_HMW1S_QTR_2020-04-06_N	FR_HMW1D_QTR_2020-04-06_N	FR_09-01-A_QTR_2020-04-06_N	FR_09-01-B_QTR_2020-04-06_N
Grouping	Analyte								
WATER									
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.00906	0.0100	0.0909	0.0927			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.040 ^{DLM}	<0.040 ^{DLM}	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 ^{DLM}	<0.00010 ^{DLM}	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	0.044	0.048	0.021	0.016			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.122	0.105	0.0349	0.0247			
	Calcium (Ca)-Dissolved (mg/L)	<0.050	561	608	205	150			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00020 ^{DLM}	<0.00020 ^{DLM}	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	3.93	5.00	<0.10	0.17			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00040 ^{DLM}	<0.00040 ^{DLM}	0.00021	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.020 ^{DLM}	<0.020 ^{DLM}	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 ^{DLM}	<0.00010 ^{DLM}	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0847	0.0817	0.0675	0.0514			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	287	301	93.3	65.9			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.328	0.696	<0.00010	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.00093	0.00068	0.000791	0.000715			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0396	0.0325	<0.00050	0.00056			
	Potassium (K)-Dissolved (mg/L)	<0.050	7.08	6.47	3.39	2.61			
	Selenium (Se)-Dissolved (ug/L)	<0.050	205	17.1	190	75.7			
	Silicon (Si)-Dissolved (mg/L)	<0.050	2.16	2.67	2.05	2.05			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 ^{DLA}	<0.000020 ^{DLA}	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050	2.04	2.26	3.40	3.30			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.332	0.366	0.245	0.192			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000029 ^{DLM}	<0.000020 ^{DLM}	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 ^{DLM}	<0.00020 ^{DLM}	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.0122	0.0120	0.00650	0.00348			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 ^{DLM}	<0.0010 ^{DLM}	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0191 ^{RRV}	0.0053	0.0086	<0.0010	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2448283-6 WS 14-MAY-20 12:18 FR_09-02- A_QTR_2020-04- 06_N	L2448283-7 WS 14-MAY-20 12:29 FR_09-02- B_QTR_2020-04- 06_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.158	0.108		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	0.0228	0.0143		
	Calcium (Ca)-Dissolved (mg/L)	174	117		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0453	0.0351		
	Magnesium (Mg)-Dissolved (mg/L)	80.4	48.1		
	Manganese (Mn)-Dissolved (mg/L)	0.00015	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00167	0.00103		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	1.95	1.53		
	Selenium (Se)-Dissolved (ug/L)	146	57.3		
	Silicon (Si)-Dissolved (mg/L)	1.73	1.57		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	2.48	2.28		
	Strontium (Sr)-Dissolved (mg/L)	0.241	0.168		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00448	0.00263		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2448283-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
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Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL	Water	pH	APHA 4500 H-Electrode
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pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
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Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200514 - 1521

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2448283

Report Date: 14-DEC-20

Page 1 of 12

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5094898							
WG3327249-2	LCS							
Acidity (as CaCO3)			105.8		%		85-115	21-MAY-20
WG3327249-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	21-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5092350							
WG3325534-6	DUP	L2448283-2						
Alkalinity, Total (as CaCO3)		210	191		mg/L	9.4	20	17-MAY-20
WG3325534-5	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	17-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-2	LCS							
Beryllium (Be)-Dissolved			93.0		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-MAY-20
BIC-CL								
	Water							
Batch	R5092350							
WG3325534-6	DUP	L2448283-2						
Bicarbonate (HCO3)		256	233		mg/L	9.4	20	17-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-2	LCS							
Bromide (Br)			96.4		%		85-115	17-MAY-20
WG3328693-6	LCS							
Bromide (Br)			100.5		%		85-115	17-MAY-20
WG3328693-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
WG3328693-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095622							
WG3328110-7	DUP	L2448283-7						
Dissolved Organic Carbon		0.62	0.66		mg/L	5.6	20	23-MAY-20
WG3328110-2	LCS							
Dissolved Organic Carbon			106.4		%		80-120	23-MAY-20



Quality Control Report

Workorder: L2448283

Report Date: 14-DEC-20

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095622							
WG3328110-6	LCS							
Dissolved Organic Carbon			103.0		%		80-120	23-MAY-20
WG3328110-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-8	MS	L2448283-7						
Dissolved Organic Carbon			112.1		%		70-130	23-MAY-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5095622							
WG3328110-7	DUP	L2448283-7						
Total Organic Carbon		0.76	0.66		mg/L	15	20	23-MAY-20
WG3328110-2	LCS							
Total Organic Carbon			104.1		%		80-120	23-MAY-20
WG3328110-6	LCS							
Total Organic Carbon			103.1		%		80-120	23-MAY-20
WG3328110-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-8	MS	L2448283-7						
Total Organic Carbon			120.6		%		70-130	23-MAY-20
CL-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-2	LCS							
Chloride (Cl)			105.4		%		90-110	17-MAY-20
WG3328693-6	LCS							
Chloride (Cl)			102.8		%		90-110	17-MAY-20
WG3328693-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
WG3328693-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
CO3-CL								
	Water							
Batch	R5092350							
WG3325534-6	DUP	L2448283-2						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	17-MAY-20
EC-L-PCT-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch	R5092350							
WG3325534-6	DUP	L2448283-2						
Conductivity (@ 25C)		2440	2390		uS/cm	2.1	10	17-MAY-20
WG3325534-5	LCS							
Conductivity (@ 25C)			98.8		%		90-110	17-MAY-20
F-IC-N-CL								
Batch	R5096943							
WG3328693-2	LCS							
Fluoride (F)			101.9		%		90-110	17-MAY-20
WG3328693-6	LCS							
Fluoride (F)			100.8		%		90-110	17-MAY-20
WG3328693-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20
WG3328693-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20
HG-D-CVAA-VA								
Batch	R5093659							
WG3326352-2	LCS							
Mercury (Hg)-Dissolved			103.1		%		80-120	21-MAY-20
WG3326352-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-MAY-20
MET-D-CCMS-VA								
Batch	R5095710							
WG3327554-2	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	22-MAY-20
Antimony (Sb)-Dissolved			94.6		%		80-120	22-MAY-20
Arsenic (As)-Dissolved			94.4		%		80-120	22-MAY-20
Barium (Ba)-Dissolved			94.5		%		80-120	22-MAY-20
Bismuth (Bi)-Dissolved			99.4		%		80-120	22-MAY-20
Boron (B)-Dissolved			87.3		%		80-120	22-MAY-20
Cadmium (Cd)-Dissolved			98.5		%		80-120	22-MAY-20
Calcium (Ca)-Dissolved			103.9		%		80-120	22-MAY-20
Chromium (Cr)-Dissolved			97.5		%		80-120	22-MAY-20
Cobalt (Co)-Dissolved			95.8		%		80-120	22-MAY-20
Copper (Cu)-Dissolved			94.6		%		80-120	22-MAY-20
Iron (Fe)-Dissolved			87.4		%		80-120	22-MAY-20
Lead (Pb)-Dissolved			95.2		%		80-120	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-2	LCS							
Lithium (Li)-Dissolved			92.0		%		80-120	22-MAY-20
Magnesium (Mg)-Dissolved			90.7		%		80-120	22-MAY-20
Manganese (Mn)-Dissolved			95.1		%		80-120	22-MAY-20
Molybdenum (Mo)-Dissolved			99.0		%		80-120	22-MAY-20
Nickel (Ni)-Dissolved			95.3		%		80-120	22-MAY-20
Potassium (K)-Dissolved			97.2		%		80-120	22-MAY-20
Selenium (Se)-Dissolved			101.9		%		80-120	22-MAY-20
Silicon (Si)-Dissolved			101.5		%		60-140	22-MAY-20
Silver (Ag)-Dissolved			98.9		%		80-120	22-MAY-20
Sodium (Na)-Dissolved			100.4		%		80-120	22-MAY-20
Strontium (Sr)-Dissolved			103.5		%		80-120	22-MAY-20
Thallium (Tl)-Dissolved			92.0		%		80-120	22-MAY-20
Tin (Sn)-Dissolved			96.6		%		80-120	22-MAY-20
Titanium (Ti)-Dissolved			86.8		%		80-120	22-MAY-20
Uranium (U)-Dissolved			98.3		%		80-120	22-MAY-20
Vanadium (V)-Dissolved			96.3		%		80-120	22-MAY-20
Zinc (Zn)-Dissolved			96.3		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Batch	R5096797							
WG3328389-2	LCS							
Aluminum (Al)-Dissolved			102.5		%		80-120	25-MAY-20
Antimony (Sb)-Dissolved			99.9		%		80-120	25-MAY-20
Arsenic (As)-Dissolved			98.5		%		80-120	25-MAY-20
Barium (Ba)-Dissolved			102.3		%		80-120	25-MAY-20
Bismuth (Bi)-Dissolved			99.2		%		80-120	25-MAY-20
Boron (B)-Dissolved			83.3		%		80-120	25-MAY-20
Cadmium (Cd)-Dissolved			96.8		%		80-120	25-MAY-20
Calcium (Ca)-Dissolved			93.0		%		80-120	25-MAY-20
Chromium (Cr)-Dissolved			101.3		%		80-120	25-MAY-20
Cobalt (Co)-Dissolved			98.6		%		80-120	25-MAY-20
Copper (Cu)-Dissolved			97.2		%		80-120	25-MAY-20
Iron (Fe)-Dissolved			95.7		%		80-120	25-MAY-20
Lead (Pb)-Dissolved			101.7		%		80-120	25-MAY-20
Lithium (Li)-Dissolved			90.9		%		80-120	25-MAY-20
Magnesium (Mg)-Dissolved			100.2		%		80-120	25-MAY-20
Manganese (Mn)-Dissolved			101.0		%		80-120	25-MAY-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	25-MAY-20
Nickel (Ni)-Dissolved			97.7		%		80-120	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5096797							
WG3328389-2	LCS							
Potassium (K)-Dissolved			103.0		%		80-120	25-MAY-20
Selenium (Se)-Dissolved			103.0		%		80-120	25-MAY-20
Silicon (Si)-Dissolved			95.6		%		60-140	25-MAY-20
Silver (Ag)-Dissolved			97.9		%		80-120	25-MAY-20
Sodium (Na)-Dissolved			103.7		%		80-120	25-MAY-20
Strontium (Sr)-Dissolved			106.7		%		80-120	25-MAY-20
Thallium (Tl)-Dissolved			100.5		%		80-120	25-MAY-20
Tin (Sn)-Dissolved			100.0		%		80-120	25-MAY-20
Titanium (Ti)-Dissolved			95.0		%		80-120	25-MAY-20
Uranium (U)-Dissolved			97.9		%		80-120	25-MAY-20
Vanadium (V)-Dissolved			103.6		%		80-120	25-MAY-20
Zinc (Zn)-Dissolved			98.1		%		80-120	25-MAY-20
WG3328389-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5096797							
WG3328389-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5096597							
WG3328628-22	LCS							
Ammonia as N			108.9		%		85-115	25-MAY-20
WG3328628-26	LCS							
Ammonia as N			100.9		%		85-115	25-MAY-20
WG3328628-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-20
WG3328628-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-2	LCS							
Nitrite (as N)			105.1		%		90-110	17-MAY-20
WG3328693-6	LCS							
Nitrite (as N)			101.7		%		90-110	17-MAY-20
WG3328693-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
WG3328693-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-2	LCS							
Nitrate (as N)			105.8		%		90-110	17-MAY-20
WG3328693-6	LCS							
Nitrate (as N)			103.4		%		90-110	17-MAY-20
WG3328693-1	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL		Water						
Batch	R5096943							
WG3328693-6	LCS							
Sulfate (SO4)			104.5		%		90-110	17-MAY-20
WG3328693-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
WG3328693-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
SOLIDS-TDS-CL		Water						
Batch	R5095263							
WG3326604-2	LCS							
Total Dissolved Solids			96.2		%		85-115	21-MAY-20
WG3326604-5	LCS							
Total Dissolved Solids			100.3		%		85-115	21-MAY-20
WG3326604-1	MB							
Total Dissolved Solids			<10		mg/L		10	21-MAY-20
WG3326604-4	MB							
Total Dissolved Solids			<10		mg/L		10	21-MAY-20
TKN-L-F-CL		Water						
Batch	R5096876							
WG3328687-13	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	25-MAY-20
WG3328687-17	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	25-MAY-20
WG3328687-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	25-MAY-20
WG3328687-21	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	25-MAY-20
WG3328687-25	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	25-MAY-20
WG3328687-5	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	25-MAY-20
WG3328687-9	LCS							
Total Kjeldahl Nitrogen			86.0		%		75-125	25-MAY-20
WG3328687-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5096876							
WG3328687-20 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-24 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
TSS-L-CL		Water						
Batch	R5095261							
WG3326544-2 LCS								
Total Suspended Solids			94.3		%		85-115	21-MAY-20
WG3326544-5 LCS								
Total Suspended Solids			108.5		%		85-115	21-MAY-20
WG3326544-1 MB								
Total Suspended Solids			<1.0		mg/L		1	21-MAY-20
WG3326544-4 MB								
Total Suspended Solids			<1.0		mg/L		1	21-MAY-20
TURBIDITY-CL		Water						
Batch	R5089048							
WG3324774-20 LCS								
Turbidity			104.0		%		85-115	16-MAY-20
WG3324774-19 MB								
Turbidity			<0.10		NTU		0.1	16-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	14-MAY-20 12:00	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
	2	14-MAY-20 14:24	25-MAY-20 20:00	0.25	270	hours	EHTR-FM
	3	14-MAY-20 14:40	25-MAY-20 20:00	0.25	269	hours	EHTR-FM
	4	14-MAY-20 11:14	25-MAY-20 20:00	0.25	273	hours	EHTR-FM
	5	14-MAY-20 11:25	25-MAY-20 20:00	0.25	273	hours	EHTR-FM
	6	14-MAY-20 12:18	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
	7	14-MAY-20 12:29	25-MAY-20 20:00	0.25	271	hours	EHTR-FM
pH							
	1	14-MAY-20 12:00	17-MAY-20 13:00	0.25	73	hours	EHTR-FM
	2	14-MAY-20 14:24	17-MAY-20 13:00	0.25	71	hours	EHTR-FM
	3	14-MAY-20 14:40	17-MAY-20 13:00	0.25	70	hours	EHTR-FM
	4	14-MAY-20 11:14	17-MAY-20 13:00	0.25	74	hours	EHTR-FM
	5	14-MAY-20 11:25	17-MAY-20 13:00	0.25	74	hours	EHTR-FM
	6	14-MAY-20 12:18	17-MAY-20 13:00	0.25	73	hours	EHTR-FM
	7	14-MAY-20 12:29	17-MAY-20 13:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2448283 were received on 15-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200514 - 1521		TURNAROUND TIME:			RUSH:				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job#: Fording River Operation				Lab Name: ALS Calgary			Report Format / Distribution		
Project Manager: Scott Roughhead				Lab Contact: Lyudmyla Shvets			Excel X PDF X EDD X		
Email: scott.roughhead@teck.com				Email: Lyudmyla.Shvets@ALSGlobal.com			Email 1: david.burroughs@teck.com X X X		
Address:				Address: 2559 29 Street NE			Email 2: britt.anderson@teck.com X X X		
City: Elkford Province: BC				City: Calgary Province: AB			Email 3: scott.roughhead@teck.com X X X		
Postal Code: Country: Canada				Postal Code: T1Y 7B5 Country: Canada			Email 4: teckcoal@cgisonline.com X		
Phone Number: 1-250-433-6976				Phone Number: 403 407 1794			Email 5: jared.cayenne@teck.com X X X		
							Email 6: kateigh.mccallum@teck.com X X X		
							PO number: VPO00680583		

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, PL: Field & Lab, N: None



L2448283-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N	N	N	N	N
								ALS_Package-DOC	ALS_Package-TRN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY
FR_TRP_QTR_2020-04-06_N	FR_TRP	WS	NO	14-May-2020	12:00	G	5	1	1	1		1		1				
FR_HMWIS_QTR_2020-04-06_N	FR_HMWIS	WS	NO	14-May-2020	14:24	G	5	1	1	1		1		1				
FR_HMWID_QTR_2020-04-06_N	FR_HMWID	WS	NO	14-May-2020	14:40	G	5	1	1	1		1		1				
FR_09-01-A_QTR_2020-04-06_N	FR_09-01-A	WS	NO	14-May-2020	11:14	G	5	1	1	1		1		1				
FR_09-01-B_QTR_2020-04-06_N	FR_09-01-B	WS	NO	14-May-2020	11:25	G	5	1	1	1		1		1				
FR_09-02-A_QTR_2020-04-06_N	FR_09-02-A	WS	NO	14-May-2020	12:18	G	5	1	1	1		1		1				
FR_09-02-B_QTR_2020-04-06_N	FR_09-02-B	WS	NO	14-May-2020	12:29	G	5	1	1	1		1		1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Kaileigh McCallum	DATE/TIME May 14, 2020	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME <i>[Signature]</i>
--	--	---------------------------	---	---------------------------------

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Kaileigh McCallum		Mobile #	519-760-2658
Sampler's Signature			Date/Time	May 14, 2020

[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 16-MAY-20
Report Date: 18-DEC-20 13:40 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2448416
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 20200515 - 1434
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

18-DEC-20 13:40 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2448416-1 WS 15-MAY-20 09:48 FR_FLD_QTR_202 0-04-06_N	L2448416-2 WS 15-MAY-20 09:48 FR_HMW5_QTR_2 020-04-06_N	L2448416-3 WS 15-MAY-20 11:25 FR_HMW3_QTR_2 020-04-06_N	L2448416-4 WS 15-MAY-20 13:49 FR_09-04- A_QTR_2020-04- 06_N	L2448416-5 WS 15-MAY-20 13:25 FR_09-04- B_QTR_2020-04- 06_N	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0	325	819	946	970
	Hardness (as CaCO3) (mg/L)	<0.50	182	552	727	734
	pH (pH)	5.37	8.30	8.22	8.17	8.03
	ORP (mV)	471	332	334	323	351
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.5	<1.0	2.9
	Total Dissolved Solids (mg/L)	<10	230	758	902	929
	Turbidity (NTU)	<0.10	0.35	2.83	0.25	0.36
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.4	<1.0	1.6	2.7	4.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	145	195	341	325
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	145	195	341	325
	Ammonia as N (mg/L)	0.0050 ^{RRV}	0.0609	0.0543	0.0163	0.0084
	Bicarbonate (HCO3) (mg/L)	<5.0	176	238	417	396
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.25 ^{DLDS}	<0.25 ^{DLDS}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	<0.50	0.98	<0.50	7.1 ^{DLDS}	7.1 ^{DLDS}
	Fluoride (F) (mg/L)	<0.020	0.530	0.272	0.38 ^{DLDS}	0.38 ^{DLDS}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	0.0	103	102	104	105
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	10.9	<0.025 ^{DLDS}	<0.025 ^{DLDS}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0066	<0.0050 ^{DLDS}	<0.0050 ^{DLDS}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.11 ^{DLM}	<0.050 ^{TKNI}	0.052	0.057
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0205	0.0044	0.0044 ^{RRV}	0.0040
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0186	0.0106	<0.0020 ^{RRV}	0.0045
	Sulfate (SO4) (mg/L)	<0.30	52.3	298	357 ^{DLDS}	371 ^{DLDS}
	Anion Sum (meq/L)	<0.10	4.03	10.9	14.5	14.4
	Cation Sum (meq/L)	<0.10	4.16	11.1	15.0	15.2
	Cation - Anion Balance (%)	0.0	1.6	1.1	1.9	2.5
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	0.56	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	1.01	0.57	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0045	0.0095	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00015	0.00012	0.00012
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00010	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2448416-6 WS 15-MAY-20 13:25 FR_DC2_QTR_202 0-04-06_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	913			
	Hardness (as CaCO3) (mg/L)	729			
	pH (pH)	8.01			
	ORP (mV)	302			
	Total Suspended Solids (mg/L)	1.5			
	Total Dissolved Solids (mg/L)	882			
	Turbidity (NTU)	0.77			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	279			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	279			
	Ammonia as N (mg/L)	0.0050 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	340			
	Bromide (Br) (mg/L)	<0.25 ^{DLDS}			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	7.2 ^{DLDS}			
	Fluoride (F) (mg/L)	0.37 ^{DLDS}			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	112			
	Nitrate (as N) (mg/L)	<0.025 ^{DLDS}			
	Nitrite (as N) (mg/L)	<0.0050 ^{DLDS}			
	Total Kjeldahl Nitrogen (mg/L)	0.079			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0040			
	Phosphorus (P)-Total (mg/L)	0.0043			
	Sulfate (SO4) (mg/L)	370 ^{DLDS}			
	Anion Sum (meq/L)	13.5			
	Cation Sum (meq/L)	15.1			
	Cation - Anion Balance (%)	5.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

18-DEC-20 13:40 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2448416-1 WS 15-MAY-20 09:48 FR_FLD_QTR_202 0-04-06_N	L2448416-2 WS 15-MAY-20 09:48 FR_HMW5_QTR_2 020-04-06_N	L2448416-3 WS 15-MAY-20 11:25 FR_HMW3_QTR_2 020-04-06_N	L2448416-4 WS 15-MAY-20 13:49 FR_09-04- A_QTR_2020-04- 06_N	L2448416-5 WS 15-MAY-20 13:25 FR_09-04- B_QTR_2020-04- 06_N	
Grouping	Analyte					
WATER						
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.206	0.0344	0.0874	0.0886
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.042	0.015	0.032	0.031
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.0386	1.11	1.09
	Calcium (Ca)-Dissolved (mg/L)	<0.050	42.1	133	160	162
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.12	1.29	1.32
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	0.00033	0.00287
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.074	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000083
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.204	0.0277	0.0935	0.0907
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	18.6	53.4	79.7	79.9
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0457	0.0833	1.35	1.45
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.000851	0.00184	0.00171
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00138	0.00828	0.00860
	Potassium (K)-Dissolved (mg/L)	<0.050	0.692	1.90	5.68	5.26
	Selenium (Se)-Dissolved (ug/L)	<0.050	6.21	84.7	0.148	0.211
	Silicon (Si)-Dissolved (mg/L)	<0.050	2.42	1.44	2.64	2.69
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	<0.050	11.8	1.17	7.29	7.46
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.383	0.146	0.231	0.235
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000011	0.000050	0.000058
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000015	0.00223	0.00636	0.00608
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0023	0.0041	0.0052

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2448416-6 WS 15-MAY-20 13:25 FR_DC2_QTR_202 0-04-06_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0869			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.030			
	Cadmium (Cd)-Dissolved (ug/L)	1.04			
	Calcium (Ca)-Dissolved (mg/L)	161			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	1.29			
	Copper (Cu)-Dissolved (mg/L)	0.00032			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0915			
	Magnesium (Mg)-Dissolved (mg/L)	79.5			
	Manganese (Mn)-Dissolved (mg/L)	1.44			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00174			
	Nickel (Ni)-Dissolved (mg/L)	0.00875			
	Potassium (K)-Dissolved (mg/L)	5.67			
	Selenium (Se)-Dissolved (ug/L)	0.259			
	Silicon (Si)-Dissolved (mg/L)	2.65			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.54			
	Strontium (Sr)-Dissolved (mg/L)	0.233			
	Thallium (Tl)-Dissolved (mg/L)	0.000060			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00599			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0051			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2448416-1, -2, -3, -4, -5, -6
Matrix Spike	Ammonia as N	MS-B	L2448416-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200515 - 1434

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2448416

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5094898							
WG3327249-8	LCS							
Acidity (as CaCO3)			102.8		%		85-115	21-MAY-20
WG3327249-7	MB							
Acidity (as CaCO3)			1.3		mg/L		2	21-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5094241							
WG3326514-14	LCS							
Alkalinity, Total (as CaCO3)			98.7		%		85-115	20-MAY-20
WG3326514-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-2	LCS							
Beryllium (Be)-Dissolved			93.0		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-MAY-20
BIC-CL								
	Water							
Batch	R5094241							
WG3326514-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	20-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-11	DUP	L2448416-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10	LCS							
Bromide (Br)			99.8		%		85-115	17-MAY-20
WG3328693-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
WG3328693-12	MS	L2448416-1						
Bromide (Br)			103.7		%		75-125	17-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095737							
WG3328297-14	LCS							
Dissolved Organic Carbon			90.8		%		80-120	24-MAY-20
WG3328297-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5095737							
WG3328297-14 LCS								
Total Organic Carbon			87.3		%		80-120	24-MAY-20
WG3328297-13 MB								
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
CL-IC-N-CL	Water							
Batch	R5096943							
WG3328693-11 DUP		L2448416-1						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10 LCS								
Chloride (Cl)			101.5		%		90-110	17-MAY-20
WG3328693-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
WG3328693-12 MS		L2448416-1						
Chloride (Cl)			109.2		%		75-125	17-MAY-20
CO3-CL	Water							
Batch	R5094241							
WG3326514-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	20-MAY-20
EC-L-PCT-CL	Water							
Batch	R5094241							
WG3326514-14 LCS								
Conductivity (@ 25C)			97.1		%		90-110	20-MAY-20
WG3326514-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAY-20
F-IC-N-CL	Water							
Batch	R5096943							
WG3328693-11 DUP		L2448416-1						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10 LCS								
Fluoride (F)			101.1		%		90-110	17-MAY-20
WG3328693-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20
WG3328693-12 MS		L2448416-1						
Fluoride (F)			94.4		%		75-125	17-MAY-20
HG-D-CVAA-VA	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5093659							
WG3326352-11	DUP	L2448416-5						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	21-MAY-20
WG3326352-10	LCS							
Mercury (Hg)-Dissolved			105.2		%		80-120	21-MAY-20
WG3326352-6	LCS							
Mercury (Hg)-Dissolved			104.4		%		80-120	21-MAY-20
WG3326352-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	21-MAY-20
WG3326352-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	21-MAY-20
WG3326352-12	MS	L2448416-6						
Mercury (Hg)-Dissolved			103.4		%		70-130	21-MAY-20
MET-D-CCMS-VA								
Water								
Batch	R5095710							
WG3327554-2	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	22-MAY-20
Antimony (Sb)-Dissolved			94.6		%		80-120	22-MAY-20
Arsenic (As)-Dissolved			94.4		%		80-120	22-MAY-20
Barium (Ba)-Dissolved			94.5		%		80-120	22-MAY-20
Bismuth (Bi)-Dissolved			99.4		%		80-120	22-MAY-20
Boron (B)-Dissolved			87.3		%		80-120	22-MAY-20
Cadmium (Cd)-Dissolved			98.5		%		80-120	22-MAY-20
Calcium (Ca)-Dissolved			103.9		%		80-120	22-MAY-20
Chromium (Cr)-Dissolved			97.5		%		80-120	22-MAY-20
Cobalt (Co)-Dissolved			95.8		%		80-120	22-MAY-20
Copper (Cu)-Dissolved			94.6		%		80-120	22-MAY-20
Iron (Fe)-Dissolved			87.4		%		80-120	22-MAY-20
Lead (Pb)-Dissolved			95.2		%		80-120	22-MAY-20
Lithium (Li)-Dissolved			92.0		%		80-120	22-MAY-20
Magnesium (Mg)-Dissolved			90.7		%		80-120	22-MAY-20
Manganese (Mn)-Dissolved			95.1		%		80-120	22-MAY-20
Molybdenum (Mo)-Dissolved			99.0		%		80-120	22-MAY-20
Nickel (Ni)-Dissolved			95.3		%		80-120	22-MAY-20
Potassium (K)-Dissolved			97.2		%		80-120	22-MAY-20
Selenium (Se)-Dissolved			101.9		%		80-120	22-MAY-20
Silicon (Si)-Dissolved			101.5		%		60-140	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-2	LCS							
Silver (Ag)-Dissolved			98.9		%		80-120	22-MAY-20
Sodium (Na)-Dissolved			100.4		%		80-120	22-MAY-20
Strontium (Sr)-Dissolved			103.5		%		80-120	22-MAY-20
Thallium (Tl)-Dissolved			92.0		%		80-120	22-MAY-20
Tin (Sn)-Dissolved			96.6		%		80-120	22-MAY-20
Titanium (Ti)-Dissolved			86.8		%		80-120	22-MAY-20
Uranium (U)-Dissolved			98.3		%		80-120	22-MAY-20
Vanadium (V)-Dissolved			96.3		%		80-120	22-MAY-20
Zinc (Zn)-Dissolved			96.3		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5098750							
WG3329264-15	DUP	L2448416-6						
Ammonia as N		0.0050	0.0055		mg/L	9.5	20	26-MAY-20
WG3329264-10	LCS							
Ammonia as N			94.3		%		85-115	26-MAY-20
WG3329264-14	LCS							
Ammonia as N			95.7		%		85-115	26-MAY-20
WG3329264-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
WG3329264-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
WG3329264-16	MS	L2448416-6						
Ammonia as N			114.1		%		75-125	26-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-11	DUP	L2448416-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10	LCS							
Nitrite (as N)			100.2		%		90-110	17-MAY-20
WG3328693-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
WG3328693-12	MS	L2448416-1						
Nitrite (as N)			109.3		%		75-125	17-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-11	DUP	L2448416-1						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10	LCS							
Nitrate (as N)			102.1		%		90-110	17-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R5090759							
WG3324761-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-MAY-20
SO4-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-11	DUP	L2448416-1						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-10	LCS							
Sulfate (SO4)			100.0		%		90-110	17-MAY-20
WG3328693-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
WG3328693-12	MS	L2448416-1						
Sulfate (SO4)			105.7		%		75-125	17-MAY-20
SOLIDS-TDS-CL								
	Water							
Batch	R5095503							
WG3327623-2	LCS							
Total Dissolved Solids			102.4		%		85-115	22-MAY-20
WG3327623-1	MB							
Total Dissolved Solids			<10		mg/L		10	22-MAY-20
TKN-L-F-CL								
	Water							
Batch	R5096876							
WG3328687-13	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	25-MAY-20
WG3328687-17	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	25-MAY-20
WG3328687-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	25-MAY-20
WG3328687-21	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	25-MAY-20
WG3328687-25	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	25-MAY-20
WG3328687-5	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	25-MAY-20
WG3328687-9	LCS							
Total Kjeldahl Nitrogen			86.0		%		75-125	25-MAY-20
WG3328687-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-12	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5096876							
WG3328687-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-24	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
TSS-L-CL		Water						
Batch	R5095446							
WG3327628-2	LCS							
Total Suspended Solids			96.3		%		85-115	22-MAY-20
WG3327628-1	MB							
Total Suspended Solids			<1.0		mg/L		1	22-MAY-20
TURBIDITY-CL		Water						
Batch	R5092019							
WG3324895-2	LCS							
Turbidity			104.5		%		85-115	17-MAY-20
WG3324895-1	MB							
Turbidity			<0.10		NTU		0.1	17-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	15-MAY-20 09:48	26-MAY-20 09:30	0.25	264	hours	EHTR-FM
	2	15-MAY-20 09:48	26-MAY-20 09:30	0.25	264	hours	EHTR-FM
	3	15-MAY-20 11:25	26-MAY-20 09:30	0.25	262	hours	EHTR-FM
	4	15-MAY-20 13:49	26-MAY-20 09:30	0.25	260	hours	EHTR-FM
	5	15-MAY-20 13:25	26-MAY-20 09:30	0.25	260	hours	EHTR-FM
	6	15-MAY-20 13:25	26-MAY-20 09:30	0.25	260	hours	EHTR-FM
pH							
	1	15-MAY-20 09:48	20-MAY-20 13:00	0.25	123	hours	EHTR-FM
	2	15-MAY-20 09:48	20-MAY-20 13:00	0.25	123	hours	EHTR-FM
	3	15-MAY-20 11:25	20-MAY-20 13:00	0.25	122	hours	EHTR-FM
	4	15-MAY-20 13:49	20-MAY-20 13:00	0.25	119	hours	EHTR-FM
	5	15-MAY-20 13:25	20-MAY-20 13:00	0.25	120	hours	EHTR-FM
	6	15-MAY-20 13:25	20-MAY-20 13:00	0.25	120	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2448416 were received on 16-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 20200515 - 1434		TURNAROUND TIME:				RUSH:					
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Project Manager Scott Roughhead				Lab Contact Lyudmyln Shvets		Email 1: david.burroughs@teck.com			X	X	X
Email scott.roughhead@teck.com				Email Lyudmyln.Shvets@ALSGlobal.com		Email 2: britt.anderson@teck.com			X	X	X
Address				Address 2559 29 Street NE		Email 3: scott.roughhead@teck.com			X	X	X
City Elkford Province BC				City Calgary Province AB		Email 4: teckcoal@teckonline.com					X
Postal Code Country Canada				Postal Code T1Y 7B5 Country Canada		Email 5: jared.cayenne@teck.com			X	X	X
Phone Number 1-250-433-6976				Phone Number 403 407 1794		Email 6: kaileigh.mccallum@teck.com			X	X	X
						PO number VPO00680583					

SAMPLE DETAILS **ANALYSIS REQUESTED**



L2448416-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/HG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY
FR_FLD_QTR_2020-04-06_N	FR_FLD	WS	NO	15-May-2020	9:48	G	5	1	1	1		1		1				
FR_HMW5_QTR_2020-04-06_N	FR_HMW5	WS	NO	15-May-2020	9:48	G	5	1	1	1		1		1				
FR_HMW3_QTR_2020-04-06_N	FR_HMW3	WS	NO	15-May-2020	11:25	G	5	1	1	1		1		1				
FR_09-04-A_QTR_2020-04-06_N	FR_09-04-A	WS	NO	15-May-2020	13:49	G	5	1	1	1		1		1				
FR_09-04-B_QTR_2020-04-06_N	FR_09-04-B	WS	NO	15-May-2020	13:25	G	5	1	1	1		1		1				
FR_DC2_QTR_2020-04-06_N	FR_DC2	WS	NO	15-May-2020	13:25	G	5	1	1	1		1		1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Kaileigh McCallum	DATE/TIME May 14, 2020	ACCEPTED BY/AFFILIATION <i>DK</i>	DATE/TIME <i>5/16 0850</i>
---	---	----------------------------------	---	--------------------------------------

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Kaileigh McCallum		Mobile #	519-760-2658
Sampler's Signature		Date/Time	May 14, 2020	

100



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 26-MAY-20
Report Date: 21-DEC-20 17:45 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2451671
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 0
Legal Site Desc:

Comments: 21-DEC-20:Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2451671-1 WG 25-MAY-20 14:00 FR_CB-2A_2020-05-25	L2451671-2 WG 25-MAY-20 11:45 FR_GCMW-1A_2020-05-25	L2451671-3 WG 25-MAY-20 10:00 FR_GCMW-1B_2020-05-25	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	701	582	606	
	Hardness (as CaCO3) (mg/L)	13.4	31.1	57.4	
	pH (pH)	8.84	8.64	8.54	
	ORP (mV)	406	461	273	
	Total Suspended Solids (mg/L)	2.0	1.7	2.9	
	Total Dissolved Solids (mg/L)	511 ^{DLHC}	439 ^{DLHC}	445 ^{DLHC}	
	Turbidity (NTU)	14.4	5.53	5.17	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	439	346	363	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	45.6	20.6	19.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	485	366	382	
	Ammonia as N (mg/L)	0.630 ^{DLHC}	0.297	0.124	
	Bicarbonate (HCO3) (mg/L)	535	422	443	
	Bromide (Br) (mg/L)	0.062	0.099	0.081	
	Carbonate (CO3) (mg/L)	27.4	12.4	11.4	
	Chloride (Cl) (mg/L)	12.3	17.3	16.9	
	Fluoride (F) (mg/L)	1.30	1.62	1.56	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	86.2	96.5	106	
	Nitrate (as N) (mg/L)	<0.0050	0.180	0.0051	
	Nitrite (as N) (mg/L)	<0.0010	0.0074	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.678	0.406	0.324	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0143	0.0552	0.0110	
	Phosphorus (P)-Total (mg/L)	0.0249	0.0632	0.0220	
	Sulfate (SO4) (mg/L)	<0.30	1.71	7.82	
	Anion Sum (meq/L)	10.1	7.94	8.36	
	Cation Sum (meq/L)	8.71	7.67	8.82	
	Cation - Anion Balance (%)	-7.4	-1.8	2.7	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.00	2.62	5.67	
	Total Organic Carbon (mg/L)	1.33	2.59	5.41	
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0060 ^{DLM}	0.0031	0.0065	
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLM}	<0.00010	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2451671-1 WG 25-MAY-20 14:00 FR_CB-2A_2020-05-25	L2451671-2 WG 25-MAY-20 11:45 FR_GCMW-1A_2020-05-25	L2451671-3 WG 25-MAY-20 10:00 FR_GCMW-1B_2020-05-25	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLM <0.00050	0.00158	0.00184	
	Barium (Ba)-Dissolved (mg/L)	DLM 0.257	0.111	0.0935	
	Beryllium (Be)-Dissolved (ug/L)	DLM <0.10	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	DLM <0.00025	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	DLM 0.347	0.180	0.122	
	Cadmium (Cd)-Dissolved (ug/L)	DLM <0.025	0.0096	0.0097	
	Calcium (Ca)-Dissolved (mg/L)	DLM 2.99	8.25	16.4	
	Chromium (Cr)-Dissolved (mg/L)	DLM <0.00050	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	DLM <0.50	<0.10	0.14	
	Copper (Cu)-Dissolved (mg/L)	DLM <0.0010	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	DLM <0.050	<0.010	0.109	
	Lead (Pb)-Dissolved (mg/L)	DLM <0.00025	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	DLM 0.614	0.284	0.201	
	Magnesium (Mg)-Dissolved (mg/L)	DLM 1.43	2.54	3.99	
	Manganese (Mn)-Dissolved (mg/L)	DLM 0.00716	0.0672	0.222	
	Mercury (Hg)-Dissolved (mg/L)	DLM <0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	DLM <0.00025	0.0464	0.0492	
	Nickel (Ni)-Dissolved (mg/L)	DLM <0.0025	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	DLM 1.02	1.14	1.41	
	Selenium (Se)-Dissolved (ug/L)	DLM <0.25	0.543	<0.050	
	Silicon (Si)-Dissolved (mg/L)	DLM 3.11	2.77	3.71	
	Silver (Ag)-Dissolved (mg/L)	DLM <0.000050	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	DLM 193	161	175	
	Strontium (Sr)-Dissolved (mg/L)	DLM 0.299	0.141	0.134	
	Thallium (Tl)-Dissolved (mg/L)	DLM <0.000050	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	DLM <0.00050	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	DLM <0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	DLM <0.000050	0.000192	0.000285	
	Vanadium (V)-Dissolved (mg/L)	DLM <0.0025	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	DLM <0.0050	0.0027	0.0018	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Ammonia as N	MS-B	L2451671-1, -2, -3
Matrix Spike	Nitrate (as N)	MS-B	L2451671-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L2451671-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

0

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2451671

Report Date: 21-DEC-20

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5100397							
WG3331266-5	LCS							
Acidity (as CaCO3)			107.8		%		85-115	28-MAY-20
WG3331266-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5100539							
WG3331283-14	LCS							
Alkalinity, Total (as CaCO3)			105.0		%		85-115	28-MAY-20
WG3331283-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-MAY-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Beryllium (Be)-Dissolved			107.1		%		80-120	01-JUN-20
WG3333020-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-JUN-20
BIC-CL								
	Water							
Batch	R5100539							
WG3331283-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5103433							
WG3333601-6	LCS							
Bromide (Br)			104.5		%		85-115	26-MAY-20
WG3333601-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5102771							
WG3332315-4	LCS							
Dissolved Organic Carbon			103.1		%		80-120	31-MAY-20
WG3332315-3	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5102771							
WG3332315-4	LCS							
Total Organic Carbon			104.6		%		80-120	31-MAY-20
WG3332315-3	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-20
CL-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Chloride (Cl)			103.2		%		90-110	26-MAY-20
WG3333601-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	26-MAY-20
CO3-CL	Water							
Batch	R5100539							
WG3331283-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-MAY-20
EC-L-PCT-CL	Water							
Batch	R5100539							
WG3331283-14	LCS							
Conductivity (@ 25C)			93.0		%		90-110	28-MAY-20
WG3331283-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-MAY-20
F-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Fluoride (F)			94.5		%		90-110	26-MAY-20
WG3333601-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-MAY-20
HG-D-CVAA-CL	Water							
Batch	R5101984							
WG3331819-2	LCS							
Mercury (Hg)-Dissolved			117.0		%		80-120	29-MAY-20
WG3331819-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-MAY-20
HG-T-CVAA-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5101984							
WG3331820-2	LCS							
Mercury (Hg)-Total			105.0		%		80-120	29-MAY-20
WG3331820-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAY-20
MET-D-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Aluminum (Al)-Dissolved			99.4		%		80-120	01-JUN-20
Antimony (Sb)-Dissolved			102.6		%		80-120	01-JUN-20
Arsenic (As)-Dissolved			96.7		%		80-120	01-JUN-20
Barium (Ba)-Dissolved			98.0		%		80-120	01-JUN-20
Bismuth (Bi)-Dissolved			99.98		%		80-120	01-JUN-20
Boron (B)-Dissolved			101.3		%		80-120	01-JUN-20
Cadmium (Cd)-Dissolved			94.6		%		80-120	01-JUN-20
Calcium (Ca)-Dissolved			102.2		%		80-120	01-JUN-20
Chromium (Cr)-Dissolved			97.7		%		80-120	01-JUN-20
Cobalt (Co)-Dissolved			98.0		%		80-120	01-JUN-20
Copper (Cu)-Dissolved			96.3		%		80-120	01-JUN-20
Iron (Fe)-Dissolved			101.3		%		80-120	01-JUN-20
Lead (Pb)-Dissolved			99.9		%		80-120	01-JUN-20
Lithium (Li)-Dissolved			109.5		%		80-120	01-JUN-20
Magnesium (Mg)-Dissolved			95.8		%		80-120	01-JUN-20
Manganese (Mn)-Dissolved			97.9		%		80-120	01-JUN-20
Molybdenum (Mo)-Dissolved			106.3		%		80-120	01-JUN-20
Nickel (Ni)-Dissolved			97.2		%		80-120	01-JUN-20
Potassium (K)-Dissolved			102.2		%		80-120	01-JUN-20
Selenium (Se)-Dissolved			97.7		%		80-120	01-JUN-20
Silicon (Si)-Dissolved			102.7		%		60-140	01-JUN-20
Silver (Ag)-Dissolved			107.0		%		80-120	01-JUN-20
Sodium (Na)-Dissolved			104.5		%		80-120	01-JUN-20
Strontium (Sr)-Dissolved			106.3		%		80-120	01-JUN-20
Thallium (Tl)-Dissolved			100.0		%		80-120	01-JUN-20
Tin (Sn)-Dissolved			95.4		%		80-120	01-JUN-20
Titanium (Ti)-Dissolved			97.1		%		80-120	01-JUN-20
Uranium (U)-Dissolved			103.6		%		80-120	01-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Vanadium (V)-Dissolved			99.5		%		80-120	01-JUN-20
Zinc (Zn)-Dissolved			93.6		%		80-120	01-JUN-20
WG3333020-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20

NH3-L-F-CL

Water

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5103597								
WG3333790-7	DUP	L2451671-3						
Ammonia as N		0.124	0.123		mg/L	0.6	20	02-JUN-20
WG3333790-6	LCS							
Ammonia as N			105.7		%		85-115	02-JUN-20
WG3333790-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-JUN-20
WG3333790-8	MS	L2451671-3						
Ammonia as N			N/A	MS-B	%		-	02-JUN-20
NO2-L-IC-N-CL								
Batch R5103433								
WG3333601-6	LCS							
Nitrite (as N)			105.3		%		90-110	26-MAY-20
WG3333601-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-MAY-20
NO3-L-IC-N-CL								
Batch R5103433								
WG3333601-6	LCS							
Nitrate (as N)			103.0		%		90-110	26-MAY-20
WG3333601-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-MAY-20
OH-CL								
Batch R5100539								
WG3331283-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	28-MAY-20
ORP-CL								
Batch R5103100								
WG3333155-2	CRM	CL-ORP						
ORP			219		mV		210-230	01-JUN-20
P-T-L-COL-CL								
Batch R5100883								
WG3331303-2	LCS							
Phosphorus (P)-Total			94.4		%		80-120	29-MAY-20
WG3331303-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-MAY-20
PH-CL								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5100539							
WG3331283-14	LCS							
pH			6.98		pH		6.9-7.1	28-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5098949							
WG3329452-6	LCS							
Orthophosphate-Dissolved (as P)			102.9		%		80-120	26-MAY-20
WG3329452-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-MAY-20
SO4-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Sulfate (SO4)			103.1		%		90-110	26-MAY-20
WG3333601-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5102478							
WG3332267-2	LCS							
Total Dissolved Solids			101.1		%		85-115	30-MAY-20
WG3332267-1	MB							
Total Dissolved Solids			<10		mg/L		10	30-MAY-20
TKN-L-F-CL	Water							
Batch	R5103674							
WG3333891-2	LCS							
Total Kjeldahl Nitrogen			93.4		%		75-125	02-JUN-20
WG3333891-5	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	02-JUN-20
WG3333891-9	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	02-JUN-20
WG3333891-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
WG3333891-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
WG3333891-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5102469							
WG3332256-2	LCS							
Total Suspended Solids			95.1		%		85-115	30-MAY-20
WG3332256-1	MB							
Total Suspended Solids			<1.0		mg/L		1	30-MAY-20
TURBIDITY-CL	Water							
Batch	R5100141							
WG3330378-3	DUP	L2451671-3						
Turbidity		5.17	5.25		NTU	1.5	15	27-MAY-20
WG3330378-2	LCS							
Turbidity			104.5		%		85-115	27-MAY-20
WG3330378-1	MB							
Turbidity			<0.10		NTU		0.1	27-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	25-MAY-20 14:00	01-JUN-20 19:00	0.25	173	hours	EHTR-FM
	2	25-MAY-20 11:45	01-JUN-20 19:00	0.25	175	hours	EHTR-FM
	3	25-MAY-20 10:00	01-JUN-20 19:00	0.25	177	hours	EHTR-FM
pH	1	25-MAY-20 14:00	28-MAY-20 14:00	0.25	72	hours	EHTR-FM
	2	25-MAY-20 11:45	28-MAY-20 14:00	0.25	74	hours	EHTR-FM
	3	25-MAY-20 10:00	28-MAY-20 14:00	0.25	76	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2451671 were received on 26-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				RUSH:							
PROJECT/GUENT INFO					LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operations				Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery				Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	gregory.jones@golder.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.				Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
City	Calgary	Province	AB		City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3		Country	Canada	Postal Code	T1Y 7B5		Country	Canada	Email 5:			
Phone Number	1-250-433-6716				Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS							ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filter	Field	Lab	Field	Lab
FR_CB-1A_2020	FR_CB-1A	WG				G	6	1	1	1	1	1	1					
FR_CB-1B_2020	FR_CB-1B	WG				G	6	1	1	1	1	1	1					
FR_CB-1C_2020	FR_CB-1C	WG				G	6	1	1	1	1	1	1					
FR_CB-2A_2020-05-25	FR_CB_2A	WG		2020/05/25	14:00	G	6	1	1	1	1	1	1					
FR_GCMW-1A_2020-05-25	FR_GCMW-1A	WG		2020/05/25	11:45	G	6	1	1	1	1	1	1					
FR_GCMW-1B_2020-05-25	FR_GCMW-1B	WG		2020/05/25	10:00	G	6	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	5/26/20

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>[Signature]</i>		Mobile #	250 946 5029
Sampler's Signature	<i>[Signature]</i>		Date/Time	May 25, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 29-MAY-20
Report Date: 30-DEC-20 09:34 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2453886
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 12-30-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2453886-1 WG 28-MAY-20 13:00 FR_TB-1A_2020-05-28	L2453886-2 WG 28-MAY-20 14:20 FR_TB-1B_2020-05-28	L2453886-3 WG 28-MAY-20 09:40 FR_TBSSMW-1_2020-05-28	L2453886-4 WG 28-MAY-20 11:00 FR_TBSSMW-2_2020-05-28	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1060	377	325	477
	Hardness (as CaCO3) (mg/L)	490	217	145	280
	pH (pH)	7.99	8.33	8.42	8.34
	ORP (mV)	366	428	480	475
	Total Suspended Solids (mg/L)	10.2	<1.0	1.2	<1.0
	Total Dissolved Solids (mg/L)	660 ^{DLHC}	252 ^{DLHC}	168 ^{DLHC}	321 ^{DLHC}
	Turbidity (NTU)	48.7	0.15	0.79	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	40.6	1.7	<1.0	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	651	133	164	151
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	5.6	9.8	5.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	651 ^{DLHC}	138	174 ^{DLHC}	156
	Ammonia as N (mg/L)	5.45 ^{DLHC}	0.0175	2.83 ^{DLHC}	0.0129
	Bicarbonate (HCO3) (mg/L)	794 ^{DLHC}	162	200	184
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0	5.9	<5.0
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.29 ^{DLHC}	0.185	0.347	0.182
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	104	102	98.8	101
	Nitrate (as N) (mg/L)	<0.025 ^{DLHC}	1.50	0.0085	2.35
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	4.66	0.442	2.88	0.246
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013 ^{HTD}	0.0024	0.0024	0.0018
	Phosphorus (P)-Total (mg/L)	0.029 ^{DLM}	0.0067 ^{DLM}	0.0075 ^{DLM}	<0.0020
	Sulfate (SO4) (mg/L)	<1.5 ^{DLHC}	68.7	15.8	109
	Anion Sum (meq/L)	13.0	4.31	3.82	5.58
	Cation Sum (meq/L)	13.5	4.38	3.77	5.65
	Cation - Anion Balance (%)	1.8	0.8	-0.6	0.6
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	1.50	0.70	0.82
	Total Organic Carbon (mg/L)	<0.50	1.48	0.74	0.67
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0050 ^{DLDS}	0.0010	0.0019	0.0011
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLDS}	<0.00010	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2453886-1 WG 28-MAY-20 13:00 FR_TB-1A_2020-05-28	L2453886-2 WG 28-MAY-20 14:20 FR_TB-1B_2020-05-28	L2453886-3 WG 28-MAY-20 09:40 FR_TBSSMW-1_2020-05-28	L2453886-4 WG 28-MAY-20 11:00 FR_TBSSMW-2_2020-05-28
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLDS <0.00050	<0.00010	0.00136	<0.00010
	Barium (Ba)-Dissolved (mg/L)	RRV 16.3	0.0448	2.17	0.0639
	Beryllium (Be)-Dissolved (ug/L)	<0.10	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	DLDS <0.00025	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	DLDS 0.064	<0.010	0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	DLDS <0.025	0.0099	0.0051	0.0130
	Calcium (Ca)-Dissolved (mg/L)	DLDS 126	54.9	11.8	69.4
	Chromium (Cr)-Dissolved (mg/L)	DLDS <0.00050	0.00011	<0.00010	0.00011
	Cobalt (Co)-Dissolved (ug/L)	DLDS <0.50	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	DLDS <0.0010	0.00028	<0.00020	0.00024
	Iron (Fe)-Dissolved (mg/L)	DLDS 3.96	<0.010	0.173	<0.010
	Lead (Pb)-Dissolved (mg/L)	DLDS <0.00025	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	DLDS 1.48	0.0088	0.205	0.0099
	Magnesium (Mg)-Dissolved (mg/L)	DLDS 42.4	19.4	28.1	25.9
	Manganese (Mn)-Dissolved (mg/L)	DLDS 0.0781	<0.00010	0.0384	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	DLDS <0.00025	0.000846	0.0158	0.000907
	Nickel (Ni)-Dissolved (mg/L)	DLDS <0.0025	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	DLDS 12.5	0.649	6.48	0.747
	Selenium (Se)-Dissolved (ug/L)	DLDS <0.25	12.2	<0.050	19.6
	Silicon (Si)-Dissolved (mg/L)	DLDS 3.51	1.70	2.50	1.67
	Silver (Ag)-Dissolved (mg/L)	DLDS <0.000050	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	DLDS 72.9	0.694	16.1	0.776
	Strontium (Sr)-Dissolved (mg/L)	DLDS 1.20	0.0932	0.215	0.119
	Thallium (Tl)-Dissolved (mg/L)	DLDS <0.000050	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	DLDS <0.00050	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	DLDS <0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	DLDS <0.000050	0.000866	0.000136	0.00116
	Vanadium (V)-Dissolved (mg/L)	DLDS <0.0025	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	DLDS 0.0085	<0.0010	0.0034	0.0011

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2453886-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2453886-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2453886-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2453886

Report Date: 30-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-11	LCS							
Acidity (as CaCO3)			98.2		%		85-115	02-JUN-20
WG3334185-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-17	LCS							
Alkalinity, Total (as CaCO3)			103.0		%		85-115	02-JUN-20
WG3334218-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5105248							
WG3334656-7	DUP	L2453886-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	04-JUN-20
WG3334656-6	LCS	TMRM						
Beryllium (Be)-Dissolved			105.0		%		80-120	04-JUN-20
WG3334656-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-JUN-20
WG3334656-8	MS	L2453886-4						
Beryllium (Be)-Dissolved			105.2		%		70-130	04-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5107336							
WG3335428-6	LCS							
Bromide (Br)			107.5		%		85-115	31-MAY-20
WG3335428-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5111416							
WG3338138-2	LCS							
Dissolved Organic Carbon			109.9		%		80-120	08-JUN-20
WG3338138-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-20



Quality Control Report

Workorder: L2453886

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5111416							
WG3338138-2	LCS							
Total Organic Carbon			115.4		%		80-120	08-JUN-20
WG3338138-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-20
CL-IC-N-CL	Water							
Batch	R5107336							
WG3335428-6	LCS							
Chloride (Cl)			102.5		%		90-110	31-MAY-20
WG3335428-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-20
CO3-CL	Water							
Batch	R5103909							
WG3334218-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL	Water							
Batch	R5103909							
WG3334218-17	LCS							
Conductivity (@ 25C)			101.8		%		90-110	02-JUN-20
WG3334218-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20
F-IC-N-CL	Water							
Batch	R5107336							
WG3335428-6	LCS							
Fluoride (F)			94.5		%		90-110	31-MAY-20
WG3335428-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-20
HG-D-CVAA-CL	Water							
Batch	R5109871							
WG3336416-3	DUP	L2453886-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-JUN-20
WG3336416-2	LCS							
Mercury (Hg)-Dissolved			110.0		%		80-120	05-JUN-20
WG3336416-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
WG3336416-4	MS	L2453886-4						
Mercury (Hg)-Dissolved			100.0		%		70-130	05-JUN-20



Quality Control Report

Workorder: L2453886

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL		Water						
Batch	R5109871							
WG3336417-3	DUP	L2453886-4						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-JUN-20
WG3336417-2	LCS							
Mercury (Hg)-Total			113.0		%		80-120	05-JUN-20
WG3336417-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	05-JUN-20
WG3336417-4	MS	L2453886-4						
Mercury (Hg)-Total			97.9		%		70-130	05-JUN-20
MET-D-CCMS-CL		Water						
Batch	R5105248							
WG3334656-7	DUP	L2453886-4						
Aluminum (Al)-Dissolved		0.0011	0.0011		mg/L	4.6	20	04-JUN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Barium (Ba)-Dissolved		0.0639	0.0613		mg/L	4.2	20	04-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Cadmium (Cd)-Dissolved		0.0000130	0.0000116		mg/L	11	20	04-JUN-20
Calcium (Ca)-Dissolved		69.4	67.1		mg/L	3.4	20	04-JUN-20
Chromium (Cr)-Dissolved		0.00011	0.00010		mg/L	7.8	20	04-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Copper (Cu)-Dissolved		0.00024	<0.00020	RPD-NA	mg/L	N/A	20	04-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20
Lithium (Li)-Dissolved		0.0099	0.0089		mg/L	11	20	04-JUN-20
Magnesium (Mg)-Dissolved		25.9	24.9		mg/L	3.9	20	04-JUN-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Molybdenum (Mo)-Dissolved		0.000907	0.000874		mg/L	3.8	20	04-JUN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-JUN-20
Potassium (K)-Dissolved		0.747	0.728		mg/L	2.7	20	04-JUN-20
Selenium (Se)-Dissolved		0.0196	0.0191		mg/L	2.3	20	04-JUN-20
Silicon (Si)-Dissolved		1.67	1.60		mg/L	4.2	20	04-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Sodium (Na)-Dissolved		0.776	0.748		mg/L	3.7	20	04-JUN-20
Strontium (Sr)-Dissolved		0.119	0.117		mg/L	1.7	20	04-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20



Quality Control Report

Workorder: L2453886

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5105248							
WG3334656-7	DUP	L2453886-4						
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Uranium (U)-Dissolved		0.00116	0.00117		mg/L	0.1	20	04-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-JUN-20
Zinc (Zn)-Dissolved		0.0011	<0.0010	RPD-NA	mg/L	N/A	20	04-JUN-20
WG3334656-6	LCS	TMRM						
Aluminum (Al)-Dissolved			101.7		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			103.5		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			100.2		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			101.8		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			95.8		%		80-120	04-JUN-20
Boron (B)-Dissolved			96.0		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			102.7		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			104.5		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			102.1		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			101.1		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			100.2		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			101.6		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			100.3		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			109.3		%		80-120	04-JUN-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			99.9		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			106.5		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			99.3		%		80-120	04-JUN-20
Potassium (K)-Dissolved			104.9		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			99.6		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			104.1		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			105.9		%		80-120	04-JUN-20
Sodium (Na)-Dissolved			102.9		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			104.1		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			96.2		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			99.98		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			99.5		%		80-120	04-JUN-20
Uranium (U)-Dissolved			102.0		%		80-120	04-JUN-20



Quality Control Report

Workorder: L2453886

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL	Water							
Batch	R5105248							
WG3334656-6	LCS	TMRM						
Vanadium (V)-Dissolved			102.3		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			99.3		%		80-120	04-JUN-20
WG3334656-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
WG3334656-8	MS	L2453886-4						
Aluminum (Al)-Dissolved			108.7		%		70-130	04-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5105248							
WG3334656-8	MS	L2453886-4						
Antimony (Sb)-Dissolved			106.7		%		70-130	04-JUN-20
Arsenic (As)-Dissolved			112.6		%		70-130	04-JUN-20
Barium (Ba)-Dissolved			108.3		%		70-130	04-JUN-20
Bismuth (Bi)-Dissolved			104.5		%		70-130	04-JUN-20
Boron (B)-Dissolved			89.2		%		70-130	04-JUN-20
Cadmium (Cd)-Dissolved			113.7		%		70-130	04-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Chromium (Cr)-Dissolved			112.6		%		70-130	04-JUN-20
Cobalt (Co)-Dissolved			112.8		%		70-130	04-JUN-20
Copper (Cu)-Dissolved			114.0		%		70-130	04-JUN-20
Iron (Fe)-Dissolved			108.5		%		70-130	04-JUN-20
Lead (Pb)-Dissolved			104.9		%		70-130	04-JUN-20
Lithium (Li)-Dissolved			106.1		%		70-130	04-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Manganese (Mn)-Dissolved			111.3		%		70-130	04-JUN-20
Molybdenum (Mo)-Dissolved			104.3		%		70-130	04-JUN-20
Nickel (Ni)-Dissolved			113.5		%		70-130	04-JUN-20
Potassium (K)-Dissolved			113.4		%		70-130	04-JUN-20
Selenium (Se)-Dissolved			107.4		%		70-130	04-JUN-20
Silicon (Si)-Dissolved			99.1		%		70-130	04-JUN-20
Silver (Ag)-Dissolved			109.2		%		70-130	04-JUN-20
Sodium (Na)-Dissolved			112.5		%		70-130	04-JUN-20
Strontium (Sr)-Dissolved			101.4		%		70-130	04-JUN-20
Thallium (Tl)-Dissolved			104.1		%		70-130	04-JUN-20
Tin (Sn)-Dissolved			102.0		%		70-130	04-JUN-20
Titanium (Ti)-Dissolved			110.5		%		70-130	04-JUN-20
Uranium (U)-Dissolved			104.2		%		70-130	04-JUN-20
Vanadium (V)-Dissolved			112.4		%		70-130	04-JUN-20
Zinc (Zn)-Dissolved			107.6		%		70-130	04-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5109816							
WG3336368-30	LCS							
Ammonia as N			99.8		%		85-115	05-JUN-20
WG3336368-29	MB							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5109816							
WG3336368-29 MB								
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-20
NO2-L-IC-N-CL	Water							
Batch	R5107336							
WG3335428-6 LCS								
Nitrite (as N)			105.7		%		90-110	31-MAY-20
WG3335428-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5107336							
WG3335428-6 LCS								
Nitrate (as N)			102.9		%		90-110	31-MAY-20
WG3335428-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAY-20
OH-CL	Water							
Batch	R5103909							
WG3334218-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL	Water							
Batch	R5110031							
WG3336525-24 CRM		CL-ORP						
ORP			230		mV		210-230	05-JUN-20
P-T-L-COL-CL	Water							
Batch	R5103589							
WG3333580-18 LCS								
Phosphorus (P)-Total			108.8		%		80-120	02-JUN-20
WG3333580-22 LCS								
Phosphorus (P)-Total			109.0		%		80-120	02-JUN-20
WG3333580-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-JUN-20
WG3333580-21 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-JUN-20
PH-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5103909							
WG3334218-17	LCS							
pH			6.98		pH		6.9-7.1	02-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5102132							
WG3331795-10	LCS							
Orthophosphate-Dissolved (as P)			101.8		%		80-120	29-MAY-20
WG3331795-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-20
SO4-IC-N-CL	Water							
Batch	R5107336							
WG3335428-6	LCS							
Sulfate (SO4)			102.5		%		90-110	31-MAY-20
WG3335428-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5110013							
WG3335047-5	LCS							
Total Dissolved Solids			99.2		%		85-115	04-JUN-20
WG3335047-4	MB							
Total Dissolved Solids			<10		mg/L		10	04-JUN-20
TKN-L-F-CL	Water							
Batch	R5109938							
WG3336303-10	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	04-JUN-20
WG3336303-13	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	04-JUN-20
WG3336303-2	LCS							
Total Kjeldahl Nitrogen			89.5		%		75-125	04-JUN-20
WG3336303-6	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	04-JUN-20
WG3336303-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-9	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5109938							
WG3336303-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-14 MS		L2453886-4						
Total Kjeldahl Nitrogen			118.0		%		70-130	04-JUN-20
TSS-L-CL	Water							
Batch	R5108476							
WG3334504-10 LCS								
Total Suspended Solids			96.8		%		85-115	03-JUN-20
WG3334504-9 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL	Water							
Batch	R5102327							
WG3332171-14 LCS								
Turbidity			102.5		%		85-115	30-MAY-20
WG3332171-17 LCS								
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-13 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20
WG3332171-16 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	28-MAY-20 13:00	05-JUN-20 09:30	0.25	188	hours	EHTR-FM
	2	28-MAY-20 14:20	05-JUN-20 09:30	0.25	187	hours	EHTR-FM
	3	28-MAY-20 09:40	05-JUN-20 09:30	0.25	192	hours	EHTR-FM
	4	28-MAY-20 11:00	05-JUN-20 09:30	0.25	191	hours	EHTR-FM
pH							
	1	28-MAY-20 13:00	02-JUN-20 13:00	0.25	120	hours	EHTR-FM
	2	28-MAY-20 14:20	02-JUN-20 13:00	0.25	119	hours	EHTR-FM
	3	28-MAY-20 09:40	02-JUN-20 13:00	0.25	123	hours	EHTR-FM
	4	28-MAY-20 11:00	02-JUN-20 13:00	0.25	122	hours	EHTR-FM
Anions and Nutrients							
Orthophosphate-Dissolved (as P)							
	1	28-MAY-20 13:00	02-JUN-20 14:00	3	5	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2453886 were received on 29-MAY-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID:				TURNAROUND TIME:				RUSH:			
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Fording River Operations				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Tom Jeffery				Lab Contact Lyudmyla Shvets				Email 1: teckcoal@equisonline.com	Excel	PDF	EDD
Email Tom.Jeffery@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: gregory.jones@golder.com	X	X	X
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE				Email 3: tom.jeffery@teck.com	X	X	X
City Calgary Province AB				City Calgary Province AB				Email 4: Scott.Roughead@teck.com	X	X	X
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5:			
Phone Number 1-250-433-6716				Phone Number 403 407 1794				PO number VPO00683840			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2453886-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED										
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	N	F	
FR_TB-1A_2020-05-28	FR_TB-1A	WG		2020/05/28	13:00	G	6	1	1	1		1	1		1			
FR_TB-1B_2020-05-28	FR_TB-1B	WG		2020/05/28	14:20	G	6	1	1	1		1	1		1			
FR_TB-2A_2020-	FR_TB-2A	WG				G	6	1	1	1		1	1		1			
FR_TB-2B_2020-	FR_TB-2B	WG				G	6	1	1	1		1	1		1			
FR_TBSSMW-1_2020-05-28	FR_TBSSMW-1	WG		2020/05/28	9:40	G	6	1	1	1		1	1		1			
FR_TBSSMW-2_2020-05-28	FR_TBSSMW-2	WG		2020/05/28	11:00	G	6	1	1	1		1	1		1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>B2</i>	5/29 03:00

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>Katie Peterson</i>	Mobile #	250-946-8029
Sampler's Signature	<i>[Signature]</i>	Date/Time	May 28, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 29-MAY-20
Report Date: 21-DEC-20 17:51 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2453937
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200528 - 1100
Legal Site Desc:

Comments: 21-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2453937-1 WS 27-MAY-20 14:45 FR_FRDSCC1_WS _2020-05-27_NP	L2453937-2 WS 27-MAY-20 15:15 FR_LMP1_WS_20 20-05-27_N	L2453937-3 WS 27-MAY-20 15:20 FR_MULTIPLATE_ WS_2020-05- 27_NP	L2453937-4 WS 28-MAY-20 08:00 FR_FRDSCC1_WS _2020-05-28_NP	L2453937-5 WS 28-MAY-20 07:30 FR_LMP1_WS_20 20-05-28_N	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	335	591	376	325	583
	Hardness (as CaCO3) (mg/L)	179	344	196	177	321
	pH (pH)	8.26	8.19	8.25	8.22	8.24
	ORP (mV)	462	472	331	489	476
	Total Suspended Solids (mg/L)	5.4	129	13.7	<1.0	21.5
	Total Dissolved Solids (mg/L)	228 ^{DLHC}	444 ^{DLHC}	263 ^{DLHC}	208 ^{DLHC}	399 ^{DLHC}
	Turbidity (NTU)	1.50	166	7.87	1.64	36.4
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	2.3	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	130	148	135	128	143
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	130	148	135	128	143
	Ammonia as N (mg/L)	0.0247	0.232	0.0795	0.0124	0.211
	Bicarbonate (HCO3) (mg/L)	158	180	165	156	175
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	<0.50	0.62	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.172	0.174	0.167	0.172	0.125
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.3	112	95.8	97.8	99.3
	Nitrate (as N) (mg/L)	2.25	17.8	3.99	2.03	17.5
	Nitrite (as N) (mg/L)	<0.0010	0.0732	0.0046	<0.0010	0.0501
	Total Kjeldahl Nitrogen (mg/L)	0.339	0.624 ^{TKNI}	0.483	0.345	0.196 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0117	0.0013	<0.0010	0.0178
	Phosphorus (P)-Total (mg/L)	0.0034	0.0911	0.0117	0.0044	0.0276
	Sulfate (SO4) (mg/L)	52.6	119	64.3	47.6	115
	Anion Sum (meq/L)	3.85	6.73	4.33	3.70	6.52
Cation Sum (meq/L)	3.71	7.54	4.15	3.62	6.48	
Cation - Anion Balance (%)	-1.9	5.7	-2.1	-1.1	-0.3	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.30	3.42	2.24	2.12	3.46
	Total Organic Carbon (mg/L)	2.53	27.2 ^{DLM}	4.35	2.40	9.30
Total Metals	Aluminum (Al)-Total (mg/L)	0.0394	0.0060	0.104	0.0523	0.267
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00078	0.00018	<0.00010	0.00079
	Arsenic (As)-Total (mg/L)	0.00015	0.00033	0.00020	0.00015	0.00051
	Barium (Ba)-Total (mg/L)	0.0358	0.0518	0.0438	0.0362	0.0669
	Beryllium (Be)-Total (ug/L)	<0.020	<0.020	<0.020	<0.020	0.030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-6	L2453937-7	L2453937-8	L2453937-9	L2453937-10
		Description	WS	WS	WS	WS	WS
		Sampled Date	28-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	08:20	09:30	14:10	13:35	10:40
		Client ID	FR_MULTIPLATE_WS_2020-05-28_NP	FR_FRCP1_WS-2020_2020-05-27_N	FR_MW_SK1A_QTR_2020-04-06_N	FR_MW_SK1B_QTR_2020-04-06_N	FR_GH_WELL4_QTR_2020-04-06_N
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		356	588	1160	899	1310
	Hardness (as CaCO3) (mg/L)		202	338	692	524	737
	pH (pH)		8.23	8.32	8.21	8.09	8.21
	ORP (mV)		463	473	365	304	338
	Total Suspended Solids (mg/L)		5.3	7.6	1.4	1.4	2.1
	Total Dissolved Solids (mg/L)		236 ^{DLHC}	430 ^{DLHC}	393 ^{DLHC}	900 ^{DLHC}	711 ^{DLHC}
	Turbidity (NTU)		2.84	2.28	0.21	0.64	1.81
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<1.0	<1.0	6.1	7.4	9.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		131	171	271	252	303
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	3.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		131	174	271	252	303
	Ammonia as N (mg/L)		0.0340	0.0186	<0.0050	<0.0050	0.173
	Bicarbonate (HCO3) (mg/L)		159	209	330 ^{DLHC}	307	370 ^{DLHC}
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.25 ^{DLHC}	<0.050	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0 ^{DLHC}	<5.0	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)		<0.50	<0.50	<2.5 ^{DLHC}	4.81	2.9 ^{DLHC}
	Fluoride (F) (mg/L)		0.158	0.175	0.18 ^{DLHC}	0.153	<0.10 ^{DLHC}
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		96.0	98.1	98.4	104	98.3
	Nitrate (as N) (mg/L)		3.59	10.4	39.1 ^{DLHC}	6.97	42.2 ^{DLHC}
	Nitrite (as N) (mg/L)		0.0040	0.0027	<0.0050 ^{DLHC}	0.0221	0.314 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)		0.367	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.050 ^{TKNI}	<0.25 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)		0.0010	<0.0010	0.0032 ^{RRV}	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0076	0.0064	0.0026 ^{RRV}	0.0020	<0.0020 ^{DLHC}
	Sulfate (SO4) (mg/L)		58.5	130	300 ^{DLHC}	249	363
	Anion Sum (meq/L)		4.09	6.93	14.5	10.8	16.7
	Cation Sum (meq/L)		3.93	6.80	14.2	11.3	16.4
	Cation - Anion Balance (%)		-2.1	-1.0	-0.8	2.1	-0.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		2.83	2.18	0.98	<0.50	1.64
	Total Organic Carbon (mg/L)		2.94	2.77	1.40	441	1.71
Total Metals	Aluminum (Al)-Total (mg/L)		0.0669	0.0506			
	Antimony (Sb)-Total (mg/L)		0.00015	0.00020			
	Arsenic (As)-Total (mg/L)		0.00018	0.00015			
	Barium (Ba)-Total (mg/L)		0.0389	0.0502			
	Beryllium (Be)-Total (ug/L)		<0.020	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2453937-11 WS 28-MAY-20 10:40 FR_DC1_QTR_202 0-04-06_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1320			
	Hardness (as CaCO3) (mg/L)	753			
	pH (pH)	8.20			
	ORP (mV)	366			
	Total Suspended Solids (mg/L)	3.4			
	Total Dissolved Solids (mg/L)	1090	DLHC		
	Turbidity (NTU)	1.74			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	7.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	299			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	299			
	Ammonia as N (mg/L)	0.194			
	Bicarbonate (HCO3) (mg/L)	365	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	DLHC		
	Chloride (Cl) (mg/L)	3.3	DLHC		
	Fluoride (F) (mg/L)	<0.10	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.3			
	Nitrate (as N) (mg/L)	42.0	DLHC		
	Nitrite (as N) (mg/L)	0.321	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020	DLHC		
	Sulfate (SO4) (mg/L)	364			
	Anion Sum (meq/L)	16.7			
	Cation Sum (meq/L)	16.4			
	Cation - Anion Balance (%)	-0.9			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.81			
	Total Organic Carbon (mg/L)	1.72			
Total Metals	Aluminum (Al)-Total (mg/L)				
	Antimony (Sb)-Total (mg/L)				
	Arsenic (As)-Total (mg/L)				
	Barium (Ba)-Total (mg/L)				
	Beryllium (Be)-Total (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-1	L2453937-2	L2453937-3	L2453937-4	L2453937-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	27-MAY-20	27-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	14:45	15:15	15:20	08:00	07:30
		Client ID	FR_FRDSCC1_WS _2020-05-27_NP	FR_LMP1_WS_20 20-05-27_N	FR_MULTIPLATE_ WS_2020-05- 27_NP	FR_FRDSCC1_WS _2020-05-28_NP	FR_LMP1_WS_20 20-05-28_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (ug/L)		0.0278	0.148	0.0581	0.0248	0.240
	Calcium (Ca)-Total (mg/L)		49.4	76.1	50.9	45.9	71.6
	Chromium (Cr)-Total (mg/L)		0.00017	0.00011	0.00027	0.00018	0.00059
	Cobalt (Co)-Total (ug/L)		<0.10	0.92	0.20	<0.10	1.15
	Copper (Cu)-Total (mg/L)		<0.00050	0.00090	<0.00050	<0.00050	0.00168
	Iron (Fe)-Total (mg/L)		0.035	<0.010	0.142	0.049	0.366
	Lead (Pb)-Total (mg/L)		<0.000050	<0.000050	0.000153	<0.000050	0.000757
	Lithium (Li)-Total (mg/L)		0.0075	0.0110	0.0094	0.0068	0.0084
	Magnesium (Mg)-Total (mg/L)		15.3	35.1	18.4	15.1	32.9
	Manganese (Mn)-Total (mg/L)		0.00300	0.00483	0.00509	0.00383	0.00829
	Mercury (Hg)-Total (ug/L)		0.00127	0.0105 ^{DLM}	0.00218	0.00129	0.0038 ^{DLM}
	Molybdenum (Mo)-Total (mg/L)		0.000672	0.00434	0.00104	0.000617	0.00401
	Nickel (Ni)-Total (mg/L)		0.00191	0.0141	0.00316	0.00180	0.0168
	Potassium (K)-Total (mg/L)		0.593	2.90	0.860	0.558	2.70
	Selenium (Se)-Total (ug/L)		10.6	57.8	15.8	9.46	54.3
	Silicon (Si)-Total (mg/L)		1.75	2.28	1.88	1.74	2.69
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	0.000023
	Sodium (Na)-Total (mg/L)		0.590	0.722	0.645	0.580	0.535
	Strontium (Sr)-Total (mg/L)		0.0875	0.0747	0.0917	0.0905	0.0717
	Thallium (Tl)-Total (mg/L)		<0.000010	0.000024	<0.000010	<0.000010	0.000040
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.000814	0.00167	0.000988	0.000772	0.00170
	Vanadium (V)-Total (mg/L)		<0.00050	0.00070	0.00083	<0.00050	0.00218
	Zinc (Zn)-Total (mg/L)		<0.0030	0.0086	0.0041	0.0034	0.0145
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0091	3.89	<0.0030	<0.0030	0.0038
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00091	0.00015	<0.00010	0.00071
	Arsenic (As)-Dissolved (mg/L)		0.00010	0.00075	0.00011	<0.00010	0.00026
	Barium (Ba)-Dissolved (mg/L)		0.0351	0.133	0.0374	0.0338	0.0484
	Beryllium (Be)-Dissolved (ug/L)		<0.020	0.142	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.00010 ^{DLM}	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.020 ^{DLM}	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0189	0.298	0.0272	0.0164	0.185

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-6	L2453937-7	L2453937-8	L2453937-9	L2453937-10
		Description	WS	WS	WS	WS	WS
		Sampled Date	28-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	08:20	09:30	14:10	13:35	10:40
		Client ID	FR_MULTIPLATE_WS_2020-05-28_NP	FR_FRCP1_WS-2020_2020-05-27_N	FR_MW_SK1A_QTR_2020-04-06_N	FR_MW_SK1B_QTR_2020-04-06_N	FR_GH_WELL4_QTR_2020-04-06_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050			
	Boron (B)-Total (mg/L)		<0.010	<0.010			
	Cadmium (Cd)-Total (ug/L)		0.0480	0.0758			
	Calcium (Ca)-Total (mg/L)		49.0	79.0			
	Chromium (Cr)-Total (mg/L)		0.00023	0.00017			
	Cobalt (Co)-Total (ug/L)		0.15	0.14			
	Copper (Cu)-Total (mg/L)		<0.00050	0.00055			
	Iron (Fe)-Total (mg/L)		0.072	0.074			
	Lead (Pb)-Total (mg/L)		0.000066	0.000069			
	Lithium (Li)-Total (mg/L)		0.0083	0.0200			
	Magnesium (Mg)-Total (mg/L)		17.8	33.7			
	Manganese (Mn)-Total (mg/L)		0.00441	0.00877			
	Mercury (Hg)-Total (ug/L)		0.00136	0.00149			
	Molybdenum (Mo)-Total (mg/L)		0.000893	0.00150			
	Nickel (Ni)-Total (mg/L)		0.00296	0.00328			
	Potassium (K)-Total (mg/L)		0.767	1.35			
	Selenium (Se)-Total (ug/L)		14.3	44.6			
	Silicon (Si)-Total (mg/L)		1.83	1.85			
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)		0.629	1.13			
	Strontium (Sr)-Total (mg/L)		0.0924	0.113			
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010			
	Uranium (U)-Total (mg/L)		0.000883	0.00211			
	Vanadium (V)-Total (mg/L)		0.00056	<0.00050			
	Zinc (Zn)-Total (mg/L)		0.0037	0.0046			
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00013	0.00017	0.00026	0.00033	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00010	0.00010	<0.00010	0.00012	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0365	0.0459	0.0517	0.0396	0.0865
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	0.016	0.013	0.011
	Cadmium (Cd)-Dissolved (ug/L)		0.0304	0.0514	0.0228	0.0409	0.0512

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2453937-11 WS 28-MAY-20 10:40 FR_DC1_QTR_202 0-04-06_N				
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L) Boron (B)-Total (mg/L) Cadmium (Cd)-Total (ug/L) Calcium (Ca)-Total (mg/L) Chromium (Cr)-Total (mg/L) Cobalt (Co)-Total (ug/L) Copper (Cu)-Total (mg/L) Iron (Fe)-Total (mg/L) Lead (Pb)-Total (mg/L) Lithium (Li)-Total (mg/L) Magnesium (Mg)-Total (mg/L) Manganese (Mn)-Total (mg/L) Mercury (Hg)-Total (ug/L) Molybdenum (Mo)-Total (mg/L) Nickel (Ni)-Total (mg/L) Potassium (K)-Total (mg/L) Selenium (Se)-Total (ug/L) Silicon (Si)-Total (mg/L) Silver (Ag)-Total (mg/L) Sodium (Na)-Total (mg/L) Strontium (Sr)-Total (mg/L) Thallium (Tl)-Total (mg/L) Tin (Sn)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L)				
Dissolved Metals	Dissolved Mercury Filtration Location Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L) Antimony (Sb)-Dissolved (mg/L) Arsenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Be)-Dissolved (ug/L) Bismuth (Bi)-Dissolved (mg/L) Boron (B)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (ug/L)	FIELD FIELD <0.0030 <0.00010 <0.00010 0.0880 <0.020 <0.000050 0.011 0.0506			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-1	L2453937-2	L2453937-3	L2453937-4	L2453937-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	27-MAY-20	27-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	14:45	15:15	15:20	08:00	07:30
		Client ID	FR_FRDSCC1_WS _2020-05-27_NP	FR_LMP1_WS_20 20-05-27_N	FR_MULTIPLATE_ WS_2020-05- 27_NP	FR_FRDSCC1_WS _2020-05-28_NP	FR_LMP1_WS_20 20-05-28_N
Grouping	Analyte						
WATER							
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		46.1	82.3	49.1	45.9	73.9
	Chromium (Cr)-Dissolved (mg/L)		0.00010	0.00604	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	1.69	0.10	<0.10	0.89
	Copper (Cu)-Dissolved (mg/L)		0.00025	0.00220	0.00036	0.00023	0.00083
	Iron (Fe)-Dissolved (mg/L)		<0.010	1.53	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.00154	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0070	0.0115	0.0092	0.0068	0.0085
	Magnesium (Mg)-Dissolved (mg/L)		15.5	33.7	17.9	15.0	33.0
	Manganese (Mn)-Dissolved (mg/L)		0.00111	0.0258	0.00117	0.00077	0.00343
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000660	0.00441	0.000969	0.000625	0.00368
	Nickel (Ni)-Dissolved (mg/L)		0.00178	0.0179	0.00266	0.00162	0.0153
	Potassium (K)-Dissolved (mg/L)		0.578	3.90	0.775	0.521	2.58
	Selenium (Se)-Dissolved (ug/L)		10.8	54.6	15.9	9.20	54.8
	Silicon (Si)-Dissolved (mg/L)		1.60	10.6	1.55	1.55	2.10
	Silver (Ag)-Dissolved (mg/L)		<0.000010	0.000046	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.632	0.66	0.679	0.603	0.575
	Strontium (Sr)-Dissolved (mg/L)		0.0828	0.0838	0.0835	0.0842	0.0678
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	0.000103	<0.000010	<0.000010	0.000020
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00020 ^{DLM}	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)		<0.010	0.156	<0.010	<0.010	<0.010	
Uranium (U)-Dissolved (mg/L)		0.000778	0.00214	0.000985	0.000764	0.00160	
Vanadium (V)-Dissolved (mg/L)		<0.00050	0.0138	<0.00050	<0.00050	0.00062	
Zinc (Zn)-Dissolved (mg/L)		0.0014	0.0176	0.0015	<0.0010	0.0086	
Hydrocarbons	EPH10-19 (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)		<0.50	<0.50	<0.50	<0.50	<0.50
	EPH19-32 (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Surrogate: 2-Bromobenzotrifluoride (%)		84.4	84.4	82.7	85.2	86.2
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Acenaphthylene (ug/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Acridine (ug/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Anthracene (ug/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Benz(a)anthracene (ug/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(a)pyrene (ug/L)		<0.0050	0.0055	<0.0050	<0.0050	<0.0050
	Benzo(b&j)fluoranthene (ug/L)		<0.010	0.015	<0.010	<0.010	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-6	L2453937-7	L2453937-8	L2453937-9	L2453937-10
		Description	WS	WS	WS	WS	WS
		Sampled Date	28-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	08:20	09:30	14:10	13:35	10:40
		Client ID	FR_MULTIPLATE_WS_2020-05-28_NP	FR_FRCP1_WS-2020_2020-05-27_N	FR_MW_SK1A_QTR_2020-04-06_N	FR_MW_SK1B_QTR_2020-04-06_N	FR_GH_WELL4_QTR_2020-04-06_N
Grouping	Analyte						
WATER							
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		51.1	77.3	156	141	176
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	0.74	0.12
	Copper (Cu)-Dissolved (mg/L)		0.00026	0.00030	0.00031	0.00021	0.00113
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	0.026
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0085	0.0197	0.0551	0.0113	0.0325
	Magnesium (Mg)-Dissolved (mg/L)		18.1	35.3	73.4	41.5	72.4
	Manganese (Mn)-Dissolved (mg/L)		0.00093	0.00131	<0.00010	0.420	0.00646
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000880	0.00139	0.00171	0.000364	0.000333
	Nickel (Ni)-Dissolved (mg/L)		0.00265	0.00280	<0.00050	0.00253	<0.00050
	Potassium (K)-Dissolved (mg/L)		0.749	1.37	2.76	1.09	1.56
	Selenium (Se)-Dissolved (ug/L)		14.5	46.7	156	8.90	126
	Silicon (Si)-Dissolved (mg/L)		1.53	1.59	1.58	3.12	2.57
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.676	1.23	2.92	4.54	3.12
	Strontium (Sr)-Dissolved (mg/L)		0.0850	0.104	0.147	0.234	0.231
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000019	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000931	0.00207	0.00593	0.00401	0.00399
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0017	0.0024	0.0015	0.0016	0.0595
Hydrocarbons	EPH10-19 (mg/L)		<0.25				
	EPH (C10-C32) (mg/L)		<0.50				
	EPH19-32 (mg/L)		<0.25				
	TEH (C10-C30) (mg/L)		<0.25				
	Surrogate: 2-Bromobenzotrifluoride (%)		86.1				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)		<0.010				
	Acenaphthylene (ug/L)		<0.010				
	Acridine (ug/L)		<0.010				
	Anthracene (ug/L)		<0.010				
	Benz(a)anthracene (ug/L)		<0.010				
	Benzo(a)pyrene (ug/L)		<0.0050				
	Benzo(b&j)fluoranthene (ug/L)		<0.010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2453937-11 WS 28-MAY-20 10:40 FR_DC1_QTR_202 0-04-06_N				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	180			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.13			
	Copper (Cu)-Dissolved (mg/L)	0.00112			
	Iron (Fe)-Dissolved (mg/L)	0.027			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0337			
	Magnesium (Mg)-Dissolved (mg/L)	73.4			
	Manganese (Mn)-Dissolved (mg/L)	0.00683			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000349			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.57			
	Selenium (Se)-Dissolved (ug/L)	132			
	Silicon (Si)-Dissolved (mg/L)	2.60			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.11			
	Strontium (Sr)-Dissolved (mg/L)	0.238			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00415			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0607			
Hydrocarbons	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)				
	Acenaphthylene (ug/L)				
	Acridine (ug/L)				
	Anthracene (ug/L)				
	Benz(a)anthracene (ug/L)				
	Benzo(a)pyrene (ug/L)				
	Benzo(b&j)fluoranthene (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2453937-1	L2453937-2	L2453937-3	L2453937-4	L2453937-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	27-MAY-20	27-MAY-20	27-MAY-20	28-MAY-20	28-MAY-20
		Sampled Time	14:45	15:15	15:20	08:00	07:30
		Client ID	FR_FRDSCC1_WS _2020-05-27_NP	FR_LMP1_WS_20 20-05-27_N	FR_MULTIPLATE_ WS_2020-05- 27_NP	FR_FRDSCC1_WS _2020-05-28_NP	FR_LMP1_WS_20 20-05-28_N
Grouping	Analyte						
WATER							
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(k)fluoranthene (ug/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (ug/L)	<0.010	0.046	<0.010	<0.010	<0.010	<0.010
	Dibenz(a,h)anthracene (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene (ug/L)	<0.010	0.017	<0.010	<0.010	<0.010	<0.010
	Fluorene (ug/L)	<0.010	0.108	<0.010	<0.010	<0.010	0.024
	Indeno(1,2,3-c,d)pyrene (ug/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (ug/L)	<0.050	0.165	<0.050	<0.050	<0.050	<0.050
	2-Methylnaphthalene (ug/L)	<0.020	0.252	0.022	<0.020	<0.020	0.053
	Naphthalene (ug/L)	<0.020	0.075	<0.020	<0.020	<0.020	<0.020
	Phenanthrene (ug/L)	<0.020	0.280	0.024	<0.020	<0.020	0.061
	Pyrene (ug/L)	<0.010	0.029	<0.010	<0.010	<0.010	<0.010
	Quinoline (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: Acenaphthene d10 (%)	62.0	60.3	64.5	67.8	68.1	68.1
	Surrogate: Chrysene d12 (%)	62.0	64.3	66.2	68.7	62.7	62.7
	Surrogate: Phenanthrene d10 (%)	68.6	65.4	66.5	72.5	70.6	70.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2453937-6 WS 28-MAY-20 08:20 FR_MULTIPLATE_ WS_2020-05- 28_NP	L2453937-7 WS 27-MAY-20 09:30 FR_FRCP1_WS- 2020_2020-05- 27_N	L2453937-8 WS 28-MAY-20 14:10 FR_MW_SK1A_QT R_2020-04-06_N	L2453937-9 WS 28-MAY-20 13:35 FR_MW_SK1B_QT R_2020-04-06_N	L2453937-10 WS 28-MAY-20 10:40 FR_GH_WELL4_Q TR_2020-04-06_N
Grouping	Analyte					
WATER						
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)	<0.010				
	Benzo(k)fluoranthene (ug/L)	<0.010				
	Chrysene (ug/L)	<0.010				
	Dibenz(a,h)anthracene (ug/L)	<0.0050				
	Fluoranthene (ug/L)	<0.010				
	Fluorene (ug/L)	<0.010				
	Indeno(1,2,3-c,d)pyrene (ug/L)	<0.010				
	1-Methylnaphthalene (ug/L)	<0.050				
	2-Methylnaphthalene (ug/L)	<0.020				
	Naphthalene (ug/L)	<0.020				
	Phenanthrene (ug/L)	<0.020				
	Pyrene (ug/L)	<0.010				
	Quinoline (ug/L)	<0.050				
	Surrogate: Acenaphthene d10 (%)	66.7				
	Surrogate: Chrysene d12 (%)	61.3				
Surrogate: Phenanthrene d10 (%)	70.1					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID			
	L2453937-11 WS 28-MAY-20 10:40 FR_DC1_QTR_202 0-04-06_N			
Grouping	Analyte			
WATER				
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L) Benzo(k)fluoranthene (ug/L) Chrysene (ug/L) Dibenz(a,h)anthracene (ug/L) Fluoranthene (ug/L) Fluorene (ug/L) Indeno(1,2,3-c,d)pyrene (ug/L) 1-Methylnaphthalene (ug/L) 2-Methylnaphthalene (ug/L) Naphthalene (ug/L) Phenanthrene (ug/L) Pyrene (ug/L) Quinoline (ug/L) Surrogate: Acenaphthene d10 (%) Surrogate: Chrysene d12 (%) Surrogate: Phenanthrene d10 (%)			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L2453937-2
Matrix Spike	Calcium (Ca)-Total	MS-B	L2453937-2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2453937-2
Matrix Spike	Selenium (Se)-Total	MS-B	L2453937-2
Matrix Spike	Strontium (Sr)-Total	MS-B	L2453937-2
Matrix Spike	Nitrate (as N)	MS-B	L2453937-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L2453937-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
		Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

CL-IC-N-CL	Water		
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PAH-BCCSR-CL Water PAHs - BC CSR Regs EPA 3511/8270D

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS.
 Container: 250 ML AMBER-EPH/PAH

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200528 - 1100

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2453937

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-11	LCS							
Acidity (as CaCO3)			98.2		%		85-115	02-JUN-20
WG3334185-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5106298							
WG3335082-3	DUP	L2453937-10						
Alkalinity, Total (as CaCO3)		303	302		mg/L	0.3	20	03-JUN-20
WG3335082-2	LCS							
Alkalinity, Total (as CaCO3)			103.7		%		85-115	03-JUN-20
WG3335082-5	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	03-JUN-20
WG3335082-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-20
WG3335082-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-2	LCS							
Beryllium (Be)-Dissolved			96.3		%		80-120	05-JUN-20
WG3334871-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-20
Batch	R5109987							
WG3334899-2	LCS							
Beryllium (Be)-Dissolved			100.7		%		80-120	05-JUN-20
WG3334899-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-20
Batch	R5110277							
WG3336765-2	LCS							
Beryllium (Be)-Dissolved			104.7		%		80-120	06-JUN-20
WG3336765-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-2	LCS							
Beryllium (Be)-Total			99.6		%		80-120	06-JUN-20
WG3336766-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	06-JUN-20



Quality Control Report

Workorder: L2453937

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BE-T-L-CCMS-VA								
Water								
Batch	R5109760							
WG3336766-4 MS		L2453937-2						
Beryllium (Be)-Total			97.4		%		70-130	06-JUN-20
Batch	R5110043							
WG3336225-3 DUP		L2453937-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	05-JUN-20
WG3336225-2 LCS								
Beryllium (Be)-Total			93.2		%		80-120	05-JUN-20
WG3336225-1 MB								
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	05-JUN-20
BIC-CL								
Water								
Batch	R5106298							
WG3335082-3 DUP		L2453937-10						
Bicarbonate (HCO3)		370	369		mg/L	0.3	20	03-JUN-20
WG3335082-1 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	03-JUN-20
BR-L-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11 DUP		L2453937-7						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-MAY-20
WG3332319-10 LCS								
Bromide (Br)			97.6		%		85-115	30-MAY-20
WG3332319-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	30-MAY-20
WG3332319-12 MS		L2453937-7						
Bromide (Br)			97.3		%		75-125	30-MAY-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5110688							
WG3337405-3 DUP		L2453937-1						
Dissolved Organic Carbon		2.30	2.42		mg/L	5.0	20	07-JUN-20
WG3337405-2 LCS								
Dissolved Organic Carbon			116.8		%		80-120	07-JUN-20
WG3337405-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
WG3337405-4 MS		L2453937-1						
Dissolved Organic Carbon			128.2		%		70-130	07-JUN-20
C-TOT-ORG-LOW-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5110688							
WG3337405-3	DUP	L2453937-1						
Total Organic Carbon		2.53	2.45		mg/L	3.2	20	07-JUN-20
WG3337405-2	LCS							
Total Organic Carbon			107.9		%		80-120	07-JUN-20
WG3337405-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
WG3337405-4	MS	L2453937-1						
Total Organic Carbon			123.3		%		70-130	07-JUN-20
CL-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11	DUP	L2453937-7						
Chloride (Cl)		<0.50	0.54	RPD-NA	mg/L	N/A	20	30-MAY-20
WG3332319-10	LCS							
Chloride (Cl)			102.3		%		90-110	30-MAY-20
WG3332319-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-MAY-20
WG3332319-12	MS	L2453937-7						
Chloride (Cl)			107.2		%		75-125	30-MAY-20
CO3-CL								
Water								
Batch	R5106298							
WG3335082-3	DUP	L2453937-10						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	03-JUN-20
WG3335082-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-JUN-20
EC-L-PCT-CL								
Water								
Batch	R5106298							
WG3335082-3	DUP	L2453937-10						
Conductivity (@ 25C)		1310	1320		uS/cm	0.4	10	03-JUN-20
WG3335082-2	LCS							
Conductivity (@ 25C)			94.9		%		90-110	03-JUN-20
WG3335082-5	LCS							
Conductivity (@ 25C)			99.9		%		90-110	03-JUN-20
WG3335082-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-20
WG3335082-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-20
F-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11	DUP	L2453937-7						
Fluoride (F)		0.175	0.190		mg/L	8.3	20	30-MAY-20
WG3332319-10	LCS							
Fluoride (F)			97.2		%		90-110	30-MAY-20
WG3332319-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-MAY-20
WG3332319-12	MS	L2453937-7						
Fluoride (F)			98.9		%		75-125	30-MAY-20
HG-D-CVAA-VA								
Water								
Batch	R5110081							
WG3336497-3	DUP	L2453937-6						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3336356-6	LCS							
Mercury (Hg)-Dissolved			103.2		%		80-120	06-JUN-20
WG3336497-2	LCS							
Mercury (Hg)-Dissolved			100.6		%		80-120	06-JUN-20
WG3336356-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-20
WG3336497-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-20
WG3336497-4	MS	L2453937-7						
Mercury (Hg)-Dissolved			104.3		%		70-130	06-JUN-20
HG-T-U-CVAF-VA								
Water								
Batch	R5109970							
WG3336534-2	LCS							
Mercury (Hg)-Total			82.6		%		80-120	05-JUN-20
WG3336534-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	05-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5109937							
WG3334871-2	LCS							
Aluminum (Al)-Dissolved			97.9		%		80-120	05-JUN-20
Antimony (Sb)-Dissolved			99.2		%		80-120	05-JUN-20
Arsenic (As)-Dissolved			98.0		%		80-120	05-JUN-20
Barium (Ba)-Dissolved			106.1		%		80-120	05-JUN-20
Bismuth (Bi)-Dissolved			96.2		%		80-120	05-JUN-20
Boron (B)-Dissolved			85.6		%		80-120	05-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-2	LCS							
Cadmium (Cd)-Dissolved			98.4		%		80-120	05-JUN-20
Calcium (Ca)-Dissolved			98.3		%		80-120	05-JUN-20
Chromium (Cr)-Dissolved			98.5		%		80-120	05-JUN-20
Cobalt (Co)-Dissolved			96.1		%		80-120	05-JUN-20
Copper (Cu)-Dissolved			96.3		%		80-120	05-JUN-20
Iron (Fe)-Dissolved			91.9		%		80-120	05-JUN-20
Lead (Pb)-Dissolved			99.7		%		80-120	05-JUN-20
Lithium (Li)-Dissolved			96.0		%		80-120	05-JUN-20
Magnesium (Mg)-Dissolved			95.3		%		80-120	05-JUN-20
Manganese (Mn)-Dissolved			100.7		%		80-120	05-JUN-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	05-JUN-20
Nickel (Ni)-Dissolved			97.3		%		80-120	05-JUN-20
Potassium (K)-Dissolved			101.9		%		80-120	05-JUN-20
Selenium (Se)-Dissolved			96.0		%		80-120	05-JUN-20
Silicon (Si)-Dissolved			102.1		%		60-140	05-JUN-20
Silver (Ag)-Dissolved			104.4		%		80-120	05-JUN-20
Sodium (Na)-Dissolved			103.3		%		80-120	05-JUN-20
Strontium (Sr)-Dissolved			109.2		%		80-120	05-JUN-20
Thallium (Tl)-Dissolved			97.8		%		80-120	05-JUN-20
Tin (Sn)-Dissolved			98.1		%		80-120	05-JUN-20
Titanium (Ti)-Dissolved			94.8		%		80-120	05-JUN-20
Uranium (U)-Dissolved			105.0		%		80-120	05-JUN-20
Vanadium (V)-Dissolved			101.9		%		80-120	05-JUN-20
Zinc (Zn)-Dissolved			95.9		%		80-120	05-JUN-20
WG3334871-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Batch	R5109987							
WG3334899-2	LCS							
Aluminum (Al)-Dissolved			105.8		%		80-120	05-JUN-20
Antimony (Sb)-Dissolved			101.6		%		80-120	05-JUN-20
Arsenic (As)-Dissolved			97.9		%		80-120	05-JUN-20
Barium (Ba)-Dissolved			101.0		%		80-120	05-JUN-20
Bismuth (Bi)-Dissolved			94.3		%		80-120	05-JUN-20
Boron (B)-Dissolved			94.6		%		80-120	05-JUN-20
Cadmium (Cd)-Dissolved			99.4		%		80-120	05-JUN-20
Calcium (Ca)-Dissolved			100.6		%		80-120	05-JUN-20
Chromium (Cr)-Dissolved			102.3		%		80-120	05-JUN-20
Cobalt (Co)-Dissolved			100.2		%		80-120	05-JUN-20
Copper (Cu)-Dissolved			98.2		%		80-120	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109987							
WG3334899-2	LCS							
Iron (Fe)-Dissolved			103.8		%		80-120	05-JUN-20
Lead (Pb)-Dissolved			95.3		%		80-120	05-JUN-20
Lithium (Li)-Dissolved			103.8		%		80-120	05-JUN-20
Magnesium (Mg)-Dissolved			98.4		%		80-120	05-JUN-20
Manganese (Mn)-Dissolved			100.3		%		80-120	05-JUN-20
Molybdenum (Mo)-Dissolved			99.5		%		80-120	05-JUN-20
Nickel (Ni)-Dissolved			97.7		%		80-120	05-JUN-20
Potassium (K)-Dissolved			104.3		%		80-120	05-JUN-20
Selenium (Se)-Dissolved			102.5		%		80-120	05-JUN-20
Silicon (Si)-Dissolved			99.2		%		60-140	05-JUN-20
Silver (Ag)-Dissolved			100.2		%		80-120	05-JUN-20
Sodium (Na)-Dissolved			108.4		%		80-120	05-JUN-20
Strontium (Sr)-Dissolved			105.3		%		80-120	05-JUN-20
Thallium (Tl)-Dissolved			96.4		%		80-120	05-JUN-20
Tin (Sn)-Dissolved			99.6		%		80-120	05-JUN-20
Titanium (Ti)-Dissolved			98.7		%		80-120	05-JUN-20
Uranium (U)-Dissolved			94.8		%		80-120	05-JUN-20
Vanadium (V)-Dissolved			101.0		%		80-120	05-JUN-20
Zinc (Zn)-Dissolved			98.0		%		80-120	05-JUN-20
WG3334899-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109987							
WG3334899-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Batch	R5110277							
WG3336765-2	LCS							
Aluminum (Al)-Dissolved			106.3		%		80-120	06-JUN-20
Antimony (Sb)-Dissolved			103.6		%		80-120	06-JUN-20
Arsenic (As)-Dissolved			97.7		%		80-120	06-JUN-20
Barium (Ba)-Dissolved			102.5		%		80-120	06-JUN-20
Bismuth (Bi)-Dissolved			98.8		%		80-120	06-JUN-20
Boron (B)-Dissolved			97.4		%		80-120	06-JUN-20
Cadmium (Cd)-Dissolved			100.6		%		80-120	06-JUN-20
Calcium (Ca)-Dissolved			106.7		%		80-120	06-JUN-20
Chromium (Cr)-Dissolved			97.0		%		80-120	06-JUN-20
Cobalt (Co)-Dissolved			98.7		%		80-120	06-JUN-20
Copper (Cu)-Dissolved			98.8		%		80-120	06-JUN-20
Iron (Fe)-Dissolved			97.4		%		80-120	06-JUN-20
Lead (Pb)-Dissolved			99.8		%		80-120	06-JUN-20
Lithium (Li)-Dissolved			105.0		%		80-120	06-JUN-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	06-JUN-20
Manganese (Mn)-Dissolved			98.9		%		80-120	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336765-2	LCS							
Molybdenum (Mo)-Dissolved			104.9		%		80-120	06-JUN-20
Nickel (Ni)-Dissolved			98.3		%		80-120	06-JUN-20
Potassium (K)-Dissolved			106.3		%		80-120	06-JUN-20
Selenium (Se)-Dissolved			101.0		%		80-120	06-JUN-20
Silicon (Si)-Dissolved			98.5		%		60-140	06-JUN-20
Silver (Ag)-Dissolved			105.6		%		80-120	06-JUN-20
Sodium (Na)-Dissolved			100.6		%		80-120	06-JUN-20
Strontium (Sr)-Dissolved			107.8		%		80-120	06-JUN-20
Thallium (Tl)-Dissolved			101.3		%		80-120	06-JUN-20
Tin (Sn)-Dissolved			98.5		%		80-120	06-JUN-20
Titanium (Ti)-Dissolved			95.6		%		80-120	06-JUN-20
Uranium (U)-Dissolved			98.1		%		80-120	06-JUN-20
Vanadium (V)-Dissolved			100.1		%		80-120	06-JUN-20
Zinc (Zn)-Dissolved			101.4		%		80-120	06-JUN-20
WG3336765-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336765-1	MB	NP						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-2	LCS							
Aluminum (Al)-Total			95.4		%		80-120	06-JUN-20
Antimony (Sb)-Total			102.9		%		80-120	06-JUN-20
Arsenic (As)-Total			101.0		%		80-120	06-JUN-20
Barium (Ba)-Total			106.2		%		80-120	06-JUN-20
Bismuth (Bi)-Total			104.9		%		80-120	06-JUN-20
Boron (B)-Total			90.9		%		80-120	06-JUN-20
Cadmium (Cd)-Total			97.6		%		80-120	06-JUN-20
Calcium (Ca)-Total			101.2		%		80-120	06-JUN-20
Chromium (Cr)-Total			102.5		%		80-120	06-JUN-20
Cobalt (Co)-Total			100.8		%		80-120	06-JUN-20
Copper (Cu)-Total			101.1		%		80-120	06-JUN-20
Iron (Fe)-Total			97.0		%		80-120	06-JUN-20
Lead (Pb)-Total			98.5		%		80-120	06-JUN-20
Lithium (Li)-Total			110.9		%		80-120	06-JUN-20
Magnesium (Mg)-Total			103.3		%		80-120	06-JUN-20
Manganese (Mn)-Total			100.6		%		80-120	06-JUN-20
Molybdenum (Mo)-Total			95.5		%		80-120	06-JUN-20
Nickel (Ni)-Total			102.7		%		80-120	06-JUN-20
Potassium (K)-Total			101.5		%		80-120	06-JUN-20
Selenium (Se)-Total			104.1		%		80-120	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-2	LCS							
Silicon (Si)-Total			101.5		%		80-120	06-JUN-20
Silver (Ag)-Total			96.2		%		80-120	06-JUN-20
Sodium (Na)-Total			109.4		%		80-120	06-JUN-20
Strontium (Sr)-Total			105.0		%		80-120	06-JUN-20
Thallium (Tl)-Total			100.6		%		80-120	06-JUN-20
Tin (Sn)-Total			96.1		%		80-120	06-JUN-20
Titanium (Ti)-Total			99.6		%		80-120	06-JUN-20
Uranium (U)-Total			95.6		%		80-120	06-JUN-20
Vanadium (V)-Total			102.7		%		80-120	06-JUN-20
Zinc (Zn)-Total			102.4		%		80-120	06-JUN-20
WG3336766-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	06-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	06-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	06-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	06-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	06-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-1	MB							
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	06-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-JUN-20
WG3336766-4	MS	L2453937-2						
Aluminum (Al)-Total			94.8		%		70-130	06-JUN-20
Antimony (Sb)-Total			96.9		%		70-130	06-JUN-20
Arsenic (As)-Total			100.6		%		70-130	06-JUN-20
Barium (Ba)-Total			N/A	MS-B	%		-	06-JUN-20
Bismuth (Bi)-Total			91.9		%		70-130	06-JUN-20
Boron (B)-Total			95.5		%		70-130	06-JUN-20
Cadmium (Cd)-Total			94.2		%		70-130	06-JUN-20
Calcium (Ca)-Total			N/A	MS-B	%		-	06-JUN-20
Chromium (Cr)-Total			99.5		%		70-130	06-JUN-20
Cobalt (Co)-Total			94.8		%		70-130	06-JUN-20
Copper (Cu)-Total			91.5		%		70-130	06-JUN-20
Iron (Fe)-Total			95.7		%		70-130	06-JUN-20
Lead (Pb)-Total			92.1		%		70-130	06-JUN-20
Lithium (Li)-Total			104.3		%		70-130	06-JUN-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	06-JUN-20
Manganese (Mn)-Total			96.2		%		70-130	06-JUN-20
Molybdenum (Mo)-Total			99.0		%		70-130	06-JUN-20
Nickel (Ni)-Total			91.7		%		70-130	06-JUN-20
Potassium (K)-Total			97.8		%		70-130	06-JUN-20
Selenium (Se)-Total			N/A	MS-B	%		-	06-JUN-20
Silicon (Si)-Total			96.6		%		70-130	06-JUN-20
Silver (Ag)-Total			94.7		%		70-130	06-JUN-20
Sodium (Na)-Total			109.0		%		70-130	06-JUN-20
Strontium (Sr)-Total			N/A	MS-B	%		-	06-JUN-20
Thallium (Tl)-Total			90.8		%		70-130	06-JUN-20
Tin (Sn)-Total			96.9		%		70-130	06-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-4 MS		L2453937-2						
Titanium (Ti)-Total			103.1		%		70-130	06-JUN-20
Uranium (U)-Total			93.6		%		70-130	06-JUN-20
Vanadium (V)-Total			101.2		%		70-130	06-JUN-20
Zinc (Zn)-Total			92.7		%		70-130	06-JUN-20
Batch	R5110043							
WG3336225-3 DUP		L2453937-1						
Aluminum (Al)-Total		0.0394	0.0439		mg/L	11	20	05-JUN-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-JUN-20
Arsenic (As)-Total		0.00015	0.00015		mg/L	5.0	20	05-JUN-20
Barium (Ba)-Total		0.0358	0.0373		mg/L	4.2	20	05-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-JUN-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-JUN-20
Cadmium (Cd)-Total		0.0000278	0.0000309		mg/L	11	20	05-JUN-20
Calcium (Ca)-Total		49.4	47.5		mg/L	3.8	20	05-JUN-20
Chromium (Cr)-Total		0.00017	0.00019		mg/L	14	20	05-JUN-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-JUN-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	05-JUN-20
Iron (Fe)-Total		0.035	0.037		mg/L	6.9	20	05-JUN-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-JUN-20
Lithium (Li)-Total		0.0075	0.0074		mg/L	1.2	20	05-JUN-20
Magnesium (Mg)-Total		15.3	15.9		mg/L	3.9	20	05-JUN-20
Manganese (Mn)-Total		0.00300	0.00306		mg/L	1.9	20	05-JUN-20
Molybdenum (Mo)-Total		0.000672	0.000670		mg/L	0.3	20	05-JUN-20
Nickel (Ni)-Total		0.00191	0.00227		mg/L	17	20	05-JUN-20
Potassium (K)-Total		0.593	0.602		mg/L	1.4	20	05-JUN-20
Selenium (Se)-Total		0.0106	0.0109		mg/L	2.4	20	05-JUN-20
Silicon (Si)-Total		1.75	1.79		mg/L	2.6	20	05-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-JUN-20
Sodium (Na)-Total		0.590	0.609		mg/L	3.3	20	05-JUN-20
Strontium (Sr)-Total		0.0875	0.0914		mg/L	4.3	20	05-JUN-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-JUN-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-JUN-20
Uranium (U)-Total		0.000814	0.000839		mg/L	3.1	20	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5110043							
WG3336225-3	DUP	L2453937-1						
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	05-JUN-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	05-JUN-20
WG3336225-2	LCS							
Aluminum (Al)-Total			100.9		%		80-120	05-JUN-20
Antimony (Sb)-Total			108.2		%		80-120	05-JUN-20
Arsenic (As)-Total			99.2		%		80-120	05-JUN-20
Barium (Ba)-Total			106.2		%		80-120	05-JUN-20
Bismuth (Bi)-Total			111.0		%		80-120	05-JUN-20
Boron (B)-Total			88.3		%		80-120	05-JUN-20
Cadmium (Cd)-Total			100.6		%		80-120	05-JUN-20
Calcium (Ca)-Total			95.3		%		80-120	05-JUN-20
Chromium (Cr)-Total			98.9		%		80-120	05-JUN-20
Cobalt (Co)-Total			100.2		%		80-120	05-JUN-20
Copper (Cu)-Total			97.3		%		80-120	05-JUN-20
Iron (Fe)-Total			94.1		%		80-120	05-JUN-20
Lead (Pb)-Total			108.1		%		80-120	05-JUN-20
Lithium (Li)-Total			94.4		%		80-120	05-JUN-20
Magnesium (Mg)-Total			94.9		%		80-120	05-JUN-20
Manganese (Mn)-Total			100.1		%		80-120	05-JUN-20
Molybdenum (Mo)-Total			107.1		%		80-120	05-JUN-20
Nickel (Ni)-Total			99.5		%		80-120	05-JUN-20
Potassium (K)-Total			104.0		%		80-120	05-JUN-20
Selenium (Se)-Total			96.3		%		80-120	05-JUN-20
Silicon (Si)-Total			104.5		%		80-120	05-JUN-20
Silver (Ag)-Total			106.4		%		80-120	05-JUN-20
Sodium (Na)-Total			96.3		%		80-120	05-JUN-20
Strontium (Sr)-Total			106.3		%		80-120	05-JUN-20
Thallium (Tl)-Total			106.1		%		80-120	05-JUN-20
Tin (Sn)-Total			101.5		%		80-120	05-JUN-20
Titanium (Ti)-Total			97.1		%		80-120	05-JUN-20
Uranium (U)-Total			98.5		%		80-120	05-JUN-20
Vanadium (V)-Total			100.5		%		80-120	05-JUN-20
Zinc (Zn)-Total			97.8		%		80-120	05-JUN-20
WG3336225-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5110043							
WG3336225-1	MB							
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5110244							
WG3336853-32	DUP	L2453937-1						
Ammonia as N		0.0247	0.0270		mg/L	8.9	20	06-JUN-20
WG3336853-30	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5110244							
WG3336853-30	LCS							
Ammonia as N			113.4		%		85-115	06-JUN-20
WG3336853-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-JUN-20
WG3336853-31	MS	L2453937-1						
Ammonia as N			111.4		%		75-125	06-JUN-20
NO2-L-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11	DUP	L2453937-7						
Nitrite (as N)		0.0027	0.0021	J	mg/L	0.0006	0.002	30-MAY-20
WG3332319-10	LCS							
Nitrite (as N)			95.7		%		90-110	30-MAY-20
WG3332319-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-MAY-20
WG3332319-12	MS	L2453937-7						
Nitrite (as N)			100.7		%		75-125	30-MAY-20
NO3-L-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11	DUP	L2453937-7						
Nitrate (as N)		10.4	10.4		mg/L	0.1	20	30-MAY-20
WG3332319-10	LCS							
Nitrate (as N)			103.3		%		90-110	30-MAY-20
WG3332319-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-MAY-20
WG3332319-12	MS	L2453937-7						
Nitrate (as N)			N/A	MS-B	%		-	30-MAY-20
OH-CL								
Water								
Batch	R5106298							
WG3335082-3	DUP	L2453937-10						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	03-JUN-20
WG3335082-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	03-JUN-20
ORP-CL								
Water								
Batch	R5110031							
WG3336525-24	CRM	CL-ORP						
ORP			230		mV		210-230	05-JUN-20
WG3336525-26	CRM	CL-ORP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch R5110031								
WG3336525-26 CRM		CL-ORP						
ORP			222		mV		210-230	05-JUN-20
P-T-L-COL-CL	Water							
Batch R5103589								
WG3333580-22 LCS								
Phosphorus (P)-Total			109.0		%		80-120	02-JUN-20
WG3333580-21 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-JUN-20
PAH-BCCSR-CL	Water							
Batch R5107176								
WG3335406-2 LCS								
Acenaphthene			98.6		ug/L		60-130	03-JUN-20
Acenaphthylene			90.2		ug/L		60-130	03-JUN-20
Acridine			81.7		ug/L		60-130	03-JUN-20
Anthracene			87.9		ug/L		60-130	03-JUN-20
Benz(a)anthracene			84.3		ug/L		60-130	03-JUN-20
Benzo(a)pyrene			83.8		ug/L		60-130	03-JUN-20
Benzo(b&j)fluoranthene			78.4		ug/L		60-130	03-JUN-20
Benzo(g,h,i)perylene			101		ug/L		60-130	03-JUN-20
Benzo(k)fluoranthene			85.9		ug/L		60-130	03-JUN-20
Chrysene			86.9		ug/L		60-130	03-JUN-20
Dibenz(a,h)anthracene			94.1		ug/L		60-130	03-JUN-20
Fluoranthene			95.1		ug/L		60-130	03-JUN-20
Fluorene			92.3		ug/L		60-130	03-JUN-20
Indeno(1,2,3-c,d)pyrene			88.3		ug/L		60-130	03-JUN-20
2-Methylnaphthalene			88.2		ug/L		60-130	03-JUN-20
Naphthalene			94.4		ug/L		50-130	03-JUN-20
Phenanthrene			94.8		ug/L		60-130	03-JUN-20
Pyrene			96.2		ug/L		60-130	03-JUN-20
Quinoline			94.3		ug/L		60-130	03-JUN-20
1-Methylnaphthalene			84.7		%		60-130	03-JUN-20
WG3335406-3 LCS								
Acenaphthene			102		ug/L		60-130	03-JUN-20
Acenaphthylene			94.1		ug/L		60-130	03-JUN-20
Acridine			82.2		ug/L		60-130	03-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5107176							
WG3335406-3	LCS							
Anthracene			91.9		ug/L		60-130	03-JUN-20
Benz(a)anthracene			94.3		ug/L		60-130	03-JUN-20
Benzo(a)pyrene			92.8		ug/L		60-130	03-JUN-20
Benzo(b&j)fluoranthene			86.0		ug/L		60-130	03-JUN-20
Benzo(g,h,i)perylene			107		ug/L		60-130	03-JUN-20
Benzo(k)fluoranthene			94.4		ug/L		60-130	03-JUN-20
Chrysene			93.9		ug/L		60-130	03-JUN-20
Dibenz(a,h)anthracene			98.7		ug/L		60-130	03-JUN-20
Fluoranthene			99.4		ug/L		60-130	03-JUN-20
Fluorene			97.1		ug/L		60-130	03-JUN-20
Indeno(1,2,3-c,d)pyrene			86.4		ug/L		60-130	03-JUN-20
2-Methylnaphthalene			88.8		ug/L		60-130	03-JUN-20
Naphthalene			97.3		ug/L		50-130	03-JUN-20
Phenanthrene			99.9		ug/L		60-130	03-JUN-20
Pyrene			101		ug/L		60-130	03-JUN-20
Quinoline			93.6		ug/L		60-130	03-JUN-20
1-Methylnaphthalene			86.6		%		60-130	03-JUN-20
WG3335406-1	MB							
Acenaphthene			<0.010		ug/L		0.01	03-JUN-20
Acenaphthylene			<0.010		ug/L		0.01	03-JUN-20
Acridine			<0.010		ug/L		0.01	03-JUN-20
Anthracene			<0.010		ug/L		0.01	03-JUN-20
Benz(a)anthracene			<0.010		ug/L		0.01	03-JUN-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	03-JUN-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	03-JUN-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	03-JUN-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	03-JUN-20
Chrysene			<0.010		ug/L		0.01	03-JUN-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	03-JUN-20
Fluoranthene			<0.010		ug/L		0.01	03-JUN-20
Fluorene			<0.010		ug/L		0.01	03-JUN-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	03-JUN-20
2-Methylnaphthalene			<0.020		ug/L		0.02	03-JUN-20
Naphthalene			<0.020		ug/L		0.02	03-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5107176							
WG3335406-1	MB							
Phenanthrene			<0.020		ug/L		0.02	03-JUN-20
Pyrene			<0.010		ug/L		0.01	03-JUN-20
Quinoline			<0.050		ug/L		0.05	03-JUN-20
1-Methylnaphthalene			<0.050		ug/L		0.05	03-JUN-20
Surrogate: Acenaphthene d10			71.9		%		60-130	03-JUN-20
Surrogate: Chrysene d12			64.1		%		60-130	03-JUN-20
Surrogate: Phenanthrene d10			71.3		%		60-130	03-JUN-20
WG3335406-4	MB							
Acenaphthene			<0.010		ug/L		0.01	04-JUN-20
Acenaphthylene			<0.010		ug/L		0.01	04-JUN-20
Acridine			<0.010		ug/L		0.01	04-JUN-20
Anthracene			<0.010		ug/L		0.01	04-JUN-20
Benz(a)anthracene			<0.010		ug/L		0.01	04-JUN-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	04-JUN-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	04-JUN-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	04-JUN-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	04-JUN-20
Chrysene			<0.010		ug/L		0.01	04-JUN-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	04-JUN-20
Fluoranthene			<0.010		ug/L		0.01	04-JUN-20
Fluorene			<0.010		ug/L		0.01	04-JUN-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	04-JUN-20
2-Methylnaphthalene			<0.020		ug/L		0.02	04-JUN-20
Naphthalene			<0.020		ug/L		0.02	04-JUN-20
Phenanthrene			<0.020		ug/L		0.02	04-JUN-20
Pyrene			<0.010		ug/L		0.01	04-JUN-20
Quinoline			<0.050		ug/L		0.05	04-JUN-20
1-Methylnaphthalene			<0.050		ug/L		0.05	04-JUN-20
Surrogate: Acenaphthene d10			66.4		%		60-130	04-JUN-20
Surrogate: Chrysene d12			65.0		%		60-130	04-JUN-20
Surrogate: Phenanthrene d10			73.5		%		60-130	04-JUN-20
PH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch	R5106298							
WG3335082-3	DUP	L2453937-10						
pH		8.21	8.20	J	pH	0.01	0.2	03-JUN-20
WG3335082-2	LCS							
pH			6.97		pH		6.9-7.1	03-JUN-20
WG3335082-5	LCS							
pH			6.98		pH		6.9-7.1	03-JUN-20
PO4-DO-L-COL-CL								
Water								
Batch	R5102132							
WG3331795-10	LCS							
Orthophosphate-Dissolved (as P)			101.8		%		80-120	29-MAY-20
WG3331795-14	LCS							
Orthophosphate-Dissolved (as P)			103.2		%		80-120	29-MAY-20
WG3331795-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-20
WG3331795-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-20
SO4-IC-N-CL								
Water								
Batch	R5102422							
WG3332319-11	DUP	L2453937-7						
Sulfate (SO4)		130	129		mg/L	0.1	20	30-MAY-20
WG3332319-10	LCS							
Sulfate (SO4)			104.9		%		90-110	30-MAY-20
WG3332319-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-MAY-20
WG3332319-12	MS	L2453937-7						
Sulfate (SO4)			N/A	MS-B	%		-	30-MAY-20
SOLIDS-TDS-CL								
Water								
Batch	R5108616							
WG3334208-17	LCS							
Total Dissolved Solids			100.2		%		85-115	03-JUN-20
WG3334208-16	MB							
Total Dissolved Solids			<10		mg/L		10	03-JUN-20
Batch	R5110013							
WG3335047-5	LCS							
Total Dissolved Solids			99.2		%		85-115	04-JUN-20
WG3335047-4	MB							
Total Dissolved Solids			<10		mg/L		10	04-JUN-20
TEH-BC-VA-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-BC-VA-CL		Water						
Batch	R5106259							
WG3335102-2	LCS							
EPH10-19			80.8		%		70-130	03-JUN-20
EPH19-32			71.3		%		70-130	03-JUN-20
WG3335102-4	LCS							
EPH10-19			99.1		%		70-130	05-JUN-20
EPH19-32			111.2		%		70-130	05-JUN-20
WG3335102-1	MB							
EPH10-19			<0.25		mg/L		0.25	03-JUN-20
EPH19-32			<0.25		mg/L		0.25	03-JUN-20
Surrogate: 2-Bromobenzotrifluoride			85.0		%		60-140	03-JUN-20
WG3335102-3	MB							
EPH10-19			<0.25		mg/L		0.25	05-JUN-20
EPH19-32			<0.25		mg/L		0.25	05-JUN-20
Surrogate: 2-Bromobenzotrifluoride			102.3		%		60-140	05-JUN-20
TEH-WATER-VA-CL		Water						
Batch	R5106259							
WG3335102-2	LCS							
TEH (C10-C30)			77.8		%		70-130	03-JUN-20
WG3335102-4	LCS							
TEH (C10-C30)			102.6		%		70-130	05-JUN-20
WG3335102-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	03-JUN-20
Surrogate: 2-Bromobenzotrifluoride			85.0		%		60-140	03-JUN-20
WG3335102-3	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	05-JUN-20
Surrogate: 2-Bromobenzotrifluoride			102.3		%		60-140	05-JUN-20
TKN-L-F-CL		Water						
Batch	R5109938							
WG3336303-10	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	04-JUN-20
WG3336303-13	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	04-JUN-20
WG3336303-2	LCS							
Total Kjeldahl Nitrogen			89.5		%		75-125	04-JUN-20
WG3336303-6	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	04-JUN-20
WG3336303-1	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5109938							
WG3336303-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
TSS-L-CL								
Water								
Batch	R5108476							
WG3334504-10 LCS								
Total Suspended Solids			96.8		%		85-115	03-JUN-20
WG3334504-12 LCS								
Total Suspended Solids			95.6		%		85-115	03-JUN-20
WG3334504-11 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
WG3334504-9 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL								
Water								
Batch	R5102327							
WG3332171-18 DUP		L2453937-2						
Turbidity		166	170		NTU	2.4	15	30-MAY-20
WG3332171-17 LCS								
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-16 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	27-MAY-20 14:45	05-JUN-20 11:00	0.25	212	hours	EHTR-FM
	2	27-MAY-20 15:15	05-JUN-20 11:00	0.25	212	hours	EHTR-FM
	3	27-MAY-20 15:20	05-JUN-20 11:00	0.25	212	hours	EHTR-FM
	4	28-MAY-20 08:00	05-JUN-20 11:00	0.25	195	hours	EHTR-FM
	5	28-MAY-20 07:30	05-JUN-20 11:00	0.25	196	hours	EHTR-FM
	6	28-MAY-20 08:20	05-JUN-20 11:00	0.25	195	hours	EHTR-FM
	7	27-MAY-20 09:30	05-JUN-20 11:00	0.25	217	hours	EHTR-FM
	8	28-MAY-20 14:10	05-JUN-20 11:00	0.25	189	hours	EHTR-FM
	9	28-MAY-20 13:35	05-JUN-20 11:00	0.25	189	hours	EHTR-FM
	10	28-MAY-20 10:40	05-JUN-20 11:00	0.25	192	hours	EHTR-FM
	11	28-MAY-20 10:40	05-JUN-20 11:00	0.25	192	hours	EHTR-FM
pH							
	1	27-MAY-20 14:45	03-JUN-20 14:00	0.25	167	hours	EHTR-FM
	2	27-MAY-20 15:15	03-JUN-20 14:00	0.25	167	hours	EHTR-FM
	3	27-MAY-20 15:20	03-JUN-20 14:00	0.25	167	hours	EHTR-FM
	4	28-MAY-20 08:00	03-JUN-20 14:00	0.25	150	hours	EHTR-FM
	5	28-MAY-20 07:30	03-JUN-20 14:00	0.25	150	hours	EHTR-FM
	6	28-MAY-20 08:20	03-JUN-20 14:00	0.25	150	hours	EHTR-FM
	7	27-MAY-20 09:30	03-JUN-20 14:00	0.25	173	hours	EHTR-FM
	8	28-MAY-20 14:10	03-JUN-20 14:00	0.25	144	hours	EHTR-FM
	9	28-MAY-20 13:35	03-JUN-20 14:00	0.25	144	hours	EHTR-FM
	10	28-MAY-20 10:40	03-JUN-20 14:00	0.25	147	hours	EHTR-FM
	11	28-MAY-20 10:40	03-JUN-20 14:00	0.25	147	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2453937 were received on 29-MAY-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

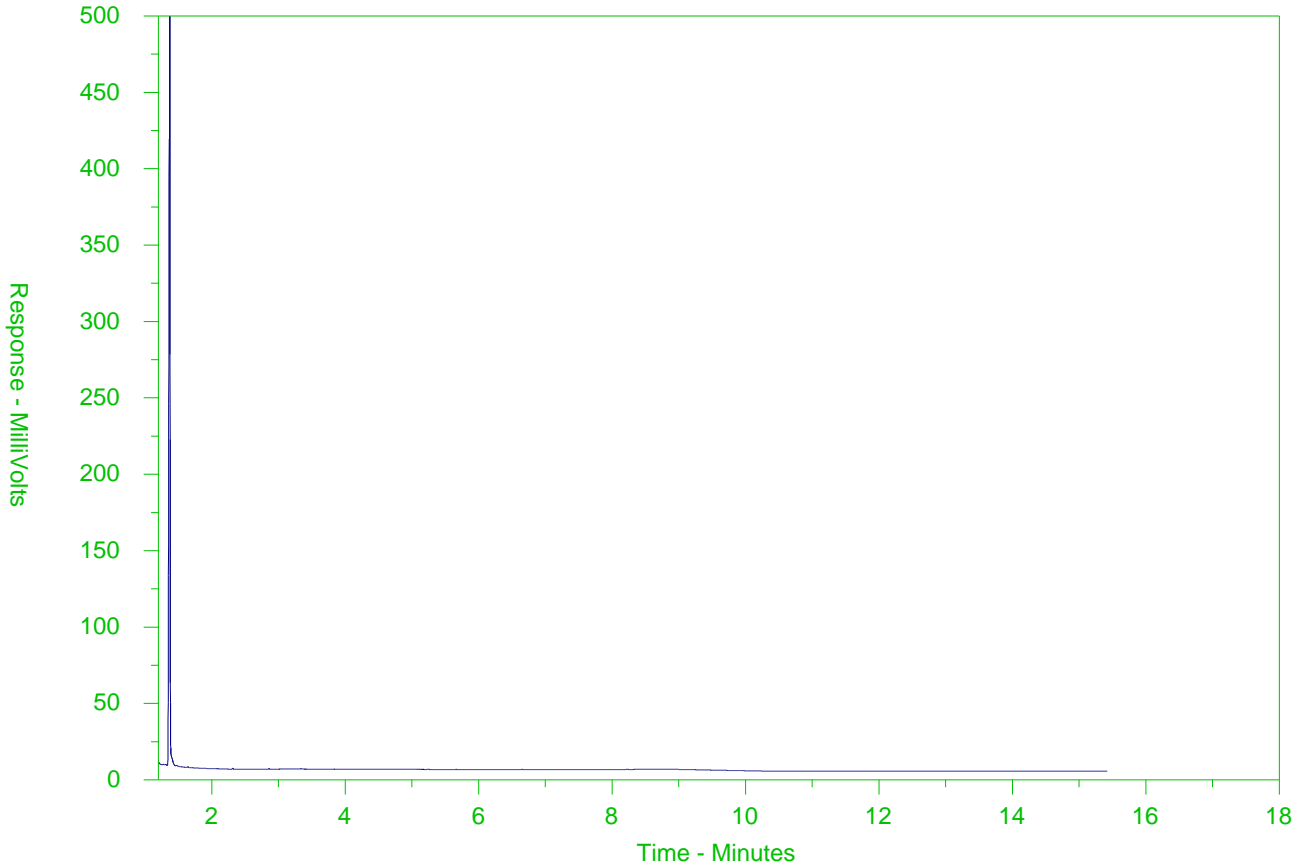
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-1
 Client Sample ID: FR_FRDSCC1_WS_2020-05-27_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

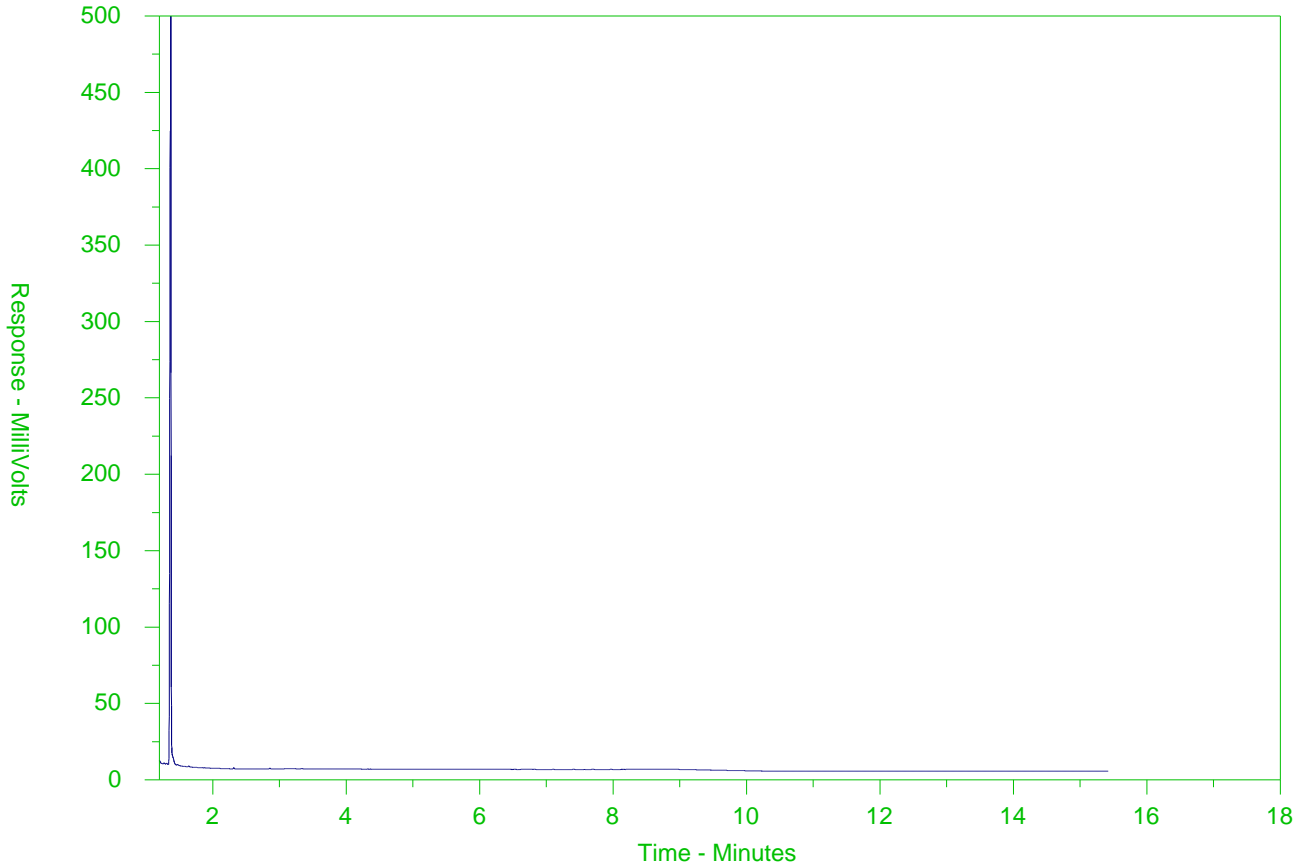
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-2
 Client Sample ID: FR_LMP1_WS_2020-05-27_N



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

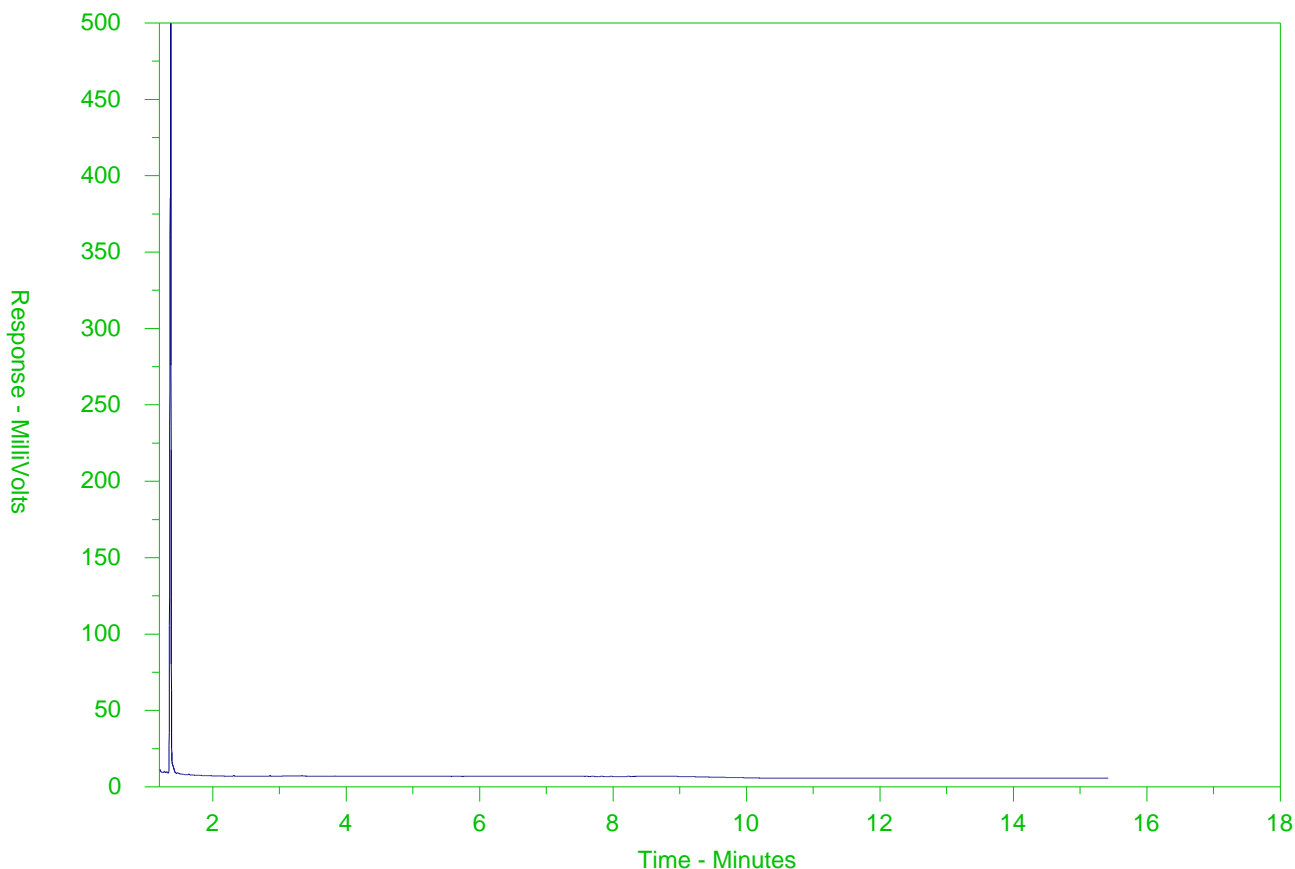
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-3
 Client Sample ID: FR_MULTIPLE_WS_2020-05-27_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

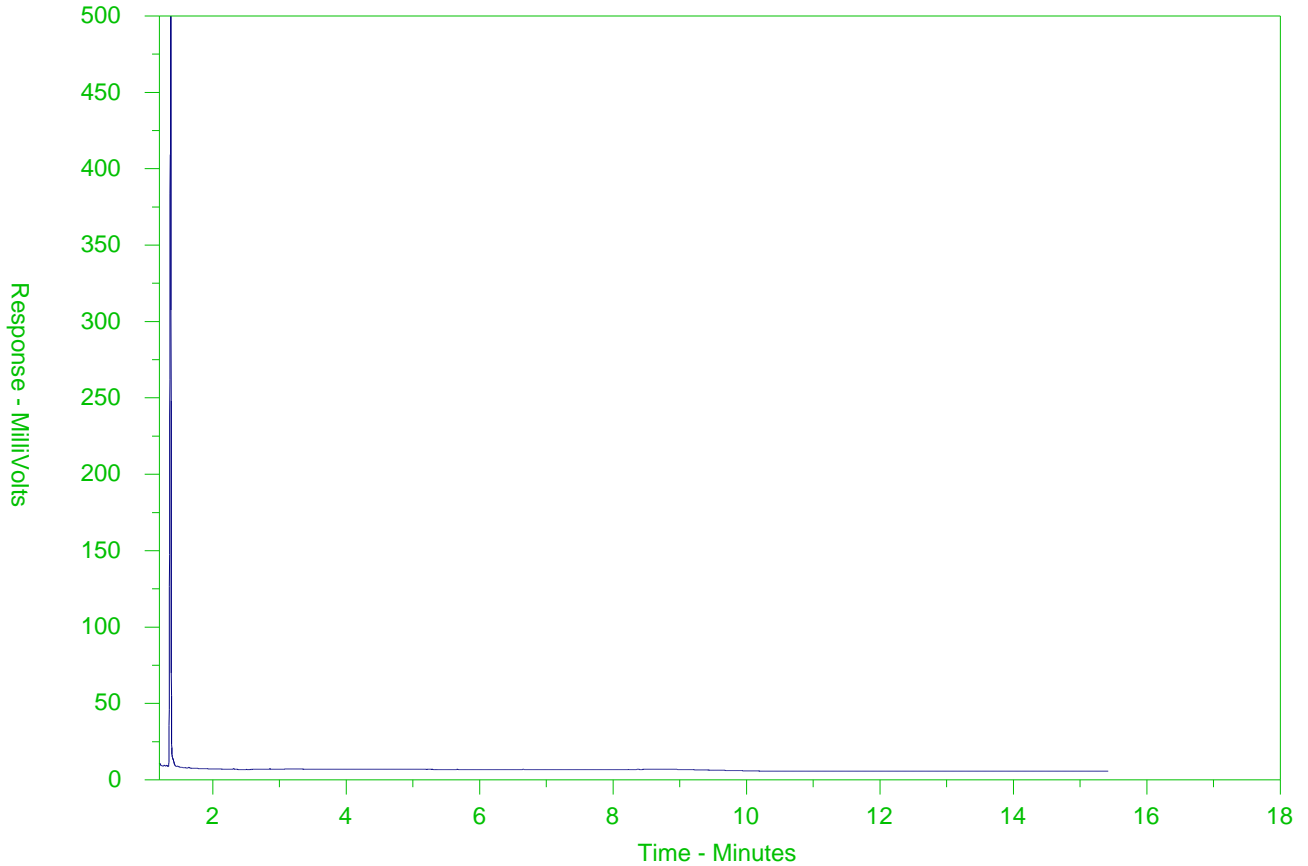
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-4
 Client Sample ID: FR_FRDSCC1_WS_2020-05-28_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

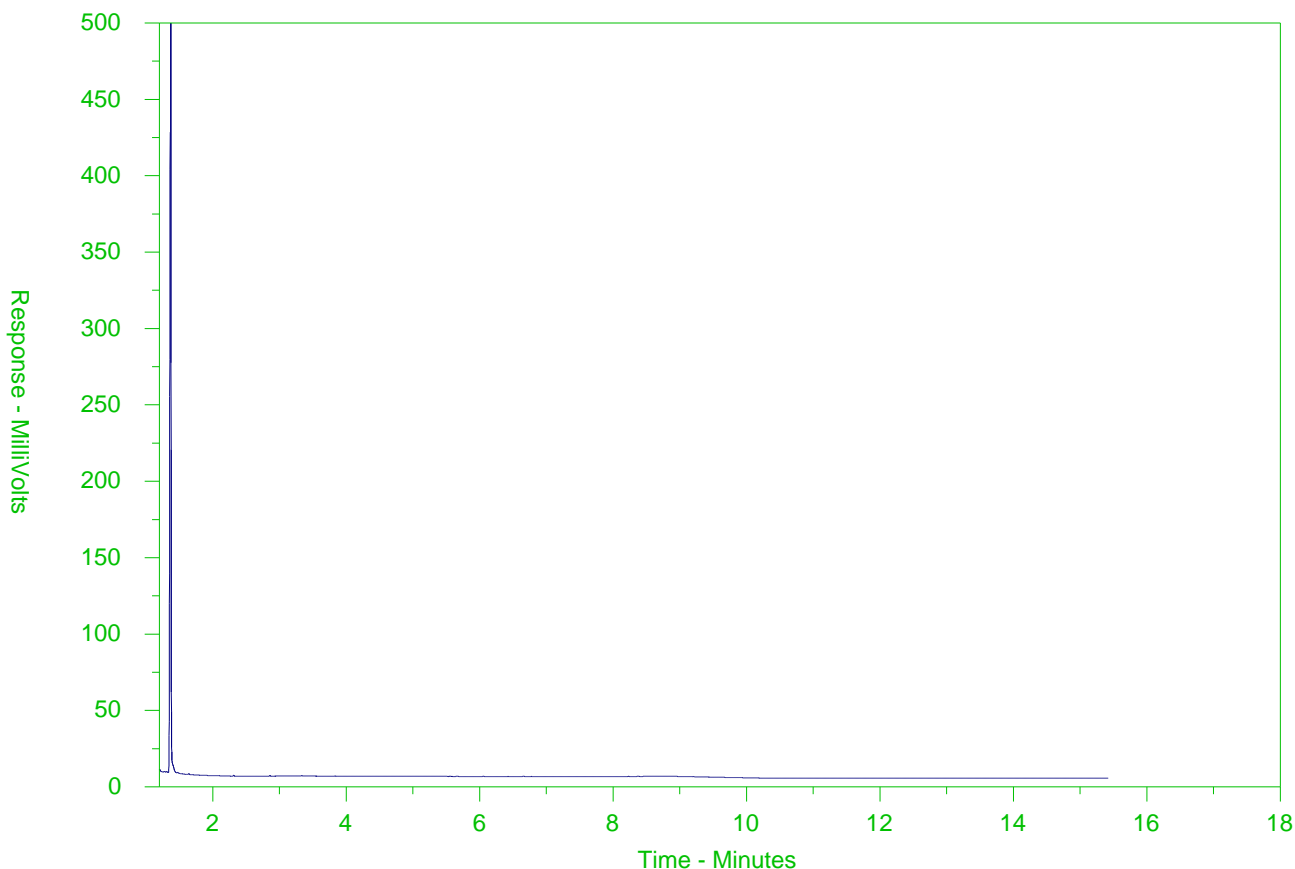
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-5
 Client Sample ID: FR_LMP1_WS_2020-05-28_N



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

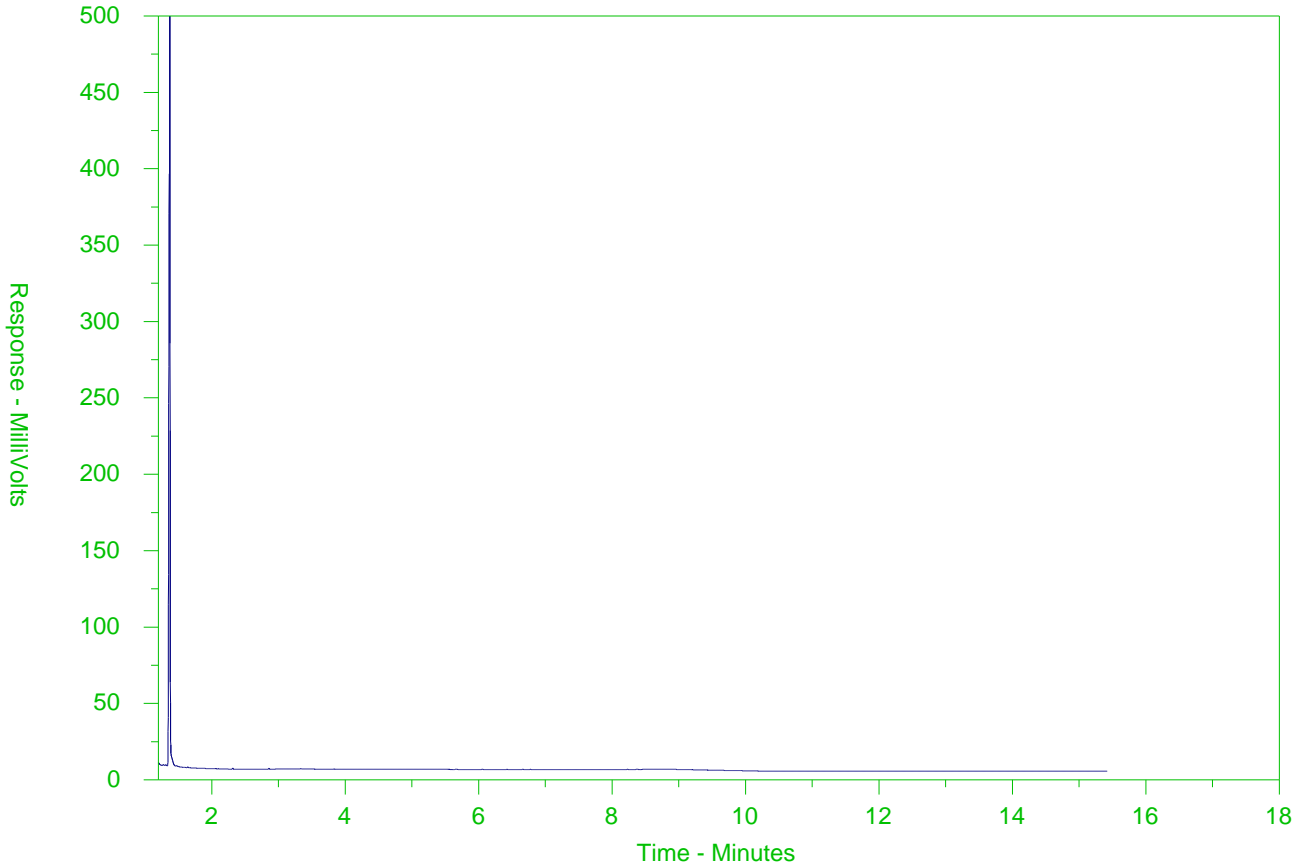
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2453937-6
 Client Sample ID: FR_MULTIPLE_WS_2020-05-28_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: 20200528 - 1100

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	ali.schroeder@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2453937-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERV.	ANALYSIS	F	N	F	N	F	N	N	N	N	N	N	N
FR_FRDSCC1_WS_2020-05-27_NP	FR_FRDSCC	WS	NO	27-May-20	14:45	G	9	H2SO4	ALS_Package-DOC	1	1	1	1	1	1	1	2				
FR_LMPI_WS_2020-05-27_N	FR_LMPI	WS	NO	27-May-20	15:15	G	9	H2SO4	ALS_Package-TKN/TOC	1	1	1	1	1	1	1	2				
FR_MULTIPLATE_WS_2020-05-27_NP	FR_MULTIPLATE	WS	NO	27-May-20	15:20	G	9	HCL	HG-D-CVAF-VA	1	1	1	1	1	1	1	2				
FR_FRDSCC1_WS_2020-05-28_NP	FR_FRDSCC	WS	NO	28-May-20	8:00	G	9	NONE	HG-T-U-CVAF-VA	1	1	1	1	1	1	1	2				
FR_LMPI_WS_2020-05-28_N	FR_LMPI	WS	NO	28-May-20	7:30	G	9	HNO3	TECKCOAL-MET-D-VA	1	1	1	1	1	1	1	2				
FR_MULTIPLATE_WS_2020-05-28_NP	FR_MULTIPLATE	WS	NO	28-May-20	8:20	G	9	HNO3	TECKCOAL-METNHG-T-CL	1	1	1	1	1	1	1	2				
FR_FRCP1_WS-2020_2020-05-27_N	FR_FRCP1	WS	NO	27-May-20	9:30	G	7	NONE	TECKCOAL-ROUTINE-VA	1	1	1	1	1	1	1	2				
FR_MW_SK1A_QTR_2020-04-06_N	FR_MW_SK1A	WS	NO	28-May-20	14:10	G	5	Sodium Bisulfate	PAH/EPH												
FR_MW_SK1B_QTR_2020-04-06_N	FR_MW_SK1B	WS	NO	28-May-20	13:35	G	5	HCL	ALS_Package-Methylmercury												
FR_GH_WELL4_QTR_2020-04-06_N	FR_GH_WELL4	WS	NO	28-May-20	10:40	G	5	NONE	BOD / Colour												
FR-DC1					1040			NONE	TSS / TURBIDITY												
									PAH												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

Britt Anderson

May 28, 2020

Britt Anderson 5/28/20

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Britt Anderson

Mobile #

250-425-5335

Sampler's Signature

Date/Time

May 28, 2020

9



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 30-MAY-20
Report Date: 30-DEC-20 09:29 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2454116
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200529 - 0730
Legal Site Desc:

Comments: 12-30-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2454116-1	L2454116-2	L2454116-3	L2454116-4	L2454116-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	29-MAY-20	29-MAY-20	29-MAY-20	29-MAY-20	29-MAY-20
		Sampled Time	09:28	13:15	12:10	09:28	10:00
		Client ID	FR_TT43_QTR_20 20-04-06_N	FR_MW- 1B_QTR_2020-04- 06_N	FR_POTWELLS_Q TR_2020-04-06_N	FR_DC3_QTR_202 0-04-06_N	FR_CIL_MON_202 0-05-04_N
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		1340	500	330	1350	919
	Hardness (as CaCO3) (mg/L)		814	260	170	805	
	pH (pH)		7.99	8.38	8.35	8.00	7.99
	ORP (mV)		393	431	408	435	373
	Total Suspended Solids (mg/L)		6.6	4.1	1.8	3.1	356 ^{DLHC}
	Total Dissolved Solids (mg/L)		1160	373	208	1200	427
	Turbidity (NTU)		0.71	2.16	0.16	0.32	79.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		8.3	<1.0	<1.0	5.5	12.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		261	148	127	264	118
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	7.0	4.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		261	155	131	264	118 ^{DLHC}
	Ammonia as N (mg/L)		0.0065	<0.0050	0.0088	<0.0050	62.6 ^{DLHC}
	Bicarbonate (HCO3) (mg/L)		318 ^{DLHC}	181	155	322 ^{DLHC}	144 ^{DLHC}
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.050	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)		<5.0 ^{DLHC}	<5.0	<5.0	<5.0 ^{DLHC}	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)		3.4 ^{DLHC}	<0.50	<0.50	12.0 ^{DLHC}	4.2 ^{DLHC}
	Fluoride (F) (mg/L)		0.12 ^{DLHC}	0.137	0.163	0.11 ^{DLHC}	0.15 ^{DLHC}
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		100	92.3	89.7	97.9	101
	Nitrate (as N) (mg/L)		50.3 ^{DLHC}	7.49	1.25	49.4 ^{DLHC}	66.0 ^{DLHC}
	Nitrite (as N) (mg/L)		<0.0050 ^{DLHC}	<0.0010 ^{TKNI}	<0.0010	<0.0050 ^{DLHC}	0.358 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)		<0.25 ^{TKNI}	<0.050 ^{TKNI}	0.334 ^{HTD}	<0.25 ^{TKNI}	66 ^{DLHC}
	Orthophosphate-Dissolved (as P) (mg/L)		0.0024	0.0025	<0.0010 ^{HTD}	<0.0010 ^{HTD}	0.0019 ^{DLHC}
	Phosphorus (P)-Total (mg/L)		0.0032 ^{DLHC}	0.0046	<0.0020	<0.0020 ^{DLHC}	0.343 ^{DLHC}
	Sulfate (SO4) (mg/L)		369	99.5	53.4	365	55.9
	Anion Sum (meq/L)		16.6	5.72	3.82	16.8	8.39
	Cation Sum (meq/L)		16.6	5.28	3.43	16.4	8.49
	Cation - Anion Balance (%)		0.0	-4.0	-5.4	-1.1	0.6
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		0.76	1.33	1.81	4.73
Total Organic Carbon (mg/L)			0.76	1.34	2.61	7.05	10.5
Total Metals	Aluminum (Al)-Total (mg/L)						
	Antimony (Sb)-Total (mg/L)						
	Arsenic (As)-Total (mg/L)						
	Barium (Ba)-Total (mg/L)						
	Beryllium (Be)-Total (ug/L)						

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2454116-6 WS 29-MAY-20 11:15 FR_TSF- RL_WS_2020-05- 29_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	970			
	Hardness (as CaCO3) (mg/L)	534			
	pH (pH)	8.29			
	ORP (mV)	410			
	Total Suspended Solids (mg/L)	3.1			
	Total Dissolved Solids (mg/L)	747			
	Turbidity (NTU)	4.57			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	219			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	219			
	Ammonia as N (mg/L)	2.03	DLHC		
	Bicarbonate (HCO3) (mg/L)	267			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	3.7	DLHC		
	Fluoride (F) (mg/L)	0.39	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	94.2			
	Nitrate (as N) (mg/L)	14.9	DLHC		
	Nitrite (as N) (mg/L)	0.154	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	1.00	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0082			
	Sulfate (SO4) (mg/L)	307	DLHC		
	Anion Sum (meq/L)	12.0			
	Cation Sum (meq/L)	11.3			
	Cation - Anion Balance (%)	-3.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	4.53			
	Total Organic Carbon (mg/L)	4.55			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0100			
	Antimony (Sb)-Total (mg/L)	0.00614			
	Arsenic (As)-Total (mg/L)	0.00069			
	Barium (Ba)-Total (mg/L)	0.0512			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2454116-1	L2454116-2	L2454116-3	L2454116-4	L2454116-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	29-MAY-20	29-MAY-20	29-MAY-20	29-MAY-20	29-MAY-20
		Sampled Time	09:28	13:15	12:10	09:28	10:00
		Client ID	FR_TT43_QTR_20 20-04-06_N	FR_MW- 1B_QTR_2020-04- 06_N	FR_POTWELLS_Q TR_2020-04-06_N	FR_DC3_QTR_202 0-04-06_N	FR_CIL_MON_202 0-05-04_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)						
	Boron (B)-Total (mg/L)						
	Cadmium (Cd)-Total (ug/L)						
	Calcium (Ca)-Total (mg/L)						
	Chromium (Cr)-Total (mg/L)						
	Cobalt (Co)-Total (ug/L)						
	Copper (Cu)-Total (mg/L)						
	Iron (Fe)-Total (mg/L)						
	Lead (Pb)-Total (mg/L)						
	Lithium (Li)-Total (mg/L)						
	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (ug/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (ug/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD		LAB
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0119	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00036	0.00021	<0.00010	0.00036		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0551	0.0756	0.0424	0.0556		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.023	<0.010	<0.010	0.022		
	Cadmium (Cd)-Dissolved (ug/L)	0.0446	0.0123	0.0058	0.0401		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2454116-6 WS 29-MAY-20 11:15 FR_TSF- RL_WS_2020-05- 29_NP				
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.044			
	Cadmium (Cd)-Total (ug/L)	0.0921			
	Calcium (Ca)-Total (mg/L)	107			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	2.81			
	Copper (Cu)-Total (mg/L)	0.00134			
	Iron (Fe)-Total (mg/L)	0.022			
	Lead (Pb)-Total (mg/L)	0.000200			
	Lithium (Li)-Total (mg/L)	0.200			
	Magnesium (Mg)-Total (mg/L)	77.9			
	Manganese (Mn)-Total (mg/L)	0.0309			
	Mercury (Hg)-Total (ug/L)	0.00054			
	Molybdenum (Mo)-Total (mg/L)	0.0315			
	Nickel (Ni)-Total (mg/L)	0.0134			
	Potassium (K)-Total (mg/L)	8.01			
	Selenium (Se)-Total (ug/L)	40.6			
	Silicon (Si)-Total (mg/L)	1.98			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	9.69			
	Strontium (Sr)-Total (mg/L)	0.304			
	Thallium (Tl)-Total (mg/L)	0.000019			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.0162			
	Vanadium (V)-Total (mg/L)	0.00233			
	Zinc (Zn)-Total (mg/L)	0.0039			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00602			
	Arsenic (As)-Dissolved (mg/L)	0.00071			
	Barium (Ba)-Dissolved (mg/L)	0.0476			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.039			
	Cadmium (Cd)-Dissolved (ug/L)	0.0663			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2454116-1	L2454116-2	L2454116-3	L2454116-4	L2454116-5
					L2454116-1 WS 29-MAY-20 09:28 FR_TT43_QTR_20 20-04-06_N	L2454116-2 WS 29-MAY-20 13:15 FR_MW- 1B_QTR_2020-04- 06_N	L2454116-3 WS 29-MAY-20 12:10 FR_POTWELLS_Q TR_2020-04-06_N	L2454116-4 WS 29-MAY-20 09:28 FR_DC3_QTR_202 0-04-06_N	L2454116-5 WS 29-MAY-20 10:00 FR_CIL_MON_202 0-05-04_N
Grouping	Analyte								
WATER									
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	180	63.3	42.3	178	49.0			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00013	<0.00010	<0.00010				
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10				
	Copper (Cu)-Dissolved (mg/L)	0.00024	0.00032	0.00052	<0.00020				
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.012	<0.010	<0.010				
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0629	0.0231	0.0050	0.0635				
	Magnesium (Mg)-Dissolved (mg/L)	88.5	24.8	15.6	87.7	17.5			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00118	<0.00010	<0.00010				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00108	0.00108	0.000716	0.00111				
	Nickel (Ni)-Dissolved (mg/L)	0.00077	<0.00050	<0.00050	0.00075				
	Potassium (K)-Dissolved (mg/L)	3.84	1.09	0.540	3.85	0.895			
	Selenium (Se)-Dissolved (ug/L)	221	25.8	9.37	215				
	Silicon (Si)-Dissolved (mg/L)	1.85	1.73	1.55	1.85				
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	5.43	1.04	0.558	5.35	2.62			
	Strontium (Sr)-Dissolved (mg/L)	0.186	0.110	0.0832	0.186				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010				
	Uranium (U)-Dissolved (mg/L)	0.00619	0.00136	0.000688	0.00619				
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	0.0015	0.0010	0.0023	0.0010				
Hydrocarbons	EPH10-19 (mg/L)								19.5
	EPH (C10-C32) (mg/L)								95.3
	EPH19-32 (mg/L)								75.8
	TEH (C10-C30) (mg/L)								85.2
	Surrogate: 2-Bromobenzotrifluoride (%)								104.2
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)								
	Acenaphthylene (ug/L)								
	Acridine (ug/L)								
	Anthracene (ug/L)								
	Benz(a)anthracene (ug/L)								
	Benzo(a)pyrene (ug/L)								
	Benzo(b&j)fluoranthene (ug/L)								

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2454116-6 WS 29-MAY-20 11:15 FR_TSF- RL_WS_2020-05- 29_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	95.0			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	2.64			
	Copper (Cu)-Dissolved (mg/L)	0.00025			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000074			
	Lithium (Li)-Dissolved (mg/L)	0.190			
	Magnesium (Mg)-Dissolved (mg/L)	72.1			
	Manganese (Mn)-Dissolved (mg/L)	0.0288			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0306			
	Nickel (Ni)-Dissolved (mg/L)	0.0127			
	Potassium (K)-Dissolved (mg/L)	7.51			
	Selenium (Se)-Dissolved (ug/L)	46.2			
	Silicon (Si)-Dissolved (mg/L)	1.81			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.24			
	Strontium (Sr)-Dissolved (mg/L)	0.297			
	Thallium (Tl)-Dissolved (mg/L)	0.000017			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.0152			
	Vanadium (V)-Dissolved (mg/L)	0.00205			
	Zinc (Zn)-Dissolved (mg/L)	0.0019			
Hydrocarbons	EPH10-19 (mg/L)	2.49			
	EPH (C10-C32) (mg/L)	14.5			
	EPH19-32 (mg/L)	12.0			
	TEH (C10-C30) (mg/L)	12.9			
	Surrogate: 2-Bromobenzotrifluoride (%)	90.9			
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)	<0.19 ^{DLCI}			
	Acenaphthylene (ug/L)	<0.040 ^{DLCI}			
	Acridine (ug/L)	<0.36 ^{DLCI}			
	Anthracene (ug/L)	<0.060 ^{DLCI}			
	Benz(a)anthracene (ug/L)	<0.010			
	Benzo(a)pyrene (ug/L)	<0.020 ^{DLCI}			
	Benzo(b&j)fluoranthene (ug/L)	<0.010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2454116-1	L2454116-2	L2454116-3	L2454116-4	L2454116-5
					WS 29-MAY-20 09:28 FR_TT43_QTR_20 20-04-06_N	WS 29-MAY-20 13:15 FR_MW- 1B_QTR_2020-04- 06_N	WS 29-MAY-20 12:10 FR_POTWELLS_Q TR_2020-04-06_N	WS 29-MAY-20 09:28 FR_DC3_QTR_202 0-04-06_N	WS 29-MAY-20 10:00 FR_CIL_MON_202 0-05-04_N
Grouping	Analyte								
WATER									
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)								
	Benzo(k)fluoranthene (ug/L)								
	Chrysene (ug/L)								
	Dibenz(a,h)anthracene (ug/L)								
	Fluoranthene (ug/L)								
	Fluorene (ug/L)								
	Indeno(1,2,3-c,d)pyrene (ug/L)								
	1-Methylnaphthalene (ug/L)								
	2-Methylnaphthalene (ug/L)								
	Naphthalene (ug/L)								
	Phenanthrene (ug/L)								
	Pyrene (ug/L)								
	Quinoline (ug/L)								
	Surrogate: Acenaphthene d10 (%)								
	Surrogate: Chrysene d12 (%)								
Surrogate: Phenanthrene d10 (%)									

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2454116-6 WS 29-MAY-20 11:15 FR_TSF- RL_WS_2020-05- 29_NP			
Grouping	Analyte				
WATER					
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)	<0.010			
	Benzo(k)fluoranthene (ug/L)	<0.010			
	Chrysene (ug/L)	<0.010			
	Dibenz(a,h)anthracene (ug/L)	<0.0050			
	Fluoranthene (ug/L)	<0.010			
	Fluorene (ug/L)	0.229			
	Indeno(1,2,3-c,d)pyrene (ug/L)	<0.010			
	1-Methylnaphthalene (ug/L)	0.552			
	2-Methylnaphthalene (ug/L)	0.683			
	Naphthalene (ug/L)	<0.050 ^{DLCI}			
	Phenanthrene (ug/L)	0.253			
	Pyrene (ug/L)	0.155			
	Quinoline (ug/L)	<0.22 ^{DLCI}			
	Surrogate: Acenaphthene d10 (%)	92.9			
	Surrogate: Chrysene d12 (%)	69.9			
Surrogate: Phenanthrene d10 (%)	91.8				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2454116-5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2454116-5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2454116-1, -2, -3, -4, -6
Matrix Spike	Sulfate (SO ₄)	MS-B	L2454116-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample			

Reference Information

pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PAH-BCCSR-CL Water PAHs - BC CSR Regs EPA 3511/8270D

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS.
 Container: 250 ML AMBER-EPH/PAH

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200529 - 0730

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2454116

Report Date: 30-DEC-20

Page 1 of 17

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-27	DUP	L2454116-4						
Acidity (as CaCO3)		5.5	5.6		mg/L	1.4	20	03-JUN-20
WG3334185-26	LCS							
Acidity (as CaCO3)			102.6		%		85-115	03-JUN-20
WG3334185-25	MB							
Acidity (as CaCO3)			1.4		mg/L		2	03-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5108979							
WG3335929-2	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	04-JUN-20
WG3335929-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-2	LCS							
Beryllium (Be)-Dissolved			97.0		%		80-120	05-JUN-20
WG3334930-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5110043							
WG3335437-2	LCS							
Beryllium (Be)-Total			96.2		%		80-120	05-JUN-20
WG3335437-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	05-JUN-20
BIC-CL								
	Water							
Batch	R5108979							
WG3335929-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5109001							
WG3335969-6	LCS							
Bromide (Br)			102.4		%		85-115	31-MAY-20
WG3335969-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-20
C-DIS-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL		Water						
Batch	R5110688							
WG3337405-10	LCS							
Dissolved Organic Carbon			110.8		%		80-120	07-JUN-20
WG3337405-6	LCS							
Dissolved Organic Carbon			102.6		%		80-120	07-JUN-20
WG3337405-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
WG3337405-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
C-TOT-ORG-LOW-CL		Water						
Batch	R5110688							
WG3337405-10	LCS							
Total Organic Carbon			116.3		%		80-120	07-JUN-20
WG3337405-6	LCS							
Total Organic Carbon			104.9		%		80-120	07-JUN-20
WG3337405-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
WG3337405-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
CL-IC-N-CL		Water						
Batch	R5109001							
WG3335969-6	LCS							
Chloride (Cl)			102.6		%		90-110	31-MAY-20
WG3335969-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-20
CO3-CL		Water						
Batch	R5108979							
WG3335929-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	04-JUN-20
EC-L-PCT-CL		Water						
Batch	R5108979							
WG3335929-2	LCS							
Conductivity (@ 25C)			99.5		%		90-110	04-JUN-20
WG3335929-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-JUN-20
F-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R5109001								
WG3335969-6	LCS							
Fluoride (F)			99.2		%		90-110	31-MAY-20
WG3335969-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-20
HG-D-CVAA-VA								
Batch R5110081								
WG3336356-10	LCS							
Mercury (Hg)-Dissolved			100.8		%		80-120	06-JUN-20
WG3336356-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-JUN-20
HG-T-U-CVAF-VA								
Batch R5108278								
WG3335657-2	LCS							
Mercury (Hg)-Total			92.0		%		80-120	04-JUN-20
WG3335657-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-JUN-20
MET-D-CCMS-CL								
Batch R5112516								
WG3338468-2	LCS	TMRM						
Calcium (Ca)-Dissolved			99.2		%		80-120	09-JUN-20
Magnesium (Mg)-Dissolved			108.6		%		80-120	09-JUN-20
Potassium (K)-Dissolved			101.8		%		80-120	09-JUN-20
Sodium (Na)-Dissolved			103.8		%		80-120	09-JUN-20
WG3338468-1	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
MET-D-CCMS-VA								
Batch R5109760								
WG3334930-2	LCS							
Aluminum (Al)-Dissolved			107.0		%		80-120	05-JUN-20
Antimony (Sb)-Dissolved			98.2		%		80-120	05-JUN-20
Arsenic (As)-Dissolved			97.3		%		80-120	05-JUN-20
Barium (Ba)-Dissolved			99.1		%		80-120	05-JUN-20
Bismuth (Bi)-Dissolved			100.9		%		80-120	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-2	LCS							
Boron (B)-Dissolved			90.9		%		80-120	05-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	05-JUN-20
Calcium (Ca)-Dissolved			96.5		%		80-120	05-JUN-20
Chromium (Cr)-Dissolved			100.1		%		80-120	05-JUN-20
Cobalt (Co)-Dissolved			101.6		%		80-120	05-JUN-20
Copper (Cu)-Dissolved			101.9		%		80-120	05-JUN-20
Iron (Fe)-Dissolved			99.97		%		80-120	05-JUN-20
Lead (Pb)-Dissolved			100.8		%		80-120	05-JUN-20
Lithium (Li)-Dissolved			98.1		%		80-120	05-JUN-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	05-JUN-20
Manganese (Mn)-Dissolved			99.9		%		80-120	05-JUN-20
Molybdenum (Mo)-Dissolved			99.4		%		80-120	05-JUN-20
Nickel (Ni)-Dissolved			100.6		%		80-120	05-JUN-20
Potassium (K)-Dissolved			103.6		%		80-120	05-JUN-20
Selenium (Se)-Dissolved			100.8		%		80-120	05-JUN-20
Silicon (Si)-Dissolved			104.2		%		60-140	05-JUN-20
Silver (Ag)-Dissolved			102.5		%		80-120	05-JUN-20
Sodium (Na)-Dissolved			103.3		%		80-120	05-JUN-20
Strontium (Sr)-Dissolved			103.9		%		80-120	05-JUN-20
Thallium (Tl)-Dissolved			102.0		%		80-120	05-JUN-20
Tin (Sn)-Dissolved			98.9		%		80-120	05-JUN-20
Titanium (Ti)-Dissolved			99.1		%		80-120	05-JUN-20
Uranium (U)-Dissolved			98.0		%		80-120	05-JUN-20
Vanadium (V)-Dissolved			101.2		%		80-120	05-JUN-20
Zinc (Zn)-Dissolved			100.2		%		80-120	05-JUN-20
WG3334930-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5110043							
WG3335437-2	LCS							
Aluminum (Al)-Total			102.0		%		80-120	05-JUN-20
Antimony (Sb)-Total			102.0		%		80-120	05-JUN-20
Arsenic (As)-Total			98.6		%		80-120	05-JUN-20
Barium (Ba)-Total			104.7		%		80-120	05-JUN-20
Bismuth (Bi)-Total			107.5		%		80-120	05-JUN-20
Boron (B)-Total			92.1		%		80-120	05-JUN-20
Cadmium (Cd)-Total			103.2		%		80-120	05-JUN-20
Calcium (Ca)-Total			100.5		%		80-120	05-JUN-20
Chromium (Cr)-Total			101.7		%		80-120	05-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5110043							
WG3335437-2	LCS							
Cobalt (Co)-Total			100.2		%		80-120	05-JUN-20
Copper (Cu)-Total			98.5		%		80-120	05-JUN-20
Iron (Fe)-Total			93.3		%		80-120	05-JUN-20
Lead (Pb)-Total			102.6		%		80-120	05-JUN-20
Lithium (Li)-Total			97.4		%		80-120	05-JUN-20
Magnesium (Mg)-Total			101.0		%		80-120	05-JUN-20
Manganese (Mn)-Total			102.0		%		80-120	05-JUN-20
Molybdenum (Mo)-Total			104.0		%		80-120	05-JUN-20
Nickel (Ni)-Total			98.9		%		80-120	05-JUN-20
Potassium (K)-Total			103.2		%		80-120	05-JUN-20
Selenium (Se)-Total			98.8		%		80-120	05-JUN-20
Silicon (Si)-Total			101.8		%		80-120	05-JUN-20
Silver (Ag)-Total			103.7		%		80-120	05-JUN-20
Sodium (Na)-Total			103.8		%		80-120	05-JUN-20
Strontium (Sr)-Total			105.6		%		80-120	05-JUN-20
Thallium (Tl)-Total			104.1		%		80-120	05-JUN-20
Tin (Sn)-Total			104.5		%		80-120	05-JUN-20
Titanium (Ti)-Total			100.4		%		80-120	05-JUN-20
Uranium (U)-Total			98.0		%		80-120	05-JUN-20
Vanadium (V)-Total			101.4		%		80-120	05-JUN-20
Zinc (Zn)-Total			96.8		%		80-120	05-JUN-20
WG3335437-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5110043							
WG3335437-1	MB							
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUN-20
NH3-L-F-CL		Water						
Batch	R5110972							
WG3337654-18	LCS							
Ammonia as N			96.3		%		85-115	08-JUN-20
WG3337654-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	08-JUN-20
NO2-L-IC-N-CL		Water						
Batch	R5109001							
WG3335969-6	LCS							
Nitrite (as N)			105.8		%		90-110	31-MAY-20
WG3335969-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAY-20
NO3-L-IC-N-CL		Water						
Batch	R5109001							
WG3335969-6	LCS							
Nitrate (as N)			103.1		%		90-110	31-MAY-20
WG3335969-5	MB							

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NO3-L-IC-N-CL	Water							
Batch	R5109001							
WG3335969-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAY-20
OH-CL	Water							
Batch	R5108979							
WG3335929-1 MB								
Hydroxide (OH)			<5.0		mg/L		5	04-JUN-20
ORP-CL	Water							
Batch	R5111019							
WG3337702-3 CRM		CL-ORP						
ORP			229		mV		210-230	08-JUN-20
WG3337702-5 CRM		CL-ORP						
ORP			227		mV		210-230	08-JUN-20
WG3337702-6 DUP		L2454116-6						
ORP		410	418	J	mV	7.8	15	08-JUN-20
P-T-L-COL-CL	Water							
Batch	R5110203							
WG3336809-2 LCS								
Phosphorus (P)-Total			97.1		%		80-120	06-JUN-20
WG3336809-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-JUN-20
PAH-BCCSR-CL	Water							
Batch	R5115145							
WG3339346-1 LCS								
Acenaphthene			100		ug/L		60-130	09-JUN-20
Acenaphthylene			95.3		ug/L		60-130	09-JUN-20
Acridine			113		ug/L		60-130	09-JUN-20
Anthracene			117		ug/L		60-130	09-JUN-20
Benz(a)anthracene			112		ug/L		60-130	09-JUN-20
Benzo(a)pyrene			116		ug/L		60-130	09-JUN-20
Benzo(b&j)fluoranthene			115		ug/L		60-130	09-JUN-20
Benzo(g,h,i)perylene			101		ug/L		60-130	09-JUN-20
Benzo(k)fluoranthene			107		ug/L		60-130	09-JUN-20
Chrysene			105		ug/L		60-130	09-JUN-20
Dibenz(a,h)anthracene			97.3		ug/L		60-130	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5115145							
WG3339346-1	LCS							
Fluoranthene			103		ug/L		60-130	09-JUN-20
Fluorene			100		ug/L		60-130	09-JUN-20
Indeno(1,2,3-c,d)pyrene			111		ug/L		60-130	09-JUN-20
2-Methylnaphthalene			99.4		ug/L		60-130	09-JUN-20
Naphthalene			109		ug/L		50-130	09-JUN-20
Phenanthrene			113		ug/L		60-130	09-JUN-20
Pyrene			105		ug/L		60-130	09-JUN-20
Quinoline			122		ug/L		60-130	09-JUN-20
1-Methylnaphthalene			102.2		%		60-130	09-JUN-20
WG3339346-4	LCS							
Acenaphthene			108		ug/L		60-130	10-JUN-20
Acenaphthylene			99.6		ug/L		60-130	10-JUN-20
Acridine			86.1		ug/L		60-130	10-JUN-20
Anthracene			92.2		ug/L		60-130	10-JUN-20
Benz(a)anthracene			108		ug/L		60-130	10-JUN-20
Benzo(a)pyrene			111		ug/L		60-130	10-JUN-20
Benzo(b&j)fluoranthene			111		ug/L		60-130	10-JUN-20
Benzo(g,h,i)perylene			106		ug/L		60-130	10-JUN-20
Benzo(k)fluoranthene			104		ug/L		60-130	10-JUN-20
Chrysene			103		ug/L		60-130	10-JUN-20
Dibenz(a,h)anthracene			99.8		ug/L		60-130	10-JUN-20
Fluoranthene			104		ug/L		60-130	10-JUN-20
Fluorene			105		ug/L		60-130	10-JUN-20
Indeno(1,2,3-c,d)pyrene			107		ug/L		60-130	10-JUN-20
2-Methylnaphthalene			89.8		ug/L		60-130	10-JUN-20
Naphthalene			96.3		ug/L		50-130	10-JUN-20
Phenanthrene			92.8		ug/L		60-130	10-JUN-20
Pyrene			106		ug/L		60-130	10-JUN-20
Quinoline			107		ug/L		60-130	10-JUN-20
1-Methylnaphthalene			90.0		%		60-130	10-JUN-20
WG3339346-5	LCS							
Acenaphthene			114		ug/L		60-130	11-JUN-20
Acenaphthylene			111		ug/L		60-130	11-JUN-20
Acridine			88.0		ug/L		60-130	11-JUN-20
Anthracene			105		ug/L		60-130	11-JUN-20



Quality Control Report

Workorder: L2454116

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5115145							
WG3339346-5	LCS							
Benz(a)anthracene			101		ug/L		60-130	11-JUN-20
Benzo(a)pyrene			101		ug/L		60-130	11-JUN-20
Benzo(b&j)fluoranthene			107		ug/L		60-130	11-JUN-20
Benzo(g,h,i)perylene			129		ug/L		60-130	11-JUN-20
Benzo(k)fluoranthene			103		ug/L		60-130	11-JUN-20
Chrysene			107		ug/L		60-130	11-JUN-20
Dibenz(a,h)anthracene			111		ug/L		60-130	11-JUN-20
Fluoranthene			117		ug/L		60-130	11-JUN-20
Fluorene			121		ug/L		60-130	11-JUN-20
Indeno(1,2,3-c,d)pyrene			112		ug/L		60-130	11-JUN-20
2-Methylnaphthalene			99.7		ug/L		60-130	11-JUN-20
Naphthalene			110		ug/L		50-130	11-JUN-20
Phenanthrene			112		ug/L		60-130	11-JUN-20
Pyrene			119		ug/L		60-130	11-JUN-20
Quinoline			98.3		ug/L		60-130	11-JUN-20
1-Methylnaphthalene			96.5		%		60-130	11-JUN-20
WG3339346-2	MB							
Acenaphthene			<0.010		ug/L		0.01	09-JUN-20
Acenaphthylene			<0.010		ug/L		0.01	09-JUN-20
Acridine			<0.010		ug/L		0.01	09-JUN-20
Anthracene			<0.010		ug/L		0.01	09-JUN-20
Benzo(a)anthracene			<0.010		ug/L		0.01	09-JUN-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	09-JUN-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	09-JUN-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	09-JUN-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	09-JUN-20
Chrysene			<0.010		ug/L		0.01	09-JUN-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	09-JUN-20
Fluoranthene			<0.010		ug/L		0.01	09-JUN-20
Fluorene			<0.010		ug/L		0.01	09-JUN-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	09-JUN-20
2-Methylnaphthalene			<0.020		ug/L		0.02	09-JUN-20
Naphthalene			<0.020		ug/L		0.02	09-JUN-20
Phenanthrene			<0.020		ug/L		0.02	09-JUN-20



Quality Control Report

Workorder: L2454116

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5115145							
WG3339346-2 MB								
Pyrene			<0.010		ug/L		0.01	09-JUN-20
Quinoline			<0.050		ug/L		0.05	09-JUN-20
1-Methylnaphthalene			<0.050		ug/L		0.05	09-JUN-20
Surrogate: Acenaphthene d10			94.5		%		60-130	09-JUN-20
Surrogate: Chrysene d12			70.7		%		60-130	09-JUN-20
Surrogate: Phenanthrene d10			110.6		%		60-130	09-JUN-20
WG3339346-3 MB								
Acenaphthene			<0.010		ug/L		0.01	10-JUN-20
Acenaphthylene			<0.010		ug/L		0.01	10-JUN-20
Acridine			<0.010		ug/L		0.01	10-JUN-20
Anthracene			<0.010		ug/L		0.01	10-JUN-20
Benz(a)anthracene			<0.010		ug/L		0.01	10-JUN-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	10-JUN-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	10-JUN-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	10-JUN-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	10-JUN-20
Chrysene			<0.010		ug/L		0.01	10-JUN-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	10-JUN-20
Fluoranthene			<0.010		ug/L		0.01	10-JUN-20
Fluorene			<0.010		ug/L		0.01	10-JUN-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	10-JUN-20
2-Methylnaphthalene			<0.020		ug/L		0.02	10-JUN-20
Naphthalene			<0.020		ug/L		0.02	10-JUN-20
Phenanthrene			<0.020		ug/L		0.02	10-JUN-20
Pyrene			<0.010		ug/L		0.01	10-JUN-20
Quinoline			<0.050		ug/L		0.05	10-JUN-20
1-Methylnaphthalene			<0.050		ug/L		0.05	10-JUN-20
Surrogate: Acenaphthene d10			81.9		%		60-130	10-JUN-20
Surrogate: Chrysene d12			82.7		%		60-130	10-JUN-20
Surrogate: Phenanthrene d10			111.3		%		60-130	10-JUN-20
WG3339346-6 MB								
Acenaphthene			<0.010		ug/L		0.01	11-JUN-20
Acenaphthylene			<0.010		ug/L		0.01	11-JUN-20
Acridine			<0.010		ug/L		0.01	11-JUN-20
Anthracene			<0.010		ug/L		0.01	11-JUN-20

Quality Control Report

Workorder: L2454116

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5115145							
WG3339346-6	MB							
Benz(a)anthracene			<0.010		ug/L		0.01	11-JUN-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	11-JUN-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	11-JUN-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	11-JUN-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	11-JUN-20
Chrysene			<0.010		ug/L		0.01	11-JUN-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	11-JUN-20
Fluoranthene			<0.010		ug/L		0.01	11-JUN-20
Fluorene			<0.010		ug/L		0.01	11-JUN-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	11-JUN-20
2-Methylnaphthalene			<0.020		ug/L		0.02	11-JUN-20
Naphthalene			<0.020		ug/L		0.02	11-JUN-20
Phenanthrene			<0.020		ug/L		0.02	11-JUN-20
Pyrene			<0.010		ug/L		0.01	11-JUN-20
Quinoline			<0.050		ug/L		0.05	11-JUN-20
1-Methylnaphthalene			<0.050		ug/L		0.05	11-JUN-20
Surrogate: Acenaphthene d10			102.1		%		60-130	11-JUN-20
Surrogate: Chrysene d12			86.2		%		60-130	11-JUN-20
Surrogate: Phenanthrene d10			104.6		%		60-130	11-JUN-20
PH-CL		Water						
Batch	R5108979							
WG3335929-2	LCS							
pH			6.98		pH		6.9-7.1	04-JUN-20
PO4-DO-L-COL-CL		Water						
Batch	R5102388							
WG3332196-14	LCS							
Orthophosphate-Dissolved (as P)			91.3		%		80-120	30-MAY-20
WG3332196-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-MAY-20
SO4-IC-N-CL		Water						
Batch	R5109001							
WG3335969-6	LCS							
Sulfate (SO4)			102.2		%		90-110	31-MAY-20
WG3335969-5	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL		Water						
Batch	R5111637							
WG3338207-3	LCS							
TEH (C10-C30)			97.7		%		70-130	09-JUN-20
WG3338207-5	LCS							
TEH (C10-C30)			100.1		%		70-130	12-JUN-20
WG3338207-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			83.0		%		60-140	09-JUN-20
WG3338207-2	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			77.5		%		60-140	09-JUN-20
WG3338207-4	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	12-JUN-20
Surrogate: 2-Bromobenzotrifluoride			84.1		%		60-140	12-JUN-20
TKN-L-F-CL		Water						
Batch	R5112676							
WG3338519-10	LCS							
Total Kjeldahl Nitrogen			81.3		%		75-125	09-JUN-20
WG3338519-14	LCS							
Total Kjeldahl Nitrogen			82.1		%		75-125	09-JUN-20
WG3338519-18	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	09-JUN-20
WG3338519-2	LCS							
Total Kjeldahl Nitrogen			83.7		%		75-125	09-JUN-20
WG3338519-6	LCS							
Total Kjeldahl Nitrogen			82.3		%		75-125	09-JUN-20
WG3338519-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JUN-20
WG3338519-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JUN-20
WG3338519-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JUN-20
WG3338519-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JUN-20
WG3338519-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JUN-20
TSS-L-CL		Water						

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5108476							
WG3334504-20 LCS								
Total Suspended Solids			90.4		%		85-115	03-JUN-20
WG3334504-19 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL	Water							
Batch	R5103089							
WG3333088-2 LCS								
Turbidity			103.0		%		85-115	01-JUN-20
WG3333088-1 MB								
Turbidity			<0.10		NTU		0.1	01-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	29-MAY-20 09:28	08-JUN-20 13:00	0.25	244	hours	EHTR-FM
	2	29-MAY-20 13:15	08-JUN-20 13:00	0.25	240	hours	EHTR-FM
	3	29-MAY-20 12:10	08-JUN-20 13:00	0.25	241	hours	EHTR-FM
	4	29-MAY-20 09:28	08-JUN-20 13:00	0.25	244	hours	EHTR-FM
	5	29-MAY-20 10:00	08-JUN-20 13:00	0.25	243	hours	EHTR-FM
	6	29-MAY-20 11:15	08-JUN-20 13:00	0.25	242	hours	EHTR-FM
pH							
	1	29-MAY-20 09:28	04-JUN-20 14:00	0.25	149	hours	EHTR-FM
	2	29-MAY-20 13:15	04-JUN-20 14:00	0.25	145	hours	EHTR-FM
	3	29-MAY-20 12:10	04-JUN-20 14:00	0.25	146	hours	EHTR-FM
	4	29-MAY-20 09:28	04-JUN-20 14:00	0.25	149	hours	EHTR-FM
	5	29-MAY-20 10:00	04-JUN-20 14:00	0.25	148	hours	EHTR-FM
	6	29-MAY-20 11:15	04-JUN-20 14:00	0.25	147	hours	EHTR-FM
Anions and Nutrients							
Orthophosphate-Dissolved (as P)							
	3	29-MAY-20 12:10	06-JUN-20 12:00	3	8	days	EHT
	4	29-MAY-20 09:28	06-JUN-20 12:00	3	8	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
 EHT: Exceeded ALS recommended hold time prior to analysis.
 Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2454116 were received on 30-MAY-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

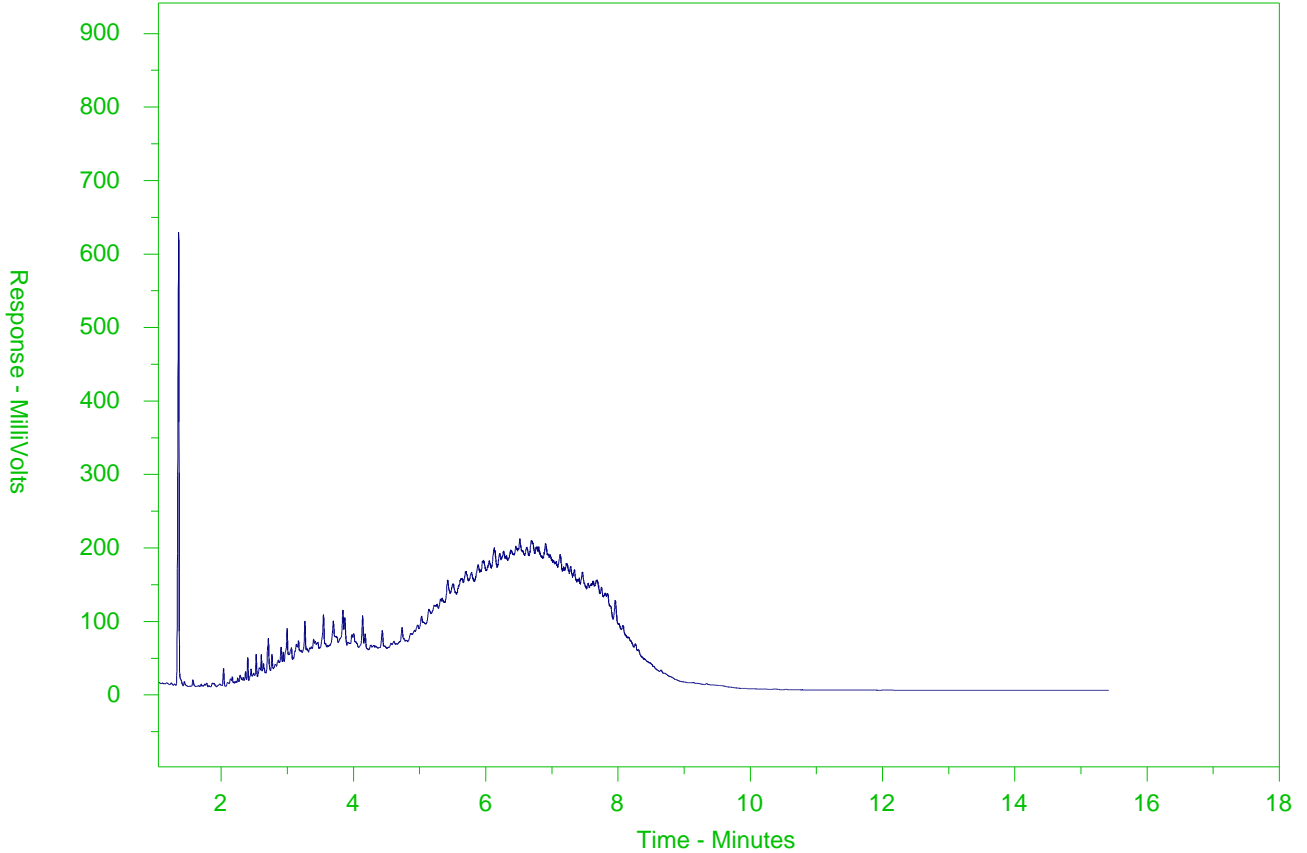
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2454116-5
 Client Sample ID: FR_CIL_MON_2020-05-04_N



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

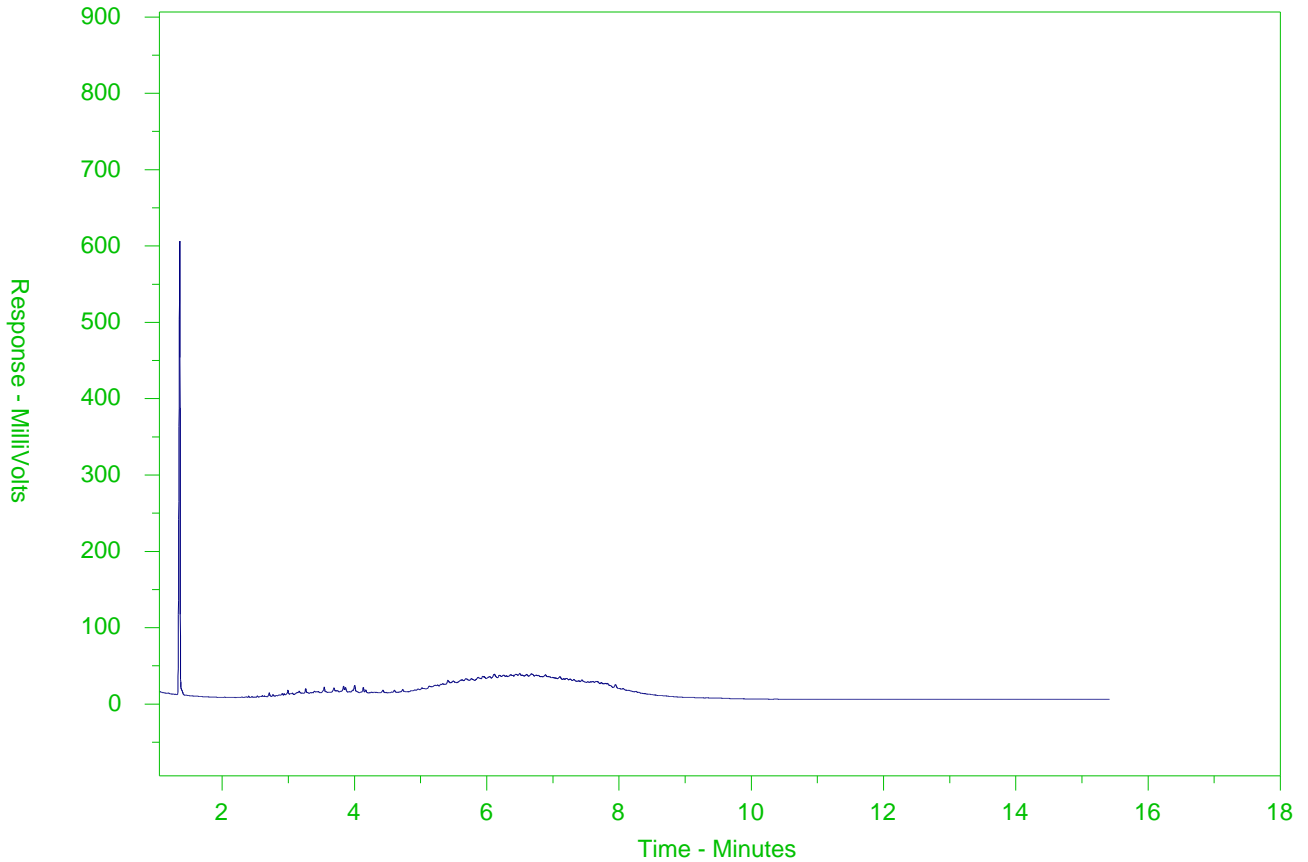
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2454116-6
 Client Sample ID: FR_TSF-RL_WS_2020-05-29_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: **20200529 - 0730** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO									
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD				
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com		X	X	X				
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com		X	X	X				
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com		X	X	X				
City	Elkford		Province	BC		City	Calgary		Province	AB		Email 4:	teckcoal@equisonline.com		X	X	X
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		Email 5:	ali.schroeder@teck.com		X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583								

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2454116-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED																	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET/NHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY	PAH						
FR_TT43_QTR_2020-04-06_N	FR_TT43	WS	NO	29-May-20	9:28	G	5	1	1	1		1		1											
FR_MW-1B_QTR_2020-04-06_N	FR_MW-1B	WS	NO	29-May-20	13:15	G	5	1	1	1		1		1											
FR_POTWELLS_QTR_2020-04-06_N	FR_POTWELLS	WS	NO	29-May-20	12:10	G	5	1	1	1		1		1											
FR_DC3_QTR_2020-04-06_N	FR_DC3	WS	NO	29-May-20	9:28	G	5	1	1	1		1		1											
FR_CIL_MON_2020-05-04_N	FR_CIL	WS	NO	29-May-20	10:00	G	4		1					1	1										
FR_TSF-RL_WS_2020-05-29_NP	FR_TSF-RL	WS	NO	29-May-20	11:15	G	9	1	1	1	1	1	1	1	1	2									

2 EPH - DK

1/1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kaileigh McCallum	May 29, 2020	<i>AK</i>	5/30 0540

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Kaileigh McCallum		Mobile #
Priority (2-3 business days) - 50% surcharge				250-494-9462
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time	
For Emergency <1 Day, ASAP or Weekend - Contact ALS				May 29, 2020

(Signature) 14/14



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 05-JUN-20
Report Date: 22-DEC-20 17:52 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2457134
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200604 - 0800
Legal Site Desc:

Comments: 22-DEC-20: Bicarbonate, Carbonate and Hydroxide results added.
21-JUNE-20: Nitrite and Nitrate for all samples were analyzed passed hold time due to sample and instrument over capacity.

Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2457134-1 WS 04-JUN-20 12:09 FR_HMW2_QTR_2 020-04-06_N	L2457134-2 WS 04-JUN-20 10:54 FR_GCMW- 2_QTR_2020-04- 06_N	L2457134-3 WS 04-JUN-20 13:13 GH_PC2_MON_20 20-06-01_N	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2960	969	617	
	Hardness (as CaCO3) (mg/L)	2140	548	325	
	pH (pH)	7.88	8.22	8.32	
	ORP (mV)	502	422	412	
	Total Suspended Solids (mg/L)	16.0	1.6	35.2	
	Total Dissolved Solids (mg/L)	3070 ^{DLHC}	792 ^{DLHC}	449 ^{DLHC}	
	Turbidity (NTU)	10.6	0.94	11.8	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	18.9	2.7	1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	359	205	166	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	5.8	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	359	205	172	
	Ammonia as N (mg/L)	0.0053	0.0086	0.0073	
	Bicarbonate (HCO3) (mg/L)	438	250	203	
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	0.66	<0.50	
	Fluoride (F) (mg/L)	0.13 ^{DLHC}	0.156	0.145	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	95.8	97.5	94.2	
	Nitrate (as N) (mg/L)	48.9 ^{DLHC}	22.4	11.8	
	Nitrite (as N) (mg/L)	0.0052 ^{DLHC}	0.0016	0.0079	
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.050 ^{TKNI}	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0066	0.0019	0.0036	
	Phosphorus (P)-Total (mg/L)	0.0189	0.0059	0.0474	
	Sulfate (SO4) (mg/L)	1650 ^{DLHC}	275	130	
	Anion Sum (meq/L)	45.0	11.4	7.00	
	Cation Sum (meq/L)	43.1	11.2	6.60	
	Cation - Anion Balance (%)	-2.1	-1.3	-3.0	
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.18	1.46 ^{DTC}	1.57
Total Organic Carbon (mg/L)		1.24	0.86 ^{DTC}	1.80	
Total Metals	Aluminum (Al)-Total (mg/L)			0.310	
	Antimony (Sb)-Total (mg/L)			0.00024	
	Arsenic (As)-Total (mg/L)			0.00033	
	Barium (Ba)-Total (mg/L)			0.0499	
	Beryllium (Be)-Total (ug/L)			0.028	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2457134-1 WS 04-JUN-20 12:09 FR_HMW2_QTR_2 020-04-06_N	L2457134-2 WS 04-JUN-20 10:54 FR_GCMW- 2_QTR_2020-04- 06_N	L2457134-3 WS 04-JUN-20 13:13 GH_PC2_MON_20 20-06-01_N	
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)			<0.000050	
	Boron (B)-Total (mg/L)			0.010	
	Cadmium (Cd)-Total (ug/L)			0.165	
	Calcium (Ca)-Total (mg/L)			79.6	
	Chromium (Cr)-Total (mg/L)			0.00052	
	Cobalt (Co)-Total (ug/L)			0.41	
	Copper (Cu)-Total (mg/L)			0.00092	
	Iron (Fe)-Total (mg/L)			0.512	
	Lead (Pb)-Total (mg/L)			0.000371	
	Lithium (Li)-Total (mg/L)			0.0254	
	Magnesium (Mg)-Total (mg/L)			34.0	
	Manganese (Mn)-Total (mg/L)			0.0248	
	Mercury (Hg)-Total (ug/L)			0.00284	
	Molybdenum (Mo)-Total (mg/L)			0.00183	
	Nickel (Ni)-Total (mg/L)			0.00548	
	Potassium (K)-Total (mg/L)			1.54	
	Selenium (Se)-Total (ug/L)			48.9	
	Silicon (Si)-Total (mg/L)			2.29	
	Silver (Ag)-Total (mg/L)			<0.000010	
	Sodium (Na)-Total (mg/L)			1.46	
	Strontium (Sr)-Total (mg/L)			0.100	
	Thallium (Tl)-Total (mg/L)			0.000017	
	Tin (Sn)-Total (mg/L)			<0.00010	
	Titanium (Ti)-Total (mg/L)			<0.010	
	Uranium (U)-Total (mg/L)			0.00216	
	Vanadium (V)-Total (mg/L)			0.00146	
	Zinc (Zn)-Total (mg/L)			0.0086	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0317	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00012	0.00038	0.00021	
	Arsenic (As)-Dissolved (mg/L)	0.00012	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0123	0.0560	0.0460	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.045	0.018	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.232	0.0344	0.104	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2457134-1 WS 04-JUN-20 12:09 FR_HMW2_QTR_2 020-04-06_N	L2457134-2 WS 04-JUN-20 10:54 FR_GCMW- 2_QTR_2020-04- 06_N	L2457134-3 WS 04-JUN-20 13:13 GH_PC2_MON_20 20-06-01_N	
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	434	122	76.0	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.21	<0.10	0.15	
	Copper (Cu)-Dissolved (mg/L)	0.00041	0.00028	0.00031	
	Iron (Fe)-Dissolved (mg/L)	0.052	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000077	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.131	0.132	0.0256	
	Magnesium (Mg)-Dissolved (mg/L)	257	58.9	32.9	
	Manganese (Mn)-Dissolved (mg/L)	0.0337	0.00014	0.00184	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000456	0.00187	0.00176	
	Nickel (Ni)-Dissolved (mg/L)	0.0152	0.00207	0.00405	
	Potassium (K)-Dissolved (mg/L)	7.56	3.09	1.49	
	Selenium (Se)-Dissolved (ug/L)	747	70.4	49.5	
	Silicon (Si)-Dissolved (mg/L)	1.67	1.93	1.75	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	2.26	3.04	1.43	
	Strontium (Sr)-Dissolved (mg/L)	0.235	0.188	0.0912	
	Thallium (Tl)-Dissolved (mg/L)	0.000037	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00962	0.00536	0.00212	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0091	0.0026	0.0040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2457134-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2457134-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2457134-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2457134-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L2457134-3
Matrix Spike	Calcium (Ca)-Total	MS-B	L2457134-3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2457134-3
Matrix Spike	Selenium (Se)-Total	MS-B	L2457134-3
Matrix Spike	Sodium (Na)-Total	MS-B	L2457134-3
Matrix Spike	Strontium (Sr)-Total	MS-B	L2457134-3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by			

Reference Information

subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200604 - 0800

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2457134

Report Date: 22-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5117783							
WG3342340-2	LCS							
Acidity (as CaCO3)			104.4		%		85-115	14-JUN-20
WG3342340-5	LCS							
Acidity (as CaCO3)			104.3		%		85-115	14-JUN-20
WG3342340-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	14-JUN-20
WG3342340-4	MB							
Acidity (as CaCO3)			1.2		mg/L		2	14-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5117752							
WG3342317-5	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	14-JUN-20
WG3342317-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-2	LCS							
Beryllium (Be)-Dissolved			99.3		%		80-120	10-JUN-20
WG3338623-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5115539							
WG3339476-2	LCS							
Beryllium (Be)-Total			104.2		%		80-120	10-JUN-20
WG3339476-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
BIC-CL								
	Water							
Batch	R5117752							
WG3342317-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5117153							
WG3341654-2	LCS							
Bromide (Br)			106.1		%		85-115	08-JUN-20
WG3341654-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-JUN-20

Quality Control Report

Workorder: L2457134

Report Date: 22-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5117274							
WG3341774-2	LCS							
Dissolved Organic Carbon			102.6		%		80-120	13-JUN-20
WG3341774-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5117274							
WG3341774-2	LCS							
Total Organic Carbon			105.6		%		80-120	13-JUN-20
WG3341774-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	13-JUN-20
CL-IC-N-CL	Water							
Batch	R5117153							
WG3341654-2	LCS							
Chloride (Cl)			104.5		%		90-110	08-JUN-20
WG3341654-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-JUN-20
CO3-CL	Water							
Batch	R5117752							
WG3342317-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-JUN-20
EC-L-PCT-CL	Water							
Batch	R5117752							
WG3342317-5	LCS							
Conductivity (@ 25C)			98.5		%		90-110	14-JUN-20
WG3342317-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-JUN-20
F-IC-N-CL	Water							
Batch	R5117153							
WG3341654-2	LCS							
Fluoride (F)			105.7		%		90-110	08-JUN-20
WG3341654-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-JUN-20
HG-D-CVAA-VA	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5116417							
WG3340380-2	LCS							
Mercury (Hg)-Dissolved			100.1		%		80-120	12-JUN-20
WG3340380-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-JUN-20
WG3340380-4	MS	L2457134-2						
Mercury (Hg)-Dissolved			99.1		%		70-130	12-JUN-20
HG-T-U-CVAF-VA								
	Water							
Batch	R5116144							
WG3340253-2	LCS							
Mercury (Hg)-Total			90.8		%		80-120	11-JUN-20
WG3340253-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	11-JUN-20
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			102.1		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			98.6		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			101.3		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			94.7		%		80-120	10-JUN-20
Boron (B)-Dissolved			95.8		%		80-120	10-JUN-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			98.3		%		80-120	10-JUN-20
Chromium (Cr)-Dissolved			99.3		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			100.6		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			101.2		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			100.7		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			97.0		%		80-120	10-JUN-20
Lithium (Li)-Dissolved			100.5		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			97.2		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			102.5		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	10-JUN-20
Nickel (Ni)-Dissolved			100.7		%		80-120	10-JUN-20
Potassium (K)-Dissolved			100.2		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			101.0		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			96.7		%		60-140	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-2	LCS							
Silver (Ag)-Dissolved			96.5		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			102.7		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			97.2		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			98.2		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			100.6		%		80-120	10-JUN-20
Titanium (Ti)-Dissolved			97.6		%		80-120	10-JUN-20
Uranium (U)-Dissolved			96.2		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			100.4		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			104.1		%		80-120	10-JUN-20
WG3338623-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5115539							
WG3339476-2	LCS							
Aluminum (Al)-Total			105.1		%		80-120	10-JUN-20
Antimony (Sb)-Total			108.1		%		80-120	10-JUN-20
Arsenic (As)-Total			102.1		%		80-120	10-JUN-20
Barium (Ba)-Total			103.3		%		80-120	10-JUN-20
Bismuth (Bi)-Total			101.2		%		80-120	10-JUN-20
Boron (B)-Total			98.9		%		80-120	10-JUN-20
Cadmium (Cd)-Total			103.3		%		80-120	10-JUN-20
Calcium (Ca)-Total			103.1		%		80-120	10-JUN-20
Chromium (Cr)-Total			100.1		%		80-120	10-JUN-20
Cobalt (Co)-Total			102.9		%		80-120	10-JUN-20
Copper (Cu)-Total			101.8		%		80-120	10-JUN-20
Iron (Fe)-Total			101.2		%		80-120	10-JUN-20
Lead (Pb)-Total			110.2		%		80-120	10-JUN-20
Lithium (Li)-Total			101.9		%		80-120	10-JUN-20
Magnesium (Mg)-Total			97.5		%		80-120	10-JUN-20
Manganese (Mn)-Total			102.2		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			98.3		%		80-120	10-JUN-20
Nickel (Ni)-Total			103.1		%		80-120	10-JUN-20
Potassium (K)-Total			103.9		%		80-120	10-JUN-20
Selenium (Se)-Total			110.3		%		80-120	10-JUN-20
Silicon (Si)-Total			103.7		%		80-120	10-JUN-20
Silver (Ag)-Total			104.3		%		80-120	10-JUN-20
Sodium (Na)-Total			101.8		%		80-120	10-JUN-20
Strontium (Sr)-Total			105.1		%		80-120	10-JUN-20
Thallium (Tl)-Total			107.0		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115539							
WG3339476-2	LCS							
Tin (Sn)-Total			102.3		%		80-120	10-JUN-20
Titanium (Ti)-Total			96.0		%		80-120	10-JUN-20
Uranium (U)-Total			110.7		%		80-120	10-JUN-20
Vanadium (V)-Total			105.9		%		80-120	10-JUN-20
Zinc (Zn)-Total			105.4		%		80-120	10-JUN-20
WG3339476-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Water								
Batch R5115539								
WG3339476-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUN-20
NH3-L-F-CL								
Water								
Batch R5117878								
WG3342466-10 LCS								
Ammonia as N			94.6		%		85-115	15-JUN-20
WG3342466-6 LCS								
Ammonia as N			95.6		%		85-115	15-JUN-20
WG3342466-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	15-JUN-20
WG3342466-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	15-JUN-20
NO2-L-IC-N-CL								
Water								
Batch R5117153								
WG3341654-2 LCS								
Nitrite (as N)			107.9		%		90-110	08-JUN-20
WG3341654-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	08-JUN-20
NO3-L-IC-N-CL								
Water								
Batch R5117153								
WG3341654-2 LCS								
Nitrate (as N)			104.5		%		90-110	08-JUN-20
WG3341654-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	08-JUN-20
OH-CL								
Water								
Batch R5117752								
WG3342317-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	14-JUN-20
ORP-CL								
Water								
Batch R5117891								
WG3342457-1 CRM								
ORP		CL-ORP	222		mV		210-230	15-JUN-20
WG3342457-3 CRM								
ORP		CL-ORP	225		mV		210-230	15-JUN-20
P-T-L-COL-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5116540							
WG3340973-6	LCS							
Phosphorus (P)-Total			98.8		%		80-120	12-JUN-20
WG3340973-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-JUN-20
PH-CL	Water							
Batch	R5117752							
WG3342317-5	LCS							
pH			6.99		pH		6.9-7.1	14-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5110047							
WG3336396-38	LCS							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	05-JUN-20
WG3336396-37	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-20
SO4-IC-N-CL	Water							
Batch	R5117153							
WG3341654-2	LCS							
Sulfate (SO4)			105.3		%		90-110	08-JUN-20
WG3341654-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5116899							
WG3339819-5	LCS							
Total Dissolved Solids			101.7		%		85-115	11-JUN-20
WG3339819-4	MB							
Total Dissolved Solids			<10		mg/L		10	11-JUN-20
TKN-L-F-CL	Water							
Batch	R5120338							
WG3343482-12	LCS							
Total Kjeldahl Nitrogen			99.1		%		75-125	16-JUN-20
WG3343482-16	LCS							
Total Kjeldahl Nitrogen			100.9		%		75-125	16-JUN-20
WG3343482-2	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	16-JUN-20
WG3343482-20	LCS							
Total Kjeldahl Nitrogen			95.3		%		75-125	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5120338							
WG3343482-24	LCS							
Total Kjeldahl Nitrogen			100.5		%		75-125	16-JUN-20
WG3343482-28	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	16-JUN-20
WG3343482-32	LCS							
Total Kjeldahl Nitrogen			101.0		%		75-125	16-JUN-20
WG3343482-36	LCS							
Total Kjeldahl Nitrogen			99.0		%		75-125	16-JUN-20
WG3343482-8	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	16-JUN-20
WG3343482-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3343482-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-31	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
TSS-L-CL		Water						
Batch	R5116846							
WG3339820-4	LCS							
Total Suspended Solids			111.6		%		85-115	11-JUN-20
WG3339820-3	MB							
Total Suspended Solids			<1.0		mg/L		1	11-JUN-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5110404							
WG3337029-2	LCS							
Turbidity			103.5		%		85-115	07-JUN-20
WG3337029-1	MB							
Turbidity			<0.10		NTU		0.1	07-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	04-JUN-20 12:09	15-JUN-20 09:00	0.25	261	hours	EHTR-FM
	2	04-JUN-20 10:54	15-JUN-20 09:00	0.25	262	hours	EHTR-FM
	3	04-JUN-20 13:13	15-JUN-20 09:00	0.25	260	hours	EHTR-FM
pH							
	1	04-JUN-20 12:09	14-JUN-20 11:00	0.25	239	hours	EHTR-FM
	2	04-JUN-20 10:54	14-JUN-20 11:00	0.25	240	hours	EHTR-FM
	3	04-JUN-20 13:13	14-JUN-20 11:00	0.25	238	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	04-JUN-20 12:09	08-JUN-20 07:24	3	4	days	EHT
	2	04-JUN-20 10:54	08-JUN-20 07:24	3	4	days	EHT
	3	04-JUN-20 13:13	08-JUN-20 07:24	3	4	days	EHT
Nitrite in Water by IC (Low Level)							
	1	04-JUN-20 12:09	08-JUN-20 07:24	3	4	days	EHT
	2	04-JUN-20 10:54	08-JUN-20 07:24	3	4	days	EHT
	3	04-JUN-20 13:13	08-JUN-20 07:24	3	4	days	EHT

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2457134 were received on 05-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200604 - 0800		TURNAROUND TIME:			RUSH:				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets			Email 1: david.burroughs@teck.com		
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Phone Number 1-250-433-6976				Phone Number 403 407 1794			Email 6: kaileigh.mccallum@teck.com		
							PO number VPO00680583		

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	File	F	N	F	N	F	N	N	N	N	N	N	N	N	N
								PRESERV.	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate		
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ME/INHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY	PAH		
FR_HMW2_QTR_2020-04-06_N	FR_HMW2	WS	NO	4-Jun-20	12:09	G	5		1	1	1		1		1							
FR_GCMW-2_QTR_2020-04-06_N	FR_GCMW-2	WS	NO	4-Jun-20	10:54	G	5		1	1	1		1		1							
GH_PC2_MON_2020-06-01_N	GH_PC2	WS	NO	4-Jun-20	13:13	G	7		1	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Kaileigh McCallum	DATE/TIME June 4, 2020	ACCEPTED BY/AFFILIATION <i>Ma</i>	DATE/TIME 6/5 8:50
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SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Kaileigh McCallum		Mobile #	250-494-9462
Sampler's Signature			Date/Time	June 4, 2020 <i>9</i>



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 10-JUN-20
Report Date: 29-DEC-20 16:18 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2459066
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 1
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2459066-1 WG 09-JUN-20 13:52 FR_KB-3A_2020-06-09	L2459066-2 WG 09-JUN-20 15:10 FR_KB-3B_2020-06-09	L2459066-3 WG 09-JUN-20 15:20 FR_FLD3_2020-06-09	L2459066-4 WG 09-JUN-20 15:15 FR_DC3_2020-06-09
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1590	1450	<2.0	1630
	Hardness (as CaCO3) (mg/L)	1210	1080	<0.50	1230
	pH (pH)	7.90	7.92	5.47	7.87
	ORP (mV)	331	358	404	315
	Total Suspended Solids (mg/L)	<1.0	1.5	<1.0	2.7
	Total Dissolved Solids (mg/L)	1620 ^{DLHC}	1410 ^{DLHC}	<10	1670 ^{DLHC}
	Turbidity (NTU)	0.18	0.84	<0.10	0.23
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	15.0	17.1	<1.0	16.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	231	214	<1.0	258
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	231	214	<1.0	258
	Ammonia as N (mg/L)	0.0053	<0.0050	0.0501 ^{RRV}	<0.0050
	Bicarbonate (HCO3) (mg/L)	282 ^{DLHC}	261 ^{DLHC}	<5.0	314 ^{DLHC}
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<0.50	<2.5 ^{DLHC}
	Fluoride (F) (mg/L)	<0.10 ^{DLHC}	<0.10 ^{DLHC}	<0.020	<0.10 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	111	111	0.0	110
	Nitrate (as N) (mg/L)	71.6 ^{DLHC}	67.8 ^{DLHC}	<0.0050	71.3 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.050	<0.25 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0014	<0.0010	0.0012
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}	<0.0020	<0.0020 ^{DLHC}
	Sulfate (SO4) (mg/L)	588	505	<0.30	588
	Anion Sum (meq/L)	22.0	19.6	<0.10	22.5
	Cation Sum (meq/L)	24.4	21.8	<0.10	24.8
	Cation - Anion Balance (%)	5.2	5.3	0.0	4.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.56	0.64	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	0.56	<0.50	<0.50
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0014	0.0013	<0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	0.00013	0.00013	<0.00010	0.00012

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2459066-1	L2459066-2	L2459066-3	L2459066-4	
Description	WG	WG	WG	WG	
Sampled Date	09-JUN-20	09-JUN-20	09-JUN-20	09-JUN-20	
Sampled Time	13:52	15:10	15:20	15:15	
Client ID	FR_KB-3A_2020-06-09	FR_KB-3B_2020-06-09	FR_FLD3_2020-06-09	FR_DC3_2020-06-09	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0596	0.0618	<0.00010	0.0593
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.016	0.019	<0.010	0.018
	Cadmium (Cd)-Dissolved (ug/L)	0.0313	0.0282	<0.0050	0.0321
	Calcium (Ca)-Dissolved (mg/L)	301	256	<0.050	309
	Chromium (Cr)-Dissolved (mg/L)	0.00016	0.00014	<0.00010	0.00016
	Cobalt (Co)-Dissolved (ug/L)	1.24	0.11	<0.10	1.23
	Copper (Cu)-Dissolved (mg/L)	0.00062	0.00037	<0.00020	0.00069
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0433	0.0584	<0.0010	0.0434
	Magnesium (Mg)-Dissolved (mg/L)	111	106	<0.0050	111
	Manganese (Mn)-Dissolved (mg/L)	0.00038	0.00066	<0.00010	0.00039
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000351	0.000568	<0.000050	0.000349
	Nickel (Ni)-Dissolved (mg/L)	0.00055	<0.00050	<0.00050	0.00059
	Potassium (K)-Dissolved (mg/L)	2.01	2.90	<0.050	2.03
	Selenium (Se)-Dissolved (ug/L)	249	247	<0.050	249
	Silicon (Si)-Dissolved (mg/L)	3.18	2.63	<0.050	3.21
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.94	5.91	<0.050	3.95
	Strontium (Sr)-Dissolved (mg/L)	0.335	0.252	<0.00020	0.332
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00595	0.00670	<0.000010	0.00595
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0027	0.0011	<0.0010	0.0026

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2459066-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2459066-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2459066-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2459066-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2459066-1, -2, -3, -4
Matrix Spike	Phosphorus (P)-Total	MS-B	L2459066-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2459066

Report Date: 29-DEC-20

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5117066							
WG3341576-14	LCS							
Acidity (as CaCO3)			104.7		%		85-115	12-JUN-20
WG3341576-13	MB							
Acidity (as CaCO3)			1.3		mg/L		2	12-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5119317							
WG3343075-5	LCS							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	15-JUN-20
WG3343075-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUN-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5122977							
WG3344279-6	LCS	TMRM						
Beryllium (Be)-Dissolved			105.8		%		80-120	17-JUN-20
WG3344279-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUN-20
BIC-CL								
	Water							
Batch	R5119317							
WG3343075-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5122179							
WG3343977-10	LCS							
Bromide (Br)			106.4		%		85-115	12-JUN-20
WG3343977-6	LCS							
Bromide (Br)			105.9		%		85-115	12-JUN-20
WG3343977-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-20
WG3343977-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5122142							
WG3344133-6	LCS							
Dissolved Organic Carbon			98.9		%		80-120	16-JUN-20
WG3344133-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-JUN-20

Quality Control Report

Workorder: L2459066

Report Date: 29-DEC-20

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5122142							
WG3344133-6	LCS							
Total Organic Carbon			104.6		%		80-120	16-JUN-20
WG3344133-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-JUN-20
CL-IC-N-CL	Water							
Batch	R5122179							
WG3343977-10	LCS							
Chloride (Cl)			102.0		%		90-110	12-JUN-20
WG3343977-6	LCS							
Chloride (Cl)			102.0		%		90-110	12-JUN-20
WG3343977-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	12-JUN-20
WG3343977-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	12-JUN-20
CO3-CL	Water							
Batch	R5119317							
WG3343075-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	15-JUN-20
EC-L-PCT-CL	Water							
Batch	R5119317							
WG3343075-5	LCS							
Conductivity (@ 25C)			95.0		%		90-110	15-JUN-20
WG3343075-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-JUN-20
F-IC-N-CL	Water							
Batch	R5122179							
WG3343977-10	LCS							
Fluoride (F)			96.3		%		90-110	12-JUN-20
WG3343977-6	LCS							
Fluoride (F)			96.3		%		90-110	12-JUN-20
WG3343977-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-20
WG3343977-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-20
HG-D-CVAA-CL	Water							

Quality Control Report

Workorder: L2459066

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL								
Water								
Batch	R5120136							
WG3343426-2	LCS							
Mercury (Hg)-Dissolved			104.0		%		80-120	16-JUN-20
WG3343426-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-JUN-20
HG-T-CVAA-CL								
Water								
Batch	R5120136							
WG3343427-6	LCS							
Mercury (Hg)-Total			112.0		%		80-120	16-JUN-20
WG3343427-5	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-JUN-20
MET-D-CCMS-CL								
Water								
Batch	R5122977							
WG3344279-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.2		%		80-120	17-JUN-20
Antimony (Sb)-Dissolved			104.0		%		80-120	17-JUN-20
Arsenic (As)-Dissolved			103.1		%		80-120	17-JUN-20
Barium (Ba)-Dissolved			104.0		%		80-120	17-JUN-20
Bismuth (Bi)-Dissolved			101.8		%		80-120	17-JUN-20
Boron (B)-Dissolved			101.9		%		80-120	17-JUN-20
Cadmium (Cd)-Dissolved			96.9		%		80-120	17-JUN-20
Calcium (Ca)-Dissolved			103.7		%		80-120	17-JUN-20
Chromium (Cr)-Dissolved			103.4		%		80-120	17-JUN-20
Cobalt (Co)-Dissolved			102.1		%		80-120	17-JUN-20
Copper (Cu)-Dissolved			100.7		%		80-120	17-JUN-20
Iron (Fe)-Dissolved			103.7		%		80-120	17-JUN-20
Lead (Pb)-Dissolved			109.0		%		80-120	17-JUN-20
Lithium (Li)-Dissolved			104.1		%		80-120	17-JUN-20
Magnesium (Mg)-Dissolved			100.2		%		80-120	17-JUN-20
Manganese (Mn)-Dissolved			103.4		%		80-120	17-JUN-20
Molybdenum (Mo)-Dissolved			105.8		%		80-120	17-JUN-20
Nickel (Ni)-Dissolved			101.8		%		80-120	17-JUN-20
Potassium (K)-Dissolved			108.2		%		80-120	17-JUN-20
Selenium (Se)-Dissolved			97.3		%		80-120	17-JUN-20
Silicon (Si)-Dissolved			104.4		%		60-140	17-JUN-20
Silver (Ag)-Dissolved			108.3		%		80-120	17-JUN-20
Sodium (Na)-Dissolved			105.3		%		80-120	17-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5122977							
WG3344279-6	LCS	TMRM						
Strontium (Sr)-Dissolved			108.7		%		80-120	17-JUN-20
Thallium (Tl)-Dissolved			103.6		%		80-120	17-JUN-20
Tin (Sn)-Dissolved			96.4		%		80-120	17-JUN-20
Titanium (Ti)-Dissolved			98.9		%		80-120	17-JUN-20
Uranium (U)-Dissolved			99.2		%		80-120	17-JUN-20
Vanadium (V)-Dissolved			103.1		%		80-120	17-JUN-20
Zinc (Zn)-Dissolved			102.6		%		80-120	17-JUN-20
WG3344279-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20

Quality Control Report

Workorder: L2459066

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL	Water							
Batch	R5122977							
WG3344279-5 MB								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
NH3-L-F-CL	Water							
Batch	R5119596							
WG3343343-10 LCS								
Ammonia as N			101.8		%		85-115	16-JUN-20
WG3343343-6 LCS								
Ammonia as N			107.2		%		85-115	16-JUN-20
WG3343343-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	16-JUN-20
WG3343343-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	16-JUN-20
NO2-L-IC-N-CL	Water							
Batch	R5122179							
WG3343977-10 LCS								
Nitrite (as N)			103.2		%		90-110	12-JUN-20
WG3343977-6 LCS								
Nitrite (as N)			103.7		%		90-110	12-JUN-20
WG3343977-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-20
WG3343977-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-20
NO3-L-IC-N-CL	Water							
Batch	R5122179							
WG3343977-10 LCS								
Nitrate (as N)			101.9		%		90-110	12-JUN-20
WG3343977-6 LCS								
Nitrate (as N)			102.2		%		90-110	12-JUN-20
WG3343977-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-20
WG3343977-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-20
OH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5119317							
WG3343075-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	15-JUN-20
ORP-CL	Water							
Batch	R5120436							
WG3343318-9 CRM		CL-ORP						
ORP			223		mV		210-230	16-JUN-20
P-T-L-COL-CL	Water							
Batch	R5119159							
WG3342956-10 LCS								
Phosphorus (P)-Total			110.1		%		80-120	16-JUN-20
WG3342956-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-20
PH-CL	Water							
Batch	R5119317							
WG3343075-5 LCS								
pH			7.00		pH		6.9-7.1	15-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5116756							
WG3340334-2 LCS								
Orthophosphate-Dissolved (as P)			103.9		%		80-120	11-JUN-20
WG3340334-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUN-20
SO4-IC-N-CL	Water							
Batch	R5122179							
WG3343977-10 LCS								
Sulfate (SO4)			104.2		%		90-110	12-JUN-20
WG3343977-6 LCS								
Sulfate (SO4)			103.8		%		90-110	12-JUN-20
WG3343977-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUN-20
WG3343977-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUN-20
SOLIDS-TDS-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5123500							
WG3342851-12	DUP	L2459066-4						
Total Dissolved Solids		1670	1700		mg/L	1.8	20	16-JUN-20
WG3342851-11	LCS							
Total Dissolved Solids			97.9		%		85-115	16-JUN-20
WG3342851-10	MB							
Total Dissolved Solids			<10		mg/L		10	16-JUN-20
TKN-L-F-CL								
	Water							
Batch	R5123699							
WG3344505-11	LCS							
Total Kjeldahl Nitrogen			103.6		%		75-125	17-JUN-20
WG3344505-15	LCS							
Total Kjeldahl Nitrogen			101.0		%		75-125	17-JUN-20
WG3344505-2	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	17-JUN-20
WG3344505-7	LCS							
Total Kjeldahl Nitrogen			105.6		%		75-125	17-JUN-20
WG3344505-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
TSS-L-CL								
	Water							
Batch	R5122979							
WG3342928-8	LCS							
Total Suspended Solids			107.1		%		85-115	16-JUN-20
WG3342928-7	MB							
Total Suspended Solids			<1.0		mg/L		1	16-JUN-20
TURBIDITY-CL								
	Water							
Batch	R5117062							
WG3341240-2	LCS							
Turbidity			99.96		%		85-115	12-JUN-20
WG3341240-1	MB							
Turbidity			<0.10		NTU		0.1	12-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	09-JUN-20 13:52	16-JUN-20 10:00	0.25	164	hours	EHTR-FM
	2	09-JUN-20 15:10	16-JUN-20 10:00	0.25	163	hours	EHTR-FM
	3	09-JUN-20 15:20	16-JUN-20 10:00	0.25	163	hours	EHTR-FM
	4	09-JUN-20 15:15	16-JUN-20 10:00	0.25	163	hours	EHTR-FM
pH							
	1	09-JUN-20 13:52	15-JUN-20 10:00	0.25	140	hours	EHTR-FM
	2	09-JUN-20 15:10	15-JUN-20 10:00	0.25	139	hours	EHTR-FM
	3	09-JUN-20 15:20	15-JUN-20 10:00	0.25	139	hours	EHTR-FM
	4	09-JUN-20 15:15	15-JUN-20 10:00	0.25	139	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2459066 were received on 10-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

Regular

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	gregory.jones@golder.com	X	X	X
Address	Suite 1000, 205 -9th Ave S.E.			Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
								Email 4:	Scott.Roughead@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:				
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERVATION	N	F	N	F	F	N
									NONE	H2SO4	H2SO4	HNO3	HNO3	HNO3
								ANALYSIS	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL
FR-2020-06-09	FR-2020-06-09	WG		2020/06/09	13:52	G	6							
FR-2020-06-09	FR-2020-06-09	WG		2020/06/09	15:10	G	6							
FR_KB-3A_2020-06-09	FR_KB-3A	WG		2020/06/09	13:52	G	6		1	1	1	1	1	1
FR_KB-3B_2020-06-09	FR_KB-3B	WG		2020/06/09	15:10	G	6		1	1	1	1	1	1
FR-FLD3-2020-06-09	FR-FLD3	WG		2020/06/09	15:20	G	6		1	1	1	1	1	1
FR-DC3-2020-06-09	FR-DC3	WG		2020/06/09	15:15	G	6		1	1	1	1	1	1
									1	1	1	1	1	1
									1	1	1	1	1	1
									1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

		<i>[Signature]</i>	6/10/2020

SERVICE REQUEST (rush - subject to availability)

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	<i>Katie Peterzon</i>	Mobile #	250-946-5029
				Sampler's Signature	<i>[Signature]</i>	Date/Time	June 08, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 16-JUN-20
Report Date: 29-DEC-20 16:10 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2461524
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2461524-1	L2461524-2	L2461524-3	L2461524-4
		Description	WG	WG	WG	WG
		Sampled Date	15-JUN-20	15-JUN-20	15-JUN-20	15-JUN-20
		Sampled Time	10:00	10:05	10:10	14:30
		Client ID	FR_KB-2_2020-06-15	FR_DC4_2020-06-15	FR_FLD4_2020-06-15	FR_TRP_2020-06-15
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		1170	1160	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)		653	680	<0.50	<0.50
	pH (pH)		7.96	7.98	5.46	5.44
	ORP (mV)		478	295	319	376
	Total Suspended Solids (mg/L)		1.2	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)		915 ^{DLHC}	928 ^{DLHC}	<10	<10
	Turbidity (NTU)		2.35	1.91	<0.10	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		16.3	15.2	1.0	1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		309	299	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		309	299	<1.0	<1.0
	Ammonia as N (mg/L)		<0.0050	0.0229	<0.0050 ^{RRV}	0.0717 ^{RRV}
	Bicarbonate (HCO3) (mg/L)		377 ^{DLHC}	364 ^{DLHC}	<5.0	<5.0
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	<0.050
	Carbonate (CO3) (mg/L)		<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0	<5.0
	Chloride (Cl) (mg/L)		<2.5 ^{DLHC}	<2.5 ^{DLHC}	<0.50	<0.50
	Fluoride (F) (mg/L)		0.18 ^{DLHC}	0.17 ^{DLHC}	<0.020	<0.020
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		93.5	99.1	0.0	0.0
	Nitrate (as N) (mg/L)		36.2 ^{DLHC}	36.0 ^{DLHC}	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		0.0054 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)		0.0018	0.0018	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0053 ^{DLHC}	0.0058 ^{DLHC}	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		260	259	<0.30	<0.30
	Anion Sum (meq/L)		14.2	13.9	<0.10	<0.10
Cation Sum (meq/L)		13.3	13.8	<0.10	<0.10	
Cation - Anion Balance (%)		-3.4	-0.5	0.0	0.0	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		0.75	0.79	<0.50	
	Total Organic Carbon (mg/L)		0.71	0.71	<0.50	<0.50
Total Metals	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)		0.0140	0.0220	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		0.00034	0.00036	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2461524-1	L2461524-2	L2461524-3	L2461524-4	
Description	WG	WG	WG	WG	
Sampled Date	15-JUN-20	15-JUN-20	15-JUN-20	15-JUN-20	
Sampled Time	10:00	10:05	10:10	14:30	
Client ID	FR_KB-2_2020-06-15	FR_DC4_2020-06-15	FR_FLD4_2020-06-15	FR_TRP_2020-06-15	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0336	0.0343	<0.00010	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.022	0.022	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.0736	0.0717	<0.0050	
	Calcium (Ca)-Dissolved (mg/L)	153	160	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.014	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000064	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0698	0.0734	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	66.0	68.4	<0.10	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00094	0.00138	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00126	0.00136	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	0.00266	0.00299	<0.00050	
	Potassium (K)-Dissolved (mg/L)	2.96	3.02	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)	142	145	<0.050	
	Silicon (Si)-Dissolved (mg/L)	1.71	1.75	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.06	3.28	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.139	0.143	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00013	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00472	0.00495	<0.000010	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0020	0.0031	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2461524-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2461524-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2461524-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2461524-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2461524-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			

It is recommended that this analysis be conducted in the field.

Reference Information

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2461524

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5124076							
WG3344686-14	LCS							
Acidity (as CaCO3)			108.6		%		85-115	17-JUN-20
WG3344686-13	MB							
Acidity (as CaCO3)			1.2		mg/L		2	17-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5125761							
WG3345630-5	LCS							
Alkalinity, Total (as CaCO3)			99.96		%		85-115	18-JUN-20
WG3345630-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-2	LCS							
Beryllium (Be)-Dissolved			98.8		%		80-120	19-JUN-20
WG3345134-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-JUN-20
BIC-CL								
	Water							
Batch	R5125761							
WG3345630-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5125332							
WG3344926-6	LCS							
Bromide (Br)			102.3		%		85-115	17-JUN-20
WG3344926-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5130256							
WG3348190-2	LCS							
Dissolved Organic Carbon			89.5		%		80-120	22-JUN-20
WG3348190-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-JUN-20
WG3348190-4	MS	L2461524-1						
Dissolved Organic Carbon			74.9		%		70-130	22-JUN-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2461524

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Batch R5130256								
WG3348190-3 DUP		L2461524-1						
Total Organic Carbon		0.71	<0.50	RPD-NA	mg/L	N/A	20	22-JUN-20
WG3348190-2 LCS								
Total Organic Carbon			92.5		%		80-120	22-JUN-20
WG3348190-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	22-JUN-20
WG3348190-4 MS		L2461524-1						
Total Organic Carbon			77.6		%		70-130	22-JUN-20
CL-IC-N-CL								
Batch R5125332								
WG3344926-6 LCS								
Chloride (Cl)			104.4		%		90-110	17-JUN-20
WG3344926-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	17-JUN-20
CO3-CL								
Batch R5125761								
WG3345630-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	18-JUN-20
EC-L-PCT-CL								
Batch R5125761								
WG3345630-5 LCS								
Conductivity (@ 25C)			96.9		%		90-110	18-JUN-20
WG3345630-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-20
F-IC-N-CL								
Batch R5125332								
WG3344926-6 LCS								
Fluoride (F)			91.7		%		90-110	17-JUN-20
WG3344926-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	17-JUN-20
HG-D-CVAA-VA								
Batch R5127564								
WG3347113-2 LCS								
Mercury (Hg)-Dissolved			97.4		%		80-120	22-JUN-20
WG3347113-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-JUN-20



Quality Control Report

Workorder: L2461524

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA		Water						
Batch	R5127564							
WG3347427-2	LCS							
Mercury (Hg)-Total			99.4		%		80-120	22-JUN-20
WG3347427-1	MB							
Mercury (Hg)-Total			<0.00005C		mg/L		0.000005	22-JUN-20
MET-D-CCMS-CL		Water						
Batch	R5130222							
WG3348361-2	LCS							
Calcium (Ca)-Dissolved			101.2		%		80-120	23-JUN-20
Magnesium (Mg)-Dissolved			110.4		%		80-120	23-JUN-20
Potassium (K)-Dissolved			103.2		%		80-120	23-JUN-20
Sodium (Na)-Dissolved			100.4		%		80-120	23-JUN-20
WG3348361-1	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUN-20
MET-D-CCMS-VA		Water						
Batch	R5125856							
WG3345134-2	LCS							
Aluminum (Al)-Dissolved			100.8		%		80-120	19-JUN-20
Antimony (Sb)-Dissolved			97.1		%		80-120	19-JUN-20
Arsenic (As)-Dissolved			95.8		%		80-120	19-JUN-20
Barium (Ba)-Dissolved			99.9		%		80-120	19-JUN-20
Bismuth (Bi)-Dissolved			94.0		%		80-120	19-JUN-20
Boron (B)-Dissolved			94.5		%		80-120	19-JUN-20
Cadmium (Cd)-Dissolved			99.1		%		80-120	19-JUN-20
Calcium (Ca)-Dissolved			102.5		%		80-120	19-JUN-20
Chromium (Cr)-Dissolved			99.3		%		80-120	19-JUN-20
Cobalt (Co)-Dissolved			98.0		%		80-120	19-JUN-20
Copper (Cu)-Dissolved			98.0		%		80-120	19-JUN-20
Iron (Fe)-Dissolved			92.9		%		80-120	19-JUN-20
Lead (Pb)-Dissolved			99.3		%		80-120	19-JUN-20
Lithium (Li)-Dissolved			98.6		%		80-120	19-JUN-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	19-JUN-20
Manganese (Mn)-Dissolved			102.5		%		80-120	19-JUN-20
Molybdenum (Mo)-Dissolved			97.9		%		80-120	19-JUN-20



Quality Control Report

Workorder: L2461524

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-2	LCS							
Nickel (Ni)-Dissolved			100.0		%		80-120	19-JUN-20
Potassium (K)-Dissolved			101.7		%		80-120	19-JUN-20
Selenium (Se)-Dissolved			102.0		%		80-120	19-JUN-20
Silicon (Si)-Dissolved			98.5		%		60-140	19-JUN-20
Silver (Ag)-Dissolved			101.7		%		80-120	19-JUN-20
Sodium (Na)-Dissolved			102.2		%		80-120	19-JUN-20
Strontium (Sr)-Dissolved			99.9		%		80-120	19-JUN-20
Thallium (Tl)-Dissolved			98.8		%		80-120	19-JUN-20
Tin (Sn)-Dissolved			99.6		%		80-120	19-JUN-20
Titanium (Ti)-Dissolved			93.9		%		80-120	19-JUN-20
Uranium (U)-Dissolved			97.1		%		80-120	19-JUN-20
Vanadium (V)-Dissolved			98.8		%		80-120	19-JUN-20
Zinc (Zn)-Dissolved			92.9		%		80-120	19-JUN-20
WG3345134-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20

Quality Control Report

Workorder: L2461524

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch	R5125856							
WG3345134-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
NH3-L-F-CL								
Water								
Batch	R5129468							
WG3347454-10	LCS							
Ammonia as N			104.8		%		85-115	22-JUN-20
WG3347454-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	22-JUN-20
NO2-L-IC-N-CL								
Water								
Batch	R5125332							
WG3344926-6	LCS							
Nitrite (as N)			106.7		%		90-110	17-JUN-20
WG3344926-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-JUN-20
NO3-L-IC-N-CL								
Water								
Batch	R5125332							
WG3344926-6	LCS							
Nitrate (as N)			105.4		%		90-110	17-JUN-20
WG3344926-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-JUN-20
OH-CL								
Water								
Batch	R5125761							
WG3345630-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-JUN-20
ORP-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5127501							
WG3347378-11	CRM	CL-ORP						
ORP			223		mV		210-230	22-JUN-20
WG3347378-13	CRM	CL-ORP						
ORP			226		mV		210-230	22-JUN-20
P-T-L-COL-CL	Water							
Batch	R5127193							
WG3347142-14	LCS							
Phosphorus (P)-Total			107.6		%		80-120	22-JUN-20
WG3347142-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-JUN-20
PH-CL	Water							
Batch	R5125761							
WG3345630-5	LCS							
pH			6.98		pH		6.9-7.1	18-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5120480							
WG3343437-14	LCS							
Orthophosphate-Dissolved (as P)			105.3		%		80-120	16-JUN-20
WG3343437-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-JUN-20
SO4-IC-N-CL	Water							
Batch	R5125332							
WG3344926-6	LCS							
Sulfate (SO4)			101.1		%		90-110	17-JUN-20
WG3344926-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5130436							
WG3346907-2	LCS							
Total Dissolved Solids			101.5		%		85-115	22-JUN-20
WG3346907-1	MB							
Total Dissolved Solids			<10		mg/L		10	22-JUN-20
TKN-L-F-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5130358							
WG3348291-12	LCS							
Total Kjeldahl Nitrogen			83.4		%		75-125	22-JUN-20
WG3348291-16	LCS							
Total Kjeldahl Nitrogen			85.4		%		75-125	22-JUN-20
WG3348291-19	LCS							
Total Kjeldahl Nitrogen			85.4		%		75-125	22-JUN-20
WG3348291-2	LCS							
Total Kjeldahl Nitrogen			84.9		%		75-125	22-JUN-20
WG3348291-5	LCS							
Total Kjeldahl Nitrogen			85.5		%		75-125	22-JUN-20
WG3348291-8	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	22-JUN-20
WG3348291-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
TSS-L-CL		Water						
Batch	R5130340							
WG3346905-2	LCS							
Total Suspended Solids			113.1		%		85-115	22-JUN-20
WG3346905-1	MB							
Total Suspended Solids			<1.0		mg/L		1	22-JUN-20
TURBIDITY-CL		Water						
Batch	R5123797							
WG3344084-2	LCS							
Turbidity			99.0		%		85-115	17-JUN-20
WG3344084-1	MB							
Turbidity			<0.10		NTU		0.1	17-JUN-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	15-JUN-20 10:00	22-JUN-20 12:30	0.25	170	hours	EHTR-FM
	2	15-JUN-20 10:05	22-JUN-20 12:30	0.25	170	hours	EHTR-FM
	3	15-JUN-20 10:10	22-JUN-20 12:30	0.25	170	hours	EHTR-FM
	4	15-JUN-20 14:30	22-JUN-20 12:30	0.25	166	hours	EHTR-FM
pH							
	1	15-JUN-20 10:00	18-JUN-20 09:00	0.25	71	hours	EHTR-FM
	2	15-JUN-20 10:05	18-JUN-20 09:00	0.25	71	hours	EHTR-FM
	3	15-JUN-20 10:10	18-JUN-20 09:00	0.25	71	hours	EHTR-FM
	4	15-JUN-20 14:30	18-JUN-20 09:00	0.25	66	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2461524 were received on 16-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				Regular	RUSH:				
PROJECT/CLIENT/INFO:				LABORATORY			OTHER/INFO:				
Facility Name / Job# Fording River Operations				Lab Name ALS Calgary			Report Format / Distribution				
Project Manager Tom Jeffery				Lab Contact Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	Excel X	PDF X	EDD X
Email Tom.Jeffery@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com			Email 2:	gregory_jones@golder.com	X	X	X
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
							Email 4:	Scott.Roughead@teck.com	X	X	X
City Calgary Province AB				City Calgary Province AB			Email 5:				
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada							
Phone Number 1-250-433-6716				Phone Number 403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp # Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered	Field 1	Lab	Field 2	Lab
FR_KB-1-2020	FR_KB-1	WG				G 6											
FR_KB-2-2020-06-15	FR_KB-2	WG		2020-06-15	10:00	G 6	1	1	1	1	1	1					
FR_KB-3A-2020	FR_KB-3A	WG				G 6											
FR_KB-3B-2020	FR_KB-3B	WG				G 6	1	1	1	1	1	1					
FR-DCH-2020-06-15	FR-DCH	WG		2020-06-15	10:05	G 6	1	1	1	1	1	1					
FR-FLDH-2020-06-15	FR-FLDH	WG		2020-06-15	10:10	G 6	1	1	1	1	1	1					
FR-TRP-2020-06-15	FR-TRP	WG		2020-06-15	14:30	G 6	1	1	1	1	1	1					
							1	1	1	1	1	1					
							1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>Rm</i>	6/16/20

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>Kate Peterson</i>	Mobile #	250-946-5029	
Sampler's Signature	<i>[Signature]</i>	Date/Time	June 15, 2020	



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 17-JUN-20
Report Date: 29-DEC-20 16:01 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2462005
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2462005-1 WG 16-JUN-20 09:35 FR_KB-1_2020-06-16			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1720			
	Hardness (as CaCO3) (mg/L)	1010			
	pH (pH)	8.00			
	ORP (mV)	288			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	1620	DLHC		
	Turbidity (NTU)	0.42			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	9.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	365			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	365			
	Ammonia as N (mg/L)	0.0064			
	Bicarbonate (HCO3) (mg/L)	445	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.11	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	93.9	DLHC		
	Nitrate (as N) (mg/L)	65.1	DLHC		
	Nitrite (as N) (mg/L)	0.0214	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0029			
	Phosphorus (P)-Total (mg/L)	0.0026	DLHC		
	Sulfate (SO4) (mg/L)	473			
	Anion Sum (meq/L)	21.8			
	Cation Sum (meq/L)	20.5			
	Cation - Anion Balance (%)	-3.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35			
	Total Organic Carbon (mg/L)	1.43			
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00031			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2462005-1 WG 16-JUN-20 09:35 FR_KB-1_2020-06-16				
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Be)-Dissolved (ug/L) Bismuth (Bi)-Dissolved (mg/L) Boron (B)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (ug/L) Calcium (Ca)-Dissolved (mg/L) Chromium (Cr)-Dissolved (mg/L) Cobalt (Co)-Dissolved (ug/L) Copper (Cu)-Dissolved (mg/L) Iron (Fe)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Lithium (Li)-Dissolved (mg/L) Magnesium (Mg)-Dissolved (mg/L) Manganese (Mn)-Dissolved (mg/L) Mercury (Hg)-Dissolved (mg/L) Molybdenum (Mo)-Dissolved (mg/L) Nickel (Ni)-Dissolved (mg/L) Potassium (K)-Dissolved (mg/L) Selenium (Se)-Dissolved (ug/L) Silicon (Si)-Dissolved (mg/L) Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (Tl)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L)	<0.00010 0.0577 <0.020 <0.000050 0.041 0.516 224 <0.00010 0.29 <0.00020 <0.010 <0.000050 0.114 109 0.00024 <0.0000050 0.00165 0.0122 5.62 251 2.78 <0.000010 3.46 0.222 0.000029 <0.00010 <0.010 0.00696 <0.00050 0.0147			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2462005-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2462005-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2462005-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2462005-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2462005-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2462005-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2462005-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2462005-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2462005-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2462005

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5126577							
WG3346475-5	LCS							
Acidity (as CaCO3)			98.6		%		85-115	19-JUN-20
WG3346475-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	19-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5126576							
WG3346462-8	LCS							
Alkalinity, Total (as CaCO3)			98.8		%		85-115	18-JUN-20
WG3346462-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-7	DUP	L2462005-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	19-JUN-20
WG3345134-6	LCS							
Beryllium (Be)-Dissolved			99.6		%		80-120	19-JUN-20
WG3345134-5	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-JUN-20
WG3345134-8	MS	L2462005-1						
Beryllium (Be)-Dissolved			96.2		%		70-130	19-JUN-20
BIC-CL								
	Water							
Batch	R5126576							
WG3346462-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5126428							
WG3346417-2	LCS							
Bromide (Br)			99.8		%		85-115	18-JUN-20
WG3346417-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5130947							
WG3348747-3	DUP	L2462005-1						
Dissolved Organic Carbon		1.35	1.69	J	mg/L	0.34	1	23-JUN-20
WG3348747-2	LCS							
Dissolved Organic Carbon			96.9		%		80-120	23-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5130947							
WG3348747-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JUN-20
WG3348747-4 MS		L2462005-1						
Dissolved Organic Carbon			93.9		%		70-130	23-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5130947							
WG3348747-3 DUP		L2462005-1						
Total Organic Carbon		1.43	1.38		mg/L	3.4	20	23-JUN-20
WG3348747-2 LCS								
Total Organic Carbon			101.7		%		80-120	23-JUN-20
WG3348747-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	23-JUN-20
WG3348747-4 MS		L2462005-1						
Total Organic Carbon			95.1		%		70-130	23-JUN-20
CL-IC-N-CL	Water							
Batch	R5126428							
WG3346417-2 LCS								
Chloride (Cl)			104.3		%		90-110	18-JUN-20
WG3346417-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	18-JUN-20
CO3-CL	Water							
Batch	R5126576							
WG3346462-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	18-JUN-20
EC-L-PCT-CL	Water							
Batch	R5126576							
WG3346462-8 LCS								
Conductivity (@ 25C)			98.9		%		90-110	18-JUN-20
WG3346462-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-20
F-IC-N-CL	Water							
Batch	R5126428							
WG3346417-2 LCS								
Fluoride (F)			106.4		%		90-110	18-JUN-20
WG3346417-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	18-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5127110							
WG3347480-2	LCS							
Mercury (Hg)-Dissolved			100.3		%		80-120	22-JUN-20
WG3347480-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-JUN-20
HG-T-CVAA-VA								
Water								
Batch	R5127564							
WG3347427-2	LCS							
Mercury (Hg)-Total			99.4		%		80-120	22-JUN-20
WG3347427-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	22-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5125856							
WG3345134-7	DUP	L2462005-1						
Aluminum (Al)-Dissolved		<0.0030	0.0053	RPD-NA	mg/L	N/A	20	19-JUN-20
Antimony (Sb)-Dissolved		0.00031	0.00031		mg/L	0.8	20	19-JUN-20
Arsenic (As)-Dissolved		<0.00010	0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Barium (Ba)-Dissolved		0.0577	0.0586		mg/L	1.6	20	19-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-JUN-20
Boron (B)-Dissolved		0.041	0.042		mg/L	2.8	20	19-JUN-20
Cadmium (Cd)-Dissolved		0.000516	0.000524		mg/L	1.5	20	19-JUN-20
Calcium (Ca)-Dissolved		224	231		mg/L	3.1	20	19-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Cobalt (Co)-Dissolved		0.00029	0.00032		mg/L	12	20	19-JUN-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	19-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-JUN-20
Lithium (Li)-Dissolved		0.114	0.115		mg/L	0.6	20	19-JUN-20
Magnesium (Mg)-Dissolved		109	112		mg/L	3.0	20	19-JUN-20
Manganese (Mn)-Dissolved		0.00024	0.00026		mg/L	11	20	19-JUN-20
Molybdenum (Mo)-Dissolved		0.00165	0.00165		mg/L	0.3	20	19-JUN-20
Nickel (Ni)-Dissolved		0.0122	0.0125		mg/L	2.7	20	19-JUN-20
Potassium (K)-Dissolved		5.62	5.71		mg/L	1.6	20	19-JUN-20
Selenium (Se)-Dissolved		0.251	0.253		mg/L	0.8	20	19-JUN-20
Silicon (Si)-Dissolved		2.78	2.76		mg/L	0.6	20	19-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-JUN-20
Sodium (Na)-Dissolved		3.46	3.47		mg/L	0.1	20	19-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-7	DUP	L2462005-1						
Strontium (Sr)-Dissolved		0.222	0.233		mg/L	4.9	20	19-JUN-20
Thallium (Tl)-Dissolved		0.000029	0.000028		mg/L	2.9	20	19-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-JUN-20
Uranium (U)-Dissolved		0.00696	0.00727		mg/L	4.3	20	19-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-JUN-20
Zinc (Zn)-Dissolved		0.0147	0.0147		mg/L	0.1	20	19-JUN-20
WG3345134-6	LCS							
Aluminum (Al)-Dissolved			96.8		%		80-120	19-JUN-20
Antimony (Sb)-Dissolved			95.3		%		80-120	19-JUN-20
Arsenic (As)-Dissolved			92.8		%		80-120	19-JUN-20
Barium (Ba)-Dissolved			97.7		%		80-120	19-JUN-20
Bismuth (Bi)-Dissolved			94.5		%		80-120	19-JUN-20
Boron (B)-Dissolved			96.5		%		80-120	19-JUN-20
Cadmium (Cd)-Dissolved			95.2		%		80-120	19-JUN-20
Calcium (Ca)-Dissolved			98.7		%		80-120	19-JUN-20
Chromium (Cr)-Dissolved			94.9		%		80-120	19-JUN-20
Cobalt (Co)-Dissolved			95.6		%		80-120	19-JUN-20
Copper (Cu)-Dissolved			95.2		%		80-120	19-JUN-20
Iron (Fe)-Dissolved			91.1		%		80-120	19-JUN-20
Lead (Pb)-Dissolved			98.1		%		80-120	19-JUN-20
Lithium (Li)-Dissolved			98.2		%		80-120	19-JUN-20
Magnesium (Mg)-Dissolved			96.1		%		80-120	19-JUN-20
Manganese (Mn)-Dissolved			97.9		%		80-120	19-JUN-20
Molybdenum (Mo)-Dissolved			95.3		%		80-120	19-JUN-20
Nickel (Ni)-Dissolved			96.2		%		80-120	19-JUN-20
Potassium (K)-Dissolved			99.6		%		80-120	19-JUN-20
Selenium (Se)-Dissolved			103.7		%		80-120	19-JUN-20
Silicon (Si)-Dissolved			95.6		%		60-140	19-JUN-20
Silver (Ag)-Dissolved			97.8		%		80-120	19-JUN-20
Sodium (Na)-Dissolved			98.4		%		80-120	19-JUN-20
Strontium (Sr)-Dissolved			95.0		%		80-120	19-JUN-20
Thallium (Tl)-Dissolved			98.2		%		80-120	19-JUN-20
Tin (Sn)-Dissolved			97.3		%		80-120	19-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-6	LCS							
Titanium (Ti)-Dissolved			94.1		%		80-120	19-JUN-20
Uranium (U)-Dissolved			93.8		%		80-120	19-JUN-20
Vanadium (V)-Dissolved			96.3		%		80-120	19-JUN-20
Zinc (Zn)-Dissolved			91.9		%		80-120	19-JUN-20
WG3345134-5	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345134-5	MB	NP						
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
WG3345134-8	MS	L2462005-1						
Aluminum (Al)-Dissolved			96.2		%		70-130	19-JUN-20
Antimony (Sb)-Dissolved			97.1		%		70-130	19-JUN-20
Arsenic (As)-Dissolved			93.3		%		70-130	19-JUN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Bismuth (Bi)-Dissolved			78.3		%		70-130	19-JUN-20
Boron (B)-Dissolved			90.7		%		70-130	19-JUN-20
Cadmium (Cd)-Dissolved			91.2		%		70-130	19-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Chromium (Cr)-Dissolved			93.9		%		70-130	19-JUN-20
Cobalt (Co)-Dissolved			88.6		%		70-130	19-JUN-20
Copper (Cu)-Dissolved			86.2		%		70-130	19-JUN-20
Iron (Fe)-Dissolved			90.7		%		70-130	19-JUN-20
Lead (Pb)-Dissolved			89.2		%		70-130	19-JUN-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Manganese (Mn)-Dissolved			95.2		%		70-130	19-JUN-20
Molybdenum (Mo)-Dissolved			95.9		%		70-130	19-JUN-20
Nickel (Ni)-Dissolved			88.9		%		70-130	19-JUN-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Silicon (Si)-Dissolved			87.6		%		70-130	19-JUN-20
Silver (Ag)-Dissolved			92.7		%		70-130	19-JUN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Thallium (Tl)-Dissolved			83.3		%		70-130	19-JUN-20
Tin (Sn)-Dissolved			95.2		%		70-130	19-JUN-20
Titanium (Ti)-Dissolved			93.3		%		70-130	19-JUN-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	19-JUN-20
Vanadium (V)-Dissolved			96.0		%		70-130	19-JUN-20
Zinc (Zn)-Dissolved			82.8		%		70-130	19-JUN-20
NH3-L-F-CL								
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5131101							
WG3348304-26	LCS							
Ammonia as N			108.3		%		85-115	23-JUN-20
WG3348304-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-JUN-20
NO2-L-IC-N-CL	Water							
Batch	R5126428							
WG3346417-2	LCS							
Nitrite (as N)			104.2		%		90-110	18-JUN-20
WG3346417-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-JUN-20
NO3-L-IC-N-CL	Water							
Batch	R5126428							
WG3346417-2	LCS							
Nitrate (as N)			104.0		%		90-110	18-JUN-20
WG3346417-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-JUN-20
OH-CL	Water							
Batch	R5126576							
WG3346462-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-JUN-20
ORP-CL	Water							
Batch	R5130158							
WG3348322-5	CRM	CL-ORP						
ORP			221		mV		210-230	23-JUN-20
P-T-L-COL-CL	Water							
Batch	R5130976							
WG3348305-18	LCS							
Phosphorus (P)-Total			106.9		%		80-120	23-JUN-20
WG3348305-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-JUN-20
PH-CL	Water							
Batch	R5126576							
WG3346462-8	LCS							
pH			6.99		pH		6.9-7.1	18-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5123801							
WG3344343-18 LCS								
Orthophosphate-Dissolved (as P)			105.2		%		80-120	17-JUN-20
WG3344343-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-JUN-20
SO4-IC-N-CL	Water							
Batch	R5126428							
WG3346417-2 LCS								
Sulfate (SO4)			104.1		%		90-110	18-JUN-20
WG3346417-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	18-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5130436							
WG3346907-11 LCS								
Total Dissolved Solids			99.9		%		85-115	22-JUN-20
WG3346907-10 MB								
Total Dissolved Solids			<10		mg/L		10	22-JUN-20
TKN-L-F-CL	Water							
Batch	R5127816							
WG3347489-13 LCS								
Total Kjeldahl Nitrogen			82.3		%		75-125	22-JUN-20
WG3347489-2 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	22-JUN-20
WG3347489-6 LCS								
Total Kjeldahl Nitrogen			83.8		%		75-125	22-JUN-20
WG3347489-9 LCS								
Total Kjeldahl Nitrogen			82.4		%		75-125	22-JUN-20
WG3347489-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3347489-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3347489-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3347489-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
TSS-L-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5130340							
WG3346905-8	LCS							
Total Suspended Solids			90.8		%		85-115	22-JUN-20
WG3346905-7	MB							
Total Suspended Solids			<1.0		mg/L		1	22-JUN-20
TURBIDITY-CL	Water							
Batch	R5125655							
WG3345243-8	LCS							
Turbidity			99.0		%		85-115	18-JUN-20
WG3345243-7	MB							
Turbidity			<0.10		NTU		0.1	18-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	16-JUN-20 09:35	23-JUN-20 09:00	0.25	168	hours	EHTR-FM
pH	1	16-JUN-20 09:35	18-JUN-20 07:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2462005 were received on 17-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				RUSH:					
PROJECT/CLIENT INFO					LABORATORY			OTHER INFO			
Facility Name / Job# Fording River Operations					Lab Name ALS Calgary			Report Format / Distribution			
Project Manager Tom Jeffery					Lab Contact Lyudmyla Shvets			Excel	PDF	EDD	
Email Tom.Jeffery@teck.com					Email Lyudmyla.Shvets@ALSGlobal.com			Email 1: teckcoal@equisonline.com	X	X	X
Address Suite 1000, 205 - 9th Ave S.E.					Address 2559 29 Street NE			Email 2: gregory.jones@golder.com	X	X	X
City Calgary					City Calgary			Email 3: tom.jeffery@teck.com	X	X	X
Province AB					Province AB			Email 4: Scott.Roughhead@teck.com	X	X	X
Postal Code T2G 0R3					Postal Code T1Y 7B5			Email 5:			
Country Canada					Country Canada			Phone Number 1-250-433-6716		VPO00683840	
Phone Number 1-250-433-6716					Phone Number 403 407 1794			PO number			

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered	Field	Lab	Field	Lab
FR-PP-1A-2020	FR-PP-1A	WG				6											
FR-PP-2A-2020	FR-PP-2A	WG				6											
FR-PP-2B-2020	FR-PP-2B	WG				6											
FR-KB-1-2020-06-16	FR-KB-1	WG		2020/06/16	9:35	G 6											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:	DATE/TIME:	ACCEPTED BY/INITIALS:	DATE/TIME:
		<i>[Signature]</i>	6/17/20

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	<i>Lorie Peterson</i>
Priority (2-3 business days) - 50% surcharge		Mobile #	250-946-5029
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	<i>[Signature]</i>
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	June 16, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 17-JUL-20
Report Date: 09-FEB-21 14:50 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2476052
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200716-1504
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2476052-1 WS 16-JUL-20 13:35 FR_HMW5_QTR_2 020-07-06_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	363			
	Hardness (as CaCO3) (mg/L)	191			
	pH (pH)	8.40			
	ORP (mV)	287			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	246 ^{DLHC}			
	Turbidity (NTU)	0.11			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	144			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.8			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	148			
	Ammonia as N (mg/L)	0.0548			
	Bicarbonate (HCO3) (mg/L)	176			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.60			
	Fluoride (F) (mg/L)	0.487			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.335			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0221			
	Phosphorus (P)-Total (mg/L)	0.021 ^{DLM}			
	Sulfate (SO4) (mg/L)	53.1			
	Anion Sum (meq/L)	4.11			
Cation Sum (meq/L)	4.22				
Cation - Anion Balance (%)	1.4				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0058			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2476052-1 WS 16-JUL-20 13:35 FR_HMW5_QTR_2 020-07-06_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.222			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.039			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	44.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.191			
	Magnesium (Mg)-Dissolved (mg/L)	19.6			
	Manganese (Mn)-Dissolved (mg/L)	0.0520			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.678			
	Selenium (Se)-Dissolved (ug/L)	7.55			
	Silicon (Si)-Dissolved (mg/L)	2.59			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	8.84			
	Strontium (Sr)-Dissolved (mg/L)	0.421			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000017			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Selenium (Se)-Dissolved	DUP-H,J	L2476052-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200716-1504

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2476052

Report Date: 09-FEB-21

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5159492							
WG3366728-5	LCS							
Acidity (as CaCO3)			96.4		%		85-115	20-JUL-20
WG3366728-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	20-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5158097							
WG3365872-11	LCS							
Alkalinity, Total (as CaCO3)			97.9		%		85-115	18-JUL-20
WG3365872-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5166171							
WG3366307-2	LCS							
Beryllium (Be)-Dissolved			97.0		%		80-120	24-JUL-20
WG3366307-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5157866							
WG3365634-2	LCS							
Bromide (Br)			105.9		%		85-115	18-JUL-20
WG3365634-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-JUL-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5163656							
WG3367674-2	LCS							
Dissolved Organic Carbon			92.0		%		80-120	22-JUL-20
WG3367674-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-JUL-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5163656							
WG3367674-2	LCS							
Total Organic Carbon			89.9		%		80-120	22-JUL-20
WG3367674-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-JUL-20
CL-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2476052

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5157866							
WG3365634-2	LCS							
Chloride (Cl)			106.9		%		90-110	18-JUL-20
WG3365634-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	18-JUL-20
EC-L-PCT-CL	Water							
Batch	R5158097							
WG3365872-11	LCS							
Conductivity (@ 25C)			100.7		%		90-110	18-JUL-20
WG3365872-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUL-20
F-IC-N-CL	Water							
Batch	R5157866							
WG3365634-2	LCS							
Fluoride (F)			106.7		%		90-110	18-JUL-20
WG3365634-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	18-JUL-20
HG-D-CVAA-VA	Water							
Batch	R5159525							
WG3367445-10	LCS							
Mercury (Hg)-Dissolved			103.5		%		80-120	21-JUL-20
WG3367445-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-JUL-20
MET-D-CCMS-VA	Water							
Batch	R5166171							
WG3366307-2	LCS							
Aluminum (Al)-Dissolved			103.8		%		80-120	24-JUL-20
Antimony (Sb)-Dissolved			93.9		%		80-120	24-JUL-20
Arsenic (As)-Dissolved			95.7		%		80-120	24-JUL-20
Barium (Ba)-Dissolved			102.5		%		80-120	24-JUL-20
Bismuth (Bi)-Dissolved			102.1		%		80-120	24-JUL-20
Boron (B)-Dissolved			96.0		%		80-120	24-JUL-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	24-JUL-20
Calcium (Ca)-Dissolved			104.0		%		80-120	24-JUL-20
Chromium (Cr)-Dissolved			98.4		%		80-120	24-JUL-20
Cobalt (Co)-Dissolved			97.1		%		80-120	24-JUL-20
Copper (Cu)-Dissolved			95.6		%		80-120	24-JUL-20



Quality Control Report

Workorder: L2476052

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5166171							
WG3366307-2	LCS							
Iron (Fe)-Dissolved			90.9		%		80-120	24-JUL-20
Lead (Pb)-Dissolved			99.0		%		80-120	24-JUL-20
Lithium (Li)-Dissolved			100.3		%		80-120	24-JUL-20
Magnesium (Mg)-Dissolved			98.4		%		80-120	24-JUL-20
Manganese (Mn)-Dissolved			100.5		%		80-120	24-JUL-20
Molybdenum (Mo)-Dissolved			98.3		%		80-120	24-JUL-20
Nickel (Ni)-Dissolved			96.5		%		80-120	24-JUL-20
Potassium (K)-Dissolved			98.6		%		80-120	24-JUL-20
Selenium (Se)-Dissolved			97.9		%		80-120	24-JUL-20
Silicon (Si)-Dissolved			101.0		%		60-140	24-JUL-20
Silver (Ag)-Dissolved			93.5		%		80-120	24-JUL-20
Sodium (Na)-Dissolved			101.5		%		80-120	24-JUL-20
Strontium (Sr)-Dissolved			98.1		%		80-120	24-JUL-20
Thallium (Tl)-Dissolved			99.6		%		80-120	24-JUL-20
Tin (Sn)-Dissolved			95.1		%		80-120	24-JUL-20
Titanium (Ti)-Dissolved			96.9		%		80-120	24-JUL-20
Uranium (U)-Dissolved			101.7		%		80-120	24-JUL-20
Vanadium (V)-Dissolved			97.3		%		80-120	24-JUL-20
Zinc (Zn)-Dissolved			93.0		%		80-120	24-JUL-20
WG3366307-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-JUL-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5166171							
WG3366307-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-JUL-20
NH3-L-F-CL								
	Water							
Batch	R5166542							
WG3369074-14	LCS							
Ammonia as N			104.1		%		85-115	23-JUL-20
WG3369074-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-JUL-20
NO2-L-IC-N-CL								
	Water							
Batch	R5157866							
WG3365634-2	LCS							
Nitrite (as N)			105.0		%		90-110	18-JUL-20
WG3365634-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-JUL-20
NO3-L-IC-N-CL								
	Water							
Batch	R5157866							
WG3365634-2	LCS							
Nitrate (as N)			105.0		%		90-110	18-JUL-20
WG3365634-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-JUL-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5166155							
WG3369200-5	CRM	CL-ORP						
ORP			227		mV		210-230	23-JUL-20
P-T-L-COL-CL	Water							
Batch	R5161978							
WG3367969-30	LCS							
Phosphorus (P)-Total			108.0		%		80-120	22-JUL-20
WG3367969-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-JUL-20
PH-CL	Water							
Batch	R5158097							
WG3365872-11	LCS							
pH			6.98		pH		6.9-7.1	18-JUL-20
PO4-DO-L-COL-CL	Water							
Batch	R5157513							
WG3365044-6	LCS							
Orthophosphate-Dissolved (as P)			103.2		%		80-120	17-JUL-20
WG3365044-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-JUL-20
SO4-IC-N-CL	Water							
Batch	R5157866							
WG3365634-2	LCS							
Sulfate (SO4)			105.0		%		90-110	18-JUL-20
WG3365634-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-JUL-20
SOLIDS-TDS-CL	Water							
Batch	R5165576							
WG3367620-9	DUP	L2476052-1						
Total Dissolved Solids		246	231		mg/L	6.3	20	22-JUL-20
WG3367620-8	LCS							
Total Dissolved Solids			107.5		%		85-115	22-JUL-20
WG3367620-7	MB							
Total Dissolved Solids			<10		mg/L		10	22-JUL-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5166841							
WG3370207-2	LCS							
Total Kjeldahl Nitrogen			102.7		%		75-125	24-JUL-20
WG3370207-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JUL-20
TSS-L-CL	Water							
Batch	R5165704							
WG3367619-7	LCS							
Total Suspended Solids			96.0		%		85-115	22-JUL-20
WG3367619-6	MB							
Total Suspended Solids			<1.0		mg/L		1	22-JUL-20
TURBIDITY-CL	Water							
Batch	R5157514							
WG3365058-8	LCS							
Turbidity			97.9		%		85-115	17-JUL-20
WG3365058-7	MB							
Turbidity			<0.10		NTU		0.1	17-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	16-JUL-20 13:35	23-JUL-20 11:30	0.25	166	hours	EHTR-FM
pH	1	16-JUL-20 13:35	18-JUL-20 12:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2476052 were received on 17-JUL-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

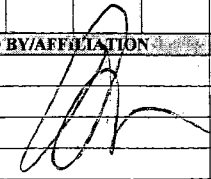
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

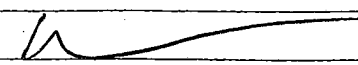
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200716 - 1504 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@egisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	ali.schroeder@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS								ANALYSIS REQUESTED																
Sample ID	Sample Location (sys. loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	F	N	F	N	N	N	N	N	N	N	N	N	N	
								RESERV.	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-U-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY					
FR_HMW5_QTR_2020-07-06_N	FR_HMW5	WS	NO	16-Jul-20	13:35	G	5		1	1	1		1		1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Ali Schroeder	July 16, 2020		7/17 8:50

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	X	Ali Schroeder	250-464-9462
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			July 16, 2020



L2476052-COFC



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 21-JUL-20
Report Date: 09-FEB-21 15:05 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2477293
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200720 - 0900
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported for Sample -3 to -7.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2477293-1 WS 20-JUL-20 16:00 FR_ USSKP2_WS_202 0-07-19_N	L2477293-2 WS 20-JUL-20 16:25 FR_SKP2H_WS_2 020-07-19_N	L2477293-3 WS 20-JUL-20 13:12 FR_HMW1S_QTR_ 2020-07-06_N	L2477293-4 WS 20-JUL-20 13:39 FR_HMW1D_QTR_ 2020-07-06_N	L2477293-5 WS 20-JUL-20 13:12 FR_FLD_QTR_202 0-07-06_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	1060	1030	3660	3780	<2.0
	Hardness (as CaCO3) (mg/L)	709	647	2620	2700	<0.50
	pH (pH)	8.04	8.07	7.91	7.76	5.83
	ORP (mV)	342	376	368	352	497
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	846 ^{DLHC}	820 ^{DLHC}	4030 ^{DLHC}	4340 ^{DLHC}	<10
	Turbidity (NTU)	<0.10	0.33	0.21	0.36	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	5.4	3.7	39.4	41.6	1.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	316	308	376	432	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	316	308	376	432	<1.0
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.725 ^{DLHC}	0.0188	<0.0050
	Bicarbonate (HCO3) (mg/L)			459 ^{DLHC}	527 ^{DLHC}	<5.0
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)			<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<0.50
	Fluoride (F) (mg/L)	0.14 ^{DLHC}	0.14 ^{DLHC}	0.16 ^{DLHC}	0.14 ^{DLHC}	<0.020
	Hydroxide (OH) (mg/L)			<5.0	<5.0	<5.0
	Ion Balance (%)	116	109	101	98.5	0.0
	Nitrate (as N) (mg/L)	25.5 ^{DLHC}	24.4 ^{DLHC}	123 ^{DLHC}	123 ^{DLHC}	<0.0050
	Nitrite (as N) (mg/L)	0.0068 ^{DLHC}	0.0242 ^{DLHC}	<0.0050 ^{DLHC}	0.0233 ^{DLHC}	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}	<0.050 ^{TKNI}	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0018	0.0021	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0021	0.0029	<0.0020
	Sulfate (SO4) (mg/L)	208 ^{DLHC}	201 ^{DLHC}	1720 ^{DLHC}	1810 ^{DLHC}	<0.30
	Anion Sum (meq/L)	12.5	12.1	52.1	55.1	<0.10
	Cation Sum (meq/L)	14.4	13.1	52.7	54.3	<0.10
	Cation - Anion Balance (%)	7.2	4.2	0.6	-0.7	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.55	1.70	1.03	<0.50
	Total Organic Carbon (mg/L)	0.51	0.73	1.44	1.12	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0202			
	Antimony (Sb)-Total (mg/L)	0.00058	0.00061			
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0476	0.0431			
	Beryllium (Be)-Total (ug/L)	<0.020	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2477293-6 WS 20-JUL-20 13:12 FR_DC1_QTR_202 0-07-06_N	L2477293-7 WS 20-JUL-20 12:00 FR_TRP_QTR_202 0-07-06_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	3630	<2.0		
	Hardness (as CaCO3) (mg/L)	2650	<0.50		
	pH (pH)	7.90	5.40		
	ORP (mV)	392	459		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	3770 ^{DLHC}	<10		
	Turbidity (NTU)	0.11	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	35.0	1.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	388	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	388	<1.0		
	Ammonia as N (mg/L)	0.721 ^{DLHC}	<0.0050		
	Bicarbonate (HCO3) (mg/L)	473	<5.0		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<0.50		
	Fluoride (F) (mg/L)	0.14 ^{DLHC}	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	101	0.0		
	Nitrate (as N) (mg/L)	123 ^{DLHC}	<0.0050		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	1720 ^{DLHC}	<0.30		
	Anion Sum (meq/L)	52.4	<0.10		
	Cation Sum (meq/L)	53.2	<0.10		
	Cation - Anion Balance (%)	0.7	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.87	<0.50		
	Total Organic Carbon (mg/L)	1.03	<0.50		
Total Metals	Aluminum (Al)-Total (mg/L)				
	Antimony (Sb)-Total (mg/L)				
	Arsenic (As)-Total (mg/L)				
	Barium (Ba)-Total (mg/L)				
	Beryllium (Be)-Total (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2477293-1	L2477293-2	L2477293-3	L2477293-4	L2477293-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	20-JUL-20	20-JUL-20	20-JUL-20	20-JUL-20	20-JUL-20
		Sampled Time	16:00	16:25	13:12	13:39	13:12
		Client ID	FR_ USSKP2_WS_202 0-07-19_N	FR_SKP2H_WS_2 020-07-19_N	FR_HMW1S_QTR_ 2020-07-06_N	FR_HMW1D_QTR_ _2020-07-06_N	FR_FLD_QTR_202 0-07-06_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050			
	Boron (B)-Total (mg/L)		0.023	0.024			
	Cadmium (Cd)-Total (ug/L)		0.432	0.462			
	Calcium (Ca)-Total (mg/L)		147	145			
	Chromium (Cr)-Total (mg/L)		<0.00010	<0.00010			
	Cobalt (Co)-Total (ug/L)		<0.10	0.16			
	Copper (Cu)-Total (mg/L)		<0.00050	<0.00050			
	Iron (Fe)-Total (mg/L)		<0.010	0.030			
	Lead (Pb)-Total (mg/L)		<0.000050	0.000057			
	Lithium (Li)-Total (mg/L)		0.0501	0.0529			
	Magnesium (Mg)-Total (mg/L)		64.2	61.3			
	Manganese (Mn)-Total (mg/L)		0.00049	0.00229			
	Mercury (Hg)-Total (ug/L)		<0.00050	0.00058			
	Molybdenum (Mo)-Total (mg/L)		0.00192	0.00201			
	Nickel (Ni)-Total (mg/L)		0.0147	0.0150			
	Potassium (K)-Total (mg/L)		3.59	3.57			
	Selenium (Se)-Total (ug/L)		102	94.1			
	Silicon (Si)-Total (mg/L)		2.00	2.06			
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)		2.51	2.50			
	Strontium (Sr)-Total (mg/L)		0.149	0.138			
	Thallium (Tl)-Total (mg/L)		0.000019	0.000024			
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010			
	Uranium (U)-Total (mg/L)		0.00557	0.00541			
	Vanadium (V)-Total (mg/L)		<0.00050	<0.00050			
	Zinc (Zn)-Total (mg/L)		0.0097	0.0104			
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00054	0.00065	0.00032	0.00038	<0.00010
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00020 ^{DLA}	<0.00020 ^{DLA}	<0.00010 ^{RRV}
	Barium (Ba)-Dissolved (mg/L)		0.0544	0.0430	0.0101	0.0101	0.00066
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.040 ^{DLA}	<0.040 ^{DLA}	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.00010 ^{DLA}	<0.00010 ^{DLA}	<0.000050
	Boron (B)-Dissolved (mg/L)		0.026	0.026	0.053	0.055	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.426	0.486	0.126	0.088	<0.0050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2477293-6 WS 20-JUL-20 13:12 FR_DC1_QTR_202 0-07-06_N	L2477293-7 WS 20-JUL-20 12:00 FR_TRP_QTR_202 0-07-06_N		
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)				
	Boron (B)-Total (mg/L)				
	Cadmium (Cd)-Total (ug/L)				
	Calcium (Ca)-Total (mg/L)				
	Chromium (Cr)-Total (mg/L)				
	Cobalt (Co)-Total (ug/L)				
	Copper (Cu)-Total (mg/L)				
	Iron (Fe)-Total (mg/L)				
	Lead (Pb)-Total (mg/L)				
	Lithium (Li)-Total (mg/L)				
	Magnesium (Mg)-Total (mg/L)				
	Manganese (Mn)-Total (mg/L)				
	Mercury (Hg)-Total (ug/L)				
	Molybdenum (Mo)-Total (mg/L)				
	Nickel (Ni)-Total (mg/L)				
	Potassium (K)-Total (mg/L)				
	Selenium (Se)-Total (ug/L)				
	Silicon (Si)-Total (mg/L)				
	Silver (Ag)-Total (mg/L)				
	Sodium (Na)-Total (mg/L)				
	Strontium (Sr)-Total (mg/L)				
	Thallium (Tl)-Total (mg/L)				
	Tin (Sn)-Total (mg/L)				
	Titanium (Ti)-Total (mg/L)				
	Uranium (U)-Total (mg/L)				
	Vanadium (V)-Total (mg/L)				
	Zinc (Zn)-Total (mg/L)				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00033	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.00979	<0.00010		
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.053	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	0.122	<0.0050		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2477293-1	L2477293-2	L2477293-3	L2477293-4	L2477293-5
					WS	WS	WS	WS	WS
		20-JUL-20	16:00	FR_	20-JUL-20	20-JUL-20	20-JUL-20	20-JUL-20	20-JUL-20
				USSKP2_WS_202	16:25	16:25	13:12	13:39	13:12
				0-07-19_N	FR_SKP2H_WS_2	FR_SKP2H_WS_2	FR_HMW1S_QTR_	FR_HMW1D_QTR_	FR_FLD_QTR_202
					0-07-19_N	020-07-19_N	2020-07-06_N	_2020-07-06_N	0-07-06_N
Grouping	Analyte								
WATER									
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	165	153	554	583	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	4.18	4.85	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00047	0.00048	<0.00040	<0.00040	0.00038			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.020	<0.020	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010	<0.00010	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0626	0.0586	0.103	0.0984	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	72.3	64.2	301	303	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	0.00041	0.00061	0.359	0.746	0.00015			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00177	0.00208	0.00089	0.00069	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	0.0139	0.0158	0.0411	0.0317	<0.00050			
	Potassium (K)-Dissolved (mg/L)	3.96	3.72	7.53	6.44	<0.050			
	Selenium (Se)-Dissolved (ug/L)	105	90.4	179	6.65	<0.050			
	Silicon (Si)-Dissolved (mg/L)	1.98	1.83	2.24	2.66	0.062			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020	<0.000020	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.01	2.66	2.20	2.30	0.354			
	Strontium (Sr)-Dissolved (mg/L)	0.160	0.152	0.313	0.335	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	0.000018	0.000024	0.000029	<0.000020	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00582	0.00553	0.0120	0.0123	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0090	0.0105	0.0054	0.0092	<0.0010			
Hydrocarbons	EPH10-19 (mg/L)	<0.25	<0.25						
	EPH (C10-C32) (mg/L)	<0.50	<0.50						
	EPH19-32 (mg/L)	<0.25	<0.25						
	TEH (C10-C30) (mg/L)	<0.25	<0.25						
	Surrogate: 2-Bromobenzotrifluoride (%)	97.6	99.0						
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)	<0.010	<0.010						
	Acenaphthylene (ug/L)	<0.010	<0.010						
	Acridine (ug/L)	<0.010	<0.010						
	Anthracene (ug/L)	<0.010	<0.010						
	Benz(a)anthracene (ug/L)	<0.010	<0.010						
	Benzo(a)pyrene (ug/L)	<0.0050	<0.0050						
	Benzo(b&j)fluoranthene (ug/L)	<0.010	<0.010						

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2477293-6 WS 20-JUL-20 13:12 FR_DC1_QTR_202 0-07-06_N	L2477293-7 WS 20-JUL-20 12:00 FR_TRP_QTR_202 0-07-06_N		
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	570	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	4.11	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00040 ^{DLA}	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.020 ^{DLA}	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.107	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	297	<0.10		
	Manganese (Mn)-Dissolved (mg/L)	0.350	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00093	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.0400	<0.00050		
	Potassium (K)-Dissolved (mg/L)	7.58	<0.050		
	Selenium (Se)-Dissolved (ug/L)	184	<0.050		
	Silicon (Si)-Dissolved (mg/L)	2.29	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	2.22	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	0.323	<0.00020		
	Thallium (Tl)-Dissolved (mg/L)	0.000031	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.0122	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0067	<0.0010		
Hydrocarbons	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)				
	Acenaphthylene (ug/L)				
	Acridine (ug/L)				
	Anthracene (ug/L)				
	Benz(a)anthracene (ug/L)				
	Benzo(a)pyrene (ug/L)				
	Benzo(b&j)fluoranthene (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2477293-1 WS 20-JUL-20 16:00 FR_ USSKP2_WS_202 0-07-19_N	L2477293-2 WS 20-JUL-20 16:25 FR_SKP2H_WS_2 020-07-19_N	L2477293-3 WS 20-JUL-20 13:12 FR_HMW1S_QTR_ 2020-07-06_N	L2477293-4 WS 20-JUL-20 13:39 FR_HMW1D_QTR_ _2020-07-06_N	L2477293-5 WS 20-JUL-20 13:12 FR_FLD_QTR_202 0-07-06_N
Grouping	Analyte					
WATER						
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)	<0.010	<0.010			
	Benzo(k)fluoranthene (ug/L)	<0.010	<0.010			
	Chrysene (ug/L)	<0.010	<0.010			
	Dibenz(a,h)anthracene (ug/L)	<0.0050	<0.0050			
	Fluoranthene (ug/L)	<0.010	<0.010			
	Fluorene (ug/L)	<0.010	<0.010			
	Indeno(1,2,3-c,d)pyrene (ug/L)	<0.010	<0.010			
	1-Methylnaphthalene (ug/L)	<0.050	<0.050			
	2-Methylnaphthalene (ug/L)	<0.020	<0.020			
	Naphthalene (ug/L)	<0.020	<0.020			
	Phenanthrene (ug/L)	<0.020	<0.020			
	Pyrene (ug/L)	<0.010	<0.010			
	Quinoline (ug/L)	<0.050	<0.050			
	Surrogate: Acenaphthene d10 (%)	108.8	103.4			
	Surrogate: Chrysene d12 (%)	116.6	111.5			
Surrogate: Phenanthrene d10 (%)	120.1	114.5				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2477293-6 WS 20-JUL-20 13:12 FR_DC1_QTR_202 0-07-06_N	L2477293-7 WS 20-JUL-20 12:00 FR_TRP_QTR_202 0-07-06_N		
Grouping	Analyte				
WATER					
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)				
	Benzo(k)fluoranthene (ug/L)				
	Chrysene (ug/L)				
	Dibenz(a,h)anthracene (ug/L)				
	Fluoranthene (ug/L)				
	Fluorene (ug/L)				
	Indeno(1,2,3-c,d)pyrene (ug/L)				
	1-Methylnaphthalene (ug/L)				
	2-Methylnaphthalene (ug/L)				
	Naphthalene (ug/L)				
	Phenanthrene (ug/L)				
	Pyrene (ug/L)				
	Quinoline (ug/L)				
	Surrogate: Acenaphthene d10 (%)				
	Surrogate: Chrysene d12 (%)				
	Surrogate: Phenanthrene d10 (%)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Barium (Ba)-Total	MES	L2477293-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2477293-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2477293-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2477293-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2477293-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2477293-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Total	MS-B	L2477293-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L2477293-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2477293-1, -2
Matrix Spike	Selenium (Se)-Total	MS-B	L2477293-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L2477293-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L2477293-1, -2
Matrix Spike	Uranium (U)-Total	MS-B	L2477293-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)

Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation redution potential by elect.	ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PAH-BCCSR-CL	Water	PAHs - BC CSR Regs	EPA 3511/8270D
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PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS.
 Container: 250 ML AMBER-EPH/PAH

PH-CL	Water	pH	APHA 4500 H-Electrode
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pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
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A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
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Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
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Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
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This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
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This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
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This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
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Reference Information

CL ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200720 - 0900

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2477293

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5167004							
WG3370390-5	LCS							
Acidity (as CaCO3)			101.6		%		85-115	24-JUL-20
WG3370390-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	24-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5161418							
WG3367941-5	LCS							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	22-JUL-20
WG3367941-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5167320							
WG3369202-2	LCS							
Beryllium (Be)-Dissolved			101.5		%		80-120	25-JUL-20
WG3369202-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-JUL-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5165756							
WG3368485-3	DUP	L2477293-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-JUL-20
WG3368485-2	LCS							
Beryllium (Be)-Total			95.3		%		80-120	23-JUL-20
WG3368485-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-JUL-20
WG3368485-4	MS	L2477293-2						
Beryllium (Be)-Total			90.6		%		70-130	23-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5163696							
WG3368651-3	DUP	L2477293-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368651-2	LCS							
Bromide (Br)			107.7		%		85-115	22-JUL-20
WG3368651-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-JUL-20
WG3368651-4	MS	L2477293-5						
Bromide (Br)			108.3		%		75-125	22-JUL-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2477293

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5166481							
WG3369637-6	LCS							
Dissolved Organic Carbon			95.4		%		80-120	23-JUL-20
WG3369637-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JUL-20
Batch	R5166485							
WG3369638-2	LCS							
Dissolved Organic Carbon			84.9		%		80-120	23-JUL-20
WG3369638-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JUL-20
Batch	R5167516							
WG3370872-2	LCS							
Dissolved Organic Carbon			98.6		%		80-120	24-JUL-20
WG3370872-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JUL-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5166481							
WG3369637-6	LCS							
Total Organic Carbon			101.3		%		80-120	23-JUL-20
WG3369637-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-JUL-20
Batch	R5166485							
WG3369638-2	LCS							
Total Organic Carbon			84.5		%		80-120	23-JUL-20
WG3369638-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-JUL-20
Batch	R5167516							
WG3370872-2	LCS							
Total Organic Carbon			97.3		%		80-120	24-JUL-20
WG3370872-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JUL-20
CL-IC-N-CL								
	Water							
Batch	R5163696							
WG3368651-3	DUP	L2477293-5						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368651-2	LCS							
Chloride (Cl)			104.8		%		90-110	22-JUL-20
WG3368651-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-JUL-20



Quality Control Report

Workorder: L2477293

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5163696							
WG3368651-4 MS		L2477293-5						
Chloride (Cl)			106.8		%		75-125	22-JUL-20
EC-L-PCT-CL	Water							
Batch	R5161418							
WG3367941-5 LCS								
Conductivity (@ 25C)			97.5		%		90-110	22-JUL-20
WG3367941-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JUL-20
F-IC-N-CL	Water							
Batch	R5163696							
WG3368651-3 DUP		L2477293-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368651-2 LCS								
Fluoride (F)			106.1		%		90-110	22-JUL-20
WG3368651-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
WG3368651-4 MS		L2477293-5						
Fluoride (F)			102.5		%		75-125	22-JUL-20
HG-D-CVAA-VA	Water							
Batch	R5166273							
WG3369904-7 DUP		L2477293-2						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-JUL-20
WG3369904-6 LCS								
Mercury (Hg)-Dissolved			100.6		%		80-120	24-JUL-20
WG3369904-5 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-JUL-20
HG-T-U-CVAF-VA	Water							
Batch	R5166428							
WG3369689-2 LCS								
Mercury (Hg)-Total			107.2		%		80-120	24-JUL-20
WG3369689-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-JUL-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2477293

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167320							
WG3369202-2	LCS							
Aluminum (Al)-Dissolved			100.8		%		80-120	25-JUL-20
Antimony (Sb)-Dissolved			102.7		%		80-120	25-JUL-20
Arsenic (As)-Dissolved			97.1		%		80-120	25-JUL-20
Barium (Ba)-Dissolved			97.4		%		80-120	25-JUL-20
Bismuth (Bi)-Dissolved			95.2		%		80-120	25-JUL-20
Boron (B)-Dissolved			104.3		%		80-120	25-JUL-20
Cadmium (Cd)-Dissolved			100.5		%		80-120	25-JUL-20
Calcium (Ca)-Dissolved			103.7		%		80-120	25-JUL-20
Chromium (Cr)-Dissolved			99.7		%		80-120	25-JUL-20
Cobalt (Co)-Dissolved			99.8		%		80-120	25-JUL-20
Copper (Cu)-Dissolved			97.9		%		80-120	25-JUL-20
Iron (Fe)-Dissolved			98.6		%		80-120	25-JUL-20
Lead (Pb)-Dissolved			94.1		%		80-120	25-JUL-20
Lithium (Li)-Dissolved			105.3		%		80-120	25-JUL-20
Magnesium (Mg)-Dissolved			99.97		%		80-120	25-JUL-20
Manganese (Mn)-Dissolved			101.0		%		80-120	25-JUL-20
Molybdenum (Mo)-Dissolved			99.6		%		80-120	25-JUL-20
Nickel (Ni)-Dissolved			99.1		%		80-120	25-JUL-20
Potassium (K)-Dissolved			103.7		%		80-120	25-JUL-20
Selenium (Se)-Dissolved			95.2		%		80-120	25-JUL-20
Silicon (Si)-Dissolved			101.5		%		60-140	25-JUL-20
Silver (Ag)-Dissolved			99.0		%		80-120	25-JUL-20
Sodium (Na)-Dissolved			101.9		%		80-120	25-JUL-20
Strontium (Sr)-Dissolved			104.7		%		80-120	25-JUL-20
Thallium (Tl)-Dissolved			95.1		%		80-120	25-JUL-20
Tin (Sn)-Dissolved			97.7		%		80-120	25-JUL-20
Titanium (Ti)-Dissolved			98.1		%		80-120	25-JUL-20
Uranium (U)-Dissolved			96.2		%		80-120	25-JUL-20
Vanadium (V)-Dissolved			100.5		%		80-120	25-JUL-20
Zinc (Zn)-Dissolved			98.5		%		80-120	25-JUL-20
WG3369202-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20



Quality Control Report

Workorder: L2477293

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167320							
WG3369202-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
Batch	R5167997							
WG3371057-3	DUP	L2477293-5						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-JUL-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JUL-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JUL-20
Barium (Ba)-Dissolved		0.00066	0.00065		mg/L	1.5	20	27-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167997							
WG3371057-3	DUP	L2477293-5						
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JUL-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-JUL-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-JUL-20
Chromium (Cr)-Dissolved		0.00013	0.00012		mg/L	8.8	20	27-JUL-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JUL-20
Copper (Cu)-Dissolved		0.00038	0.00038		mg/L	1.5	20	27-JUL-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JUL-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUL-20
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	27-JUL-20
Manganese (Mn)-Dissolved		0.00015	0.00017		mg/L	15	20	27-JUL-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JUL-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-JUL-20
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-JUL-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JUL-20
Silicon (Si)-Dissolved		0.062	0.066		mg/L	5.9	20	27-JUL-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JUL-20
Sodium (Na)-Dissolved		0.354	0.349		mg/L	1.5	20	27-JUL-20
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JUL-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JUL-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JUL-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JUL-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JUL-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-JUL-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUL-20
WG3371057-2	LCS							
Aluminum (Al)-Dissolved			103.4		%		80-120	27-JUL-20
Antimony (Sb)-Dissolved			93.1		%		80-120	27-JUL-20
Arsenic (As)-Dissolved			98.5		%		80-120	27-JUL-20
Barium (Ba)-Dissolved			97.6		%		80-120	27-JUL-20
Bismuth (Bi)-Dissolved			94.5		%		80-120	27-JUL-20
Boron (B)-Dissolved			102.8		%		80-120	27-JUL-20
Cadmium (Cd)-Dissolved			99.7		%		80-120	27-JUL-20
Calcium (Ca)-Dissolved			101.4		%		80-120	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167997							
WG3371057-2	LCS							
Chromium (Cr)-Dissolved			101.5		%		80-120	27-JUL-20
Cobalt (Co)-Dissolved			99.1		%		80-120	27-JUL-20
Copper (Cu)-Dissolved			99.9		%		80-120	27-JUL-20
Iron (Fe)-Dissolved			98.4		%		80-120	27-JUL-20
Lead (Pb)-Dissolved			96.9		%		80-120	27-JUL-20
Lithium (Li)-Dissolved			104.2		%		80-120	27-JUL-20
Magnesium (Mg)-Dissolved			100.0		%		80-120	27-JUL-20
Manganese (Mn)-Dissolved			99.7		%		80-120	27-JUL-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	27-JUL-20
Nickel (Ni)-Dissolved			99.6		%		80-120	27-JUL-20
Potassium (K)-Dissolved			101.7		%		80-120	27-JUL-20
Selenium (Se)-Dissolved			105.7		%		80-120	27-JUL-20
Silicon (Si)-Dissolved			98.3		%		60-140	27-JUL-20
Silver (Ag)-Dissolved			99.97		%		80-120	27-JUL-20
Sodium (Na)-Dissolved			107.6		%		80-120	27-JUL-20
Strontium (Sr)-Dissolved			101.4		%		80-120	27-JUL-20
Thallium (Tl)-Dissolved			97.3		%		80-120	27-JUL-20
Tin (Sn)-Dissolved			94.8		%		80-120	27-JUL-20
Titanium (Ti)-Dissolved			97.1		%		80-120	27-JUL-20
Uranium (U)-Dissolved			101.7		%		80-120	27-JUL-20
Vanadium (V)-Dissolved			102.7		%		80-120	27-JUL-20
Zinc (Zn)-Dissolved			100.1		%		80-120	27-JUL-20
WG3371057-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167997							
WG3371057-1	MB	NP						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20
MET-T-CCMS-VA								
	Water							
Batch	R5165756							
WG3368485-3	DUP	L2477293-1						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-JUL-20
Antimony (Sb)-Total		0.00058	0.00058		mg/L	0.0	20	23-JUL-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JUL-20
Barium (Ba)-Total		0.0476	0.0481		mg/L	1.2	20	23-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-JUL-20
Boron (B)-Total		0.023	0.024		mg/L	4.7	20	23-JUL-20
Cadmium (Cd)-Total		0.000432	0.000436		mg/L	0.8	20	23-JUL-20
Calcium (Ca)-Total		147	152		mg/L	3.3	20	23-JUL-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JUL-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JUL-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-JUL-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5165756							
WG3368485-3	DUP	L2477293-1						
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-JUL-20
Lithium (Li)-Total		0.0501	0.0534		mg/L	6.3	20	23-JUL-20
Magnesium (Mg)-Total		64.2	67.0		mg/L	4.3	20	23-JUL-20
Manganese (Mn)-Total		0.00049	0.00047		mg/L	3.7	20	23-JUL-20
Molybdenum (Mo)-Total		0.00192	0.00193		mg/L	0.2	20	23-JUL-20
Nickel (Ni)-Total		0.0147	0.0148		mg/L	0.4	20	23-JUL-20
Potassium (K)-Total		3.59	3.68		mg/L	2.7	20	23-JUL-20
Selenium (Se)-Total		0.102	0.0996		mg/L	2.3	20	23-JUL-20
Silicon (Si)-Total		2.00	2.06		mg/L	2.8	20	23-JUL-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-JUL-20
Sodium (Na)-Total		2.51	2.68		mg/L	6.4	20	23-JUL-20
Strontium (Sr)-Total		0.149	0.141		mg/L	5.6	20	23-JUL-20
Thallium (Tl)-Total		0.000019	0.000019		mg/L	0.2	20	23-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JUL-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JUL-20
Uranium (U)-Total		0.00557	0.00569		mg/L	2.1	20	23-JUL-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-JUL-20
Zinc (Zn)-Total		0.0097	0.0098		mg/L	0.5	20	23-JUL-20
WG3368485-2	LCS							
Aluminum (Al)-Total			103.5		%		80-120	23-JUL-20
Antimony (Sb)-Total			102.3		%		80-120	23-JUL-20
Arsenic (As)-Total			101.4		%		80-120	23-JUL-20
Barium (Ba)-Total			127.6	MES	%		80-120	23-JUL-20
Bismuth (Bi)-Total			108.5		%		80-120	23-JUL-20
Boron (B)-Total			99.5		%		80-120	23-JUL-20
Cadmium (Cd)-Total			100.9		%		80-120	23-JUL-20
Calcium (Ca)-Total			102.0		%		80-120	23-JUL-20
Chromium (Cr)-Total			100.1		%		80-120	23-JUL-20
Cobalt (Co)-Total			103.2		%		80-120	23-JUL-20
Copper (Cu)-Total			101.5		%		80-120	23-JUL-20
Iron (Fe)-Total			103.8		%		80-120	23-JUL-20
Lead (Pb)-Total			111.4		%		80-120	23-JUL-20
Lithium (Li)-Total			105.7		%		80-120	23-JUL-20
Magnesium (Mg)-Total			102.4		%		80-120	23-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5165756							
WG3368485-2 LCS								
Manganese (Mn)-Total			100.5		%		80-120	23-JUL-20
Molybdenum (Mo)-Total			109.3		%		80-120	23-JUL-20
Nickel (Ni)-Total			100.9		%		80-120	23-JUL-20
Potassium (K)-Total			107.7		%		80-120	23-JUL-20
Selenium (Se)-Total			110.5		%		80-120	23-JUL-20
Silicon (Si)-Total			108.4		%		80-120	23-JUL-20
Silver (Ag)-Total			106.2		%		80-120	23-JUL-20
Sodium (Na)-Total			106.6		%		80-120	23-JUL-20
Strontium (Sr)-Total			112.4		%		80-120	23-JUL-20
Thallium (Tl)-Total			109.3		%		80-120	23-JUL-20
Tin (Sn)-Total			104.5		%		80-120	23-JUL-20
Titanium (Ti)-Total			96.6		%		80-120	23-JUL-20
Uranium (U)-Total			113.7		%		80-120	23-JUL-20
Vanadium (V)-Total			101.6		%		80-120	23-JUL-20
Zinc (Zn)-Total			103.1		%		80-120	23-JUL-20
WG3368485-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	23-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	23-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5165756							
WG3368485-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	23-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	23-JUL-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	23-JUL-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-JUL-20
WG3368485-4	MS	L2477293-2						
Aluminum (Al)-Total			104.3		%		70-130	23-JUL-20
Antimony (Sb)-Total			103.3		%		70-130	23-JUL-20
Arsenic (As)-Total			99.9		%		70-130	23-JUL-20
Barium (Ba)-Total			N/A	MS-B	%		-	23-JUL-20
Bismuth (Bi)-Total			94.1		%		70-130	23-JUL-20
Boron (B)-Total			99.8		%		70-130	23-JUL-20
Cadmium (Cd)-Total			97.5		%		70-130	23-JUL-20
Calcium (Ca)-Total			N/A	MS-B	%		-	23-JUL-20
Chromium (Cr)-Total			99.1		%		70-130	23-JUL-20
Cobalt (Co)-Total			95.5		%		70-130	23-JUL-20
Copper (Cu)-Total			90.9		%		70-130	23-JUL-20
Iron (Fe)-Total			96.0		%		70-130	23-JUL-20
Lead (Pb)-Total			95.4		%		70-130	23-JUL-20
Lithium (Li)-Total			91.0		%		70-130	23-JUL-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	23-JUL-20
Manganese (Mn)-Total			93.7		%		70-130	23-JUL-20
Molybdenum (Mo)-Total			105.6		%		70-130	23-JUL-20
Nickel (Ni)-Total			89.5		%		70-130	23-JUL-20
Potassium (K)-Total			105.7		%		70-130	23-JUL-20
Selenium (Se)-Total			N/A	MS-B	%		-	23-JUL-20
Silicon (Si)-Total			103.2		%		70-130	23-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5165756							
WG3368485-4	MS	L2477293-2						
Silver (Ag)-Total			97.2		%		70-130	23-JUL-20
Sodium (Na)-Total			N/A	MS-B	%		-	23-JUL-20
Strontium (Sr)-Total			N/A	MS-B	%		-	23-JUL-20
Thallium (Tl)-Total			97.5		%		70-130	23-JUL-20
Tin (Sn)-Total			102.0		%		70-130	23-JUL-20
Titanium (Ti)-Total			96.7		%		70-130	23-JUL-20
Uranium (U)-Total			N/A	MS-B	%		-	23-JUL-20
Vanadium (V)-Total			101.2		%		70-130	23-JUL-20
Zinc (Zn)-Total			92.6		%		70-130	23-JUL-20
NH3-L-F-CL								
	Water							
Batch	R5167807							
WG3371282-11	DUP	L2477293-1						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-JUL-20
WG3371282-10	LCS							
Ammonia as N			99.9		%		85-115	27-JUL-20
WG3371282-6	LCS							
Ammonia as N			99.6		%		85-115	27-JUL-20
WG3371282-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-JUL-20
WG3371282-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-JUL-20
WG3371282-12	MS	L2477293-1						
Ammonia as N			92.6		%		75-125	27-JUL-20
NO2-L-IC-N-CL								
	Water							
Batch	R5163696							
WG3368651-3	DUP	L2477293-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368651-2	LCS							
Nitrite (as N)			103.1		%		90-110	22-JUL-20
WG3368651-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
WG3368651-4	MS	L2477293-5						
Nitrite (as N)			105.8		%		75-125	22-JUL-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Water								
Batch	R5163696							
WG3368651-3	DUP	L2477293-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368651-2	LCS							
Nitrate (as N)			105.1		%		90-110	22-JUL-20
WG3368651-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
WG3368651-4	MS	L2477293-5						
Nitrate (as N)			107.1		%		75-125	22-JUL-20
ORP-CL								
Water								
Batch	R5167790							
WG3371239-1	CRM	CL-ORP						
ORP			222		mV		210-230	27-JUL-20
WG3371239-3	CRM	CL-ORP						
ORP			224		mV		210-230	27-JUL-20
WG3371239-4	DUP	L2477293-1						
ORP		342	328	J	mV	14.0	15	27-JUL-20
P-T-L-COL-CL								
Water								
Batch	R5165183							
WG3368949-22	LCS							
Phosphorus (P)-Total			106.6		%		80-120	23-JUL-20
WG3368949-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-JUL-20
PAH-BCCSR-CL								
Water								
Batch	R5167154							
WG3370538-2	LCS							
Acenaphthene			119		ug/L		60-130	25-JUL-20
Acenaphthylene			112		ug/L		60-130	25-JUL-20
Acridine			105		ug/L		60-130	25-JUL-20
Anthracene			111		ug/L		60-130	25-JUL-20
Benzo(a)anthracene			120		ug/L		60-130	25-JUL-20
Benzo(a)pyrene			116		ug/L		60-130	25-JUL-20
Benzo(b&j)fluoranthene			115		ug/L		60-130	25-JUL-20
Benzo(g,h,i)perylene			121		ug/L		60-130	25-JUL-20
Benzo(k)fluoranthene			124		ug/L		60-130	25-JUL-20
Chrysene			118		ug/L		60-130	25-JUL-20
Dibenz(a,h)anthracene			115		ug/L		60-130	25-JUL-20
Fluoranthene			116		ug/L		60-130	25-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5167154							
WG3370538-2	LCS							
Fluorene			112		ug/L		60-130	25-JUL-20
Indeno(1,2,3-c,d)pyrene			108		ug/L		60-130	25-JUL-20
2-Methylnaphthalene			109		ug/L		60-130	25-JUL-20
Naphthalene			106		ug/L		50-130	25-JUL-20
Phenanthrene			115		ug/L		60-130	25-JUL-20
Pyrene			119		ug/L		60-130	25-JUL-20
Quinoline			104		ug/L		60-130	25-JUL-20
1-Methylnaphthalene			109.5		%		60-130	25-JUL-20
WG3370538-4	LCS							
Acenaphthene			102		ug/L		60-130	27-JUL-20
Acenaphthylene			101		ug/L		60-130	27-JUL-20
Acridine			113		ug/L		60-130	27-JUL-20
Anthracene			111		ug/L		60-130	27-JUL-20
Benz(a)anthracene			123		ug/L		60-130	27-JUL-20
Benzo(a)pyrene			113		ug/L		60-130	27-JUL-20
Benzo(b&j)fluoranthene			107		ug/L		60-130	27-JUL-20
Benzo(g,h,i)perylene			106		ug/L		60-130	27-JUL-20
Benzo(k)fluoranthene			101		ug/L		60-130	27-JUL-20
Chrysene			108		ug/L		60-130	27-JUL-20
Dibenz(a,h)anthracene			114		ug/L		60-130	27-JUL-20
Fluoranthene			108		ug/L		60-130	27-JUL-20
Fluorene			103		ug/L		60-130	27-JUL-20
Indeno(1,2,3-c,d)pyrene			78.5		ug/L		60-130	27-JUL-20
2-Methylnaphthalene			87.2		ug/L		60-130	27-JUL-20
Naphthalene			83.0		ug/L		50-130	27-JUL-20
Phenanthrene			109		ug/L		60-130	27-JUL-20
Pyrene			111		ug/L		60-130	27-JUL-20
Quinoline			101		ug/L		60-130	27-JUL-20
1-Methylnaphthalene			88.7		%		60-130	27-JUL-20
WG3370538-1	MB							
Acenaphthene			<0.010		ug/L		0.01	25-JUL-20
Acenaphthylene			<0.010		ug/L		0.01	25-JUL-20
Acridine			<0.010		ug/L		0.01	25-JUL-20
Anthracene			<0.010		ug/L		0.01	25-JUL-20
Benz(a)anthracene			<0.010		ug/L		0.01	25-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5167154							
WG3370538-1 MB								
Benzo(a)pyrene			<0.0050		ug/L		0.005	25-JUL-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	25-JUL-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	25-JUL-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	25-JUL-20
Chrysene			<0.010		ug/L		0.01	25-JUL-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	25-JUL-20
Fluoranthene			<0.010		ug/L		0.01	25-JUL-20
Fluorene			<0.010		ug/L		0.01	25-JUL-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	25-JUL-20
2-Methylnaphthalene			<0.020		ug/L		0.02	25-JUL-20
Naphthalene			<0.020		ug/L		0.02	25-JUL-20
Phenanthrene			<0.020		ug/L		0.02	25-JUL-20
Pyrene			<0.010		ug/L		0.01	25-JUL-20
Quinoline			<0.050		ug/L		0.05	25-JUL-20
1-Methylnaphthalene			<0.050		ug/L		0.05	25-JUL-20
Surrogate: Acenaphthene d10			103.0		%		60-130	25-JUL-20
Surrogate: Chrysene d12			104.6		%		60-130	25-JUL-20
Surrogate: Phenanthrene d10			104.2		%		60-130	25-JUL-20
WG3370538-3 MB								
Acenaphthene			<0.010		ug/L		0.01	27-JUL-20
Acenaphthylene			<0.010		ug/L		0.01	27-JUL-20
Acridine			<0.010		ug/L		0.01	27-JUL-20
Anthracene			<0.010		ug/L		0.01	27-JUL-20
Benz(a)anthracene			<0.010		ug/L		0.01	27-JUL-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	27-JUL-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	27-JUL-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	27-JUL-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	27-JUL-20
Chrysene			<0.010		ug/L		0.01	27-JUL-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	27-JUL-20
Fluoranthene			<0.010		ug/L		0.01	27-JUL-20
Fluorene			<0.010		ug/L		0.01	27-JUL-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	27-JUL-20
2-Methylnaphthalene			<0.020		ug/L		0.02	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-BC-VA-CL		Water						
Batch	R5169100							
WG3372128-2	LCS							
EPH10-19			78.0		%		70-130	27-JUL-20
EPH19-32			76.5		%		70-130	27-JUL-20
WG3372128-4	LCS							
EPH10-19			82.3		%		70-130	31-JUL-20
EPH19-32			70.9		%		70-130	31-JUL-20
WG3372128-6	LCS							
EPH10-19			81.9		%		70-130	06-AUG-20
EPH19-32			80.3		%		70-130	06-AUG-20
WG3372128-1	MB							
EPH10-19			<0.25		mg/L		0.25	27-JUL-20
EPH19-32			<0.25		mg/L		0.25	27-JUL-20
Surrogate: 2-Bromobenzotrifluoride			91.6		%		60-140	27-JUL-20
WG3372128-3	MB							
EPH10-19			<0.25		mg/L		0.25	31-JUL-20
EPH19-32			<0.25		mg/L		0.25	31-JUL-20
Surrogate: 2-Bromobenzotrifluoride			75.6		%		60-140	31-JUL-20
WG3372128-5	MB							
EPH10-19			<0.25		mg/L		0.25	06-AUG-20
EPH19-32			<0.25		mg/L		0.25	06-AUG-20
Surrogate: 2-Bromobenzotrifluoride			87.5		%		60-140	06-AUG-20
TEH-WATER-VA-CL		Water						
Batch	R5169100							
WG3372128-2	LCS							
TEH (C10-C30)			77.6		%		70-130	27-JUL-20
WG3372128-4	LCS							
TEH (C10-C30)			80.0		%		70-130	31-JUL-20
WG3372128-6	LCS							
TEH (C10-C30)			81.5		%		70-130	06-AUG-20
TEH (C10-C30)			81.5		mg/L		70-130	06-AUG-20
WG3372128-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	27-JUL-20
Surrogate: 2-Bromobenzotrifluoride			91.6		%		60-140	27-JUL-20
WG3372128-3	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	31-JUL-20
Surrogate: 2-Bromobenzotrifluoride			75.6		%		60-140	31-JUL-20
WG3372128-5	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL								
	Water							
Batch	R5169100							
WG3372128-5	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	06-AUG-20
Surrogate: 2-Bromobenzotrifluoride			87.5		%		60-140	06-AUG-20
TKN-L-F-CL								
	Water							
Batch	R5163016							
WG3368422-25	DUP	L2477293-5						
Total Kjeldahl Nitrogen		<0.050	0.050	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368422-9	DUP	L2477293-7						
Total Kjeldahl Nitrogen		<0.050	0.072	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3368422-12	LCS							
Total Kjeldahl Nitrogen			109.0		%		75-125	22-JUL-20
WG3368422-16	LCS							
Total Kjeldahl Nitrogen			108.6		%		75-125	22-JUL-20
WG3368422-2	LCS							
Total Kjeldahl Nitrogen			118.0		%		75-125	22-JUL-20
WG3368422-20	LCS							
Total Kjeldahl Nitrogen			102.0		%		75-125	22-JUL-20
WG3368422-24	LCS							
Total Kjeldahl Nitrogen			103.0		%		75-125	22-JUL-20
WG3368422-4	LCS							
Total Kjeldahl Nitrogen			116.0		%		75-125	22-JUL-20
WG3368422-8	LCS							
Total Kjeldahl Nitrogen			111.6		%		75-125	22-JUL-20
WG3368422-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-20
WG3368422-10	MS	L2477293-7						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5163016							
WG3368422-10	MS	L2477293-7						
Total Kjeldahl Nitrogen			94.4		%		70-130	22-JUL-20
WG3368422-26	MS	L2477293-5						
Total Kjeldahl Nitrogen			90.8		%		70-130	22-JUL-20
TSS-L-CL								
Water								
Batch	R5167167							
WG3369503-6	LCS							
Total Suspended Solids			93.8		%		85-115	24-JUL-20
WG3369503-5	MB							
Total Suspended Solids			<1.0		mg/L		1	24-JUL-20
TURBIDITY-CL								
Water								
Batch	R5160114							
WG3367180-8	LCS							
Turbidity			97.9		%		85-115	21-JUL-20
WG3367180-7	MB							
Turbidity			<0.10		NTU		0.1	21-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	20-JUL-20 16:00	27-JUL-20 14:00	0.25	166	hours	EHTR-FM
	2	20-JUL-20 16:25	27-JUL-20 06:13	0.25	158	hours	EHTR-FM
	3	20-JUL-20 13:12	27-JUL-20 06:13	0.25	161	hours	EHTR-FM
	4	20-JUL-20 13:39	27-JUL-20 06:13	0.25	161	hours	EHTR-FM
	5	20-JUL-20 13:12	27-JUL-20 06:13	0.25	161	hours	EHTR-FM
	6	20-JUL-20 13:12	27-JUL-20 07:03	0.25	162	hours	EHTR-FM
	7	20-JUL-20 12:00	27-JUL-20 07:03	0.25	163	hours	EHTR-FM
pH							
	1	20-JUL-20 16:00	22-JUL-20 13:00	0.25	45	hours	EHTR-FM
	2	20-JUL-20 16:25	22-JUL-20 13:00	0.25	45	hours	EHTR-FM
	3	20-JUL-20 13:12	22-JUL-20 13:00	0.25	48	hours	EHTR-FM
	4	20-JUL-20 13:39	22-JUL-20 13:00	0.25	47	hours	EHTR-FM
	5	20-JUL-20 13:12	22-JUL-20 13:00	0.25	48	hours	EHTR-FM
	6	20-JUL-20 13:12	22-JUL-20 13:00	0.25	48	hours	EHTR-FM
	7	20-JUL-20 12:00	22-JUL-20 13:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477293 were received on 21-JUL-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

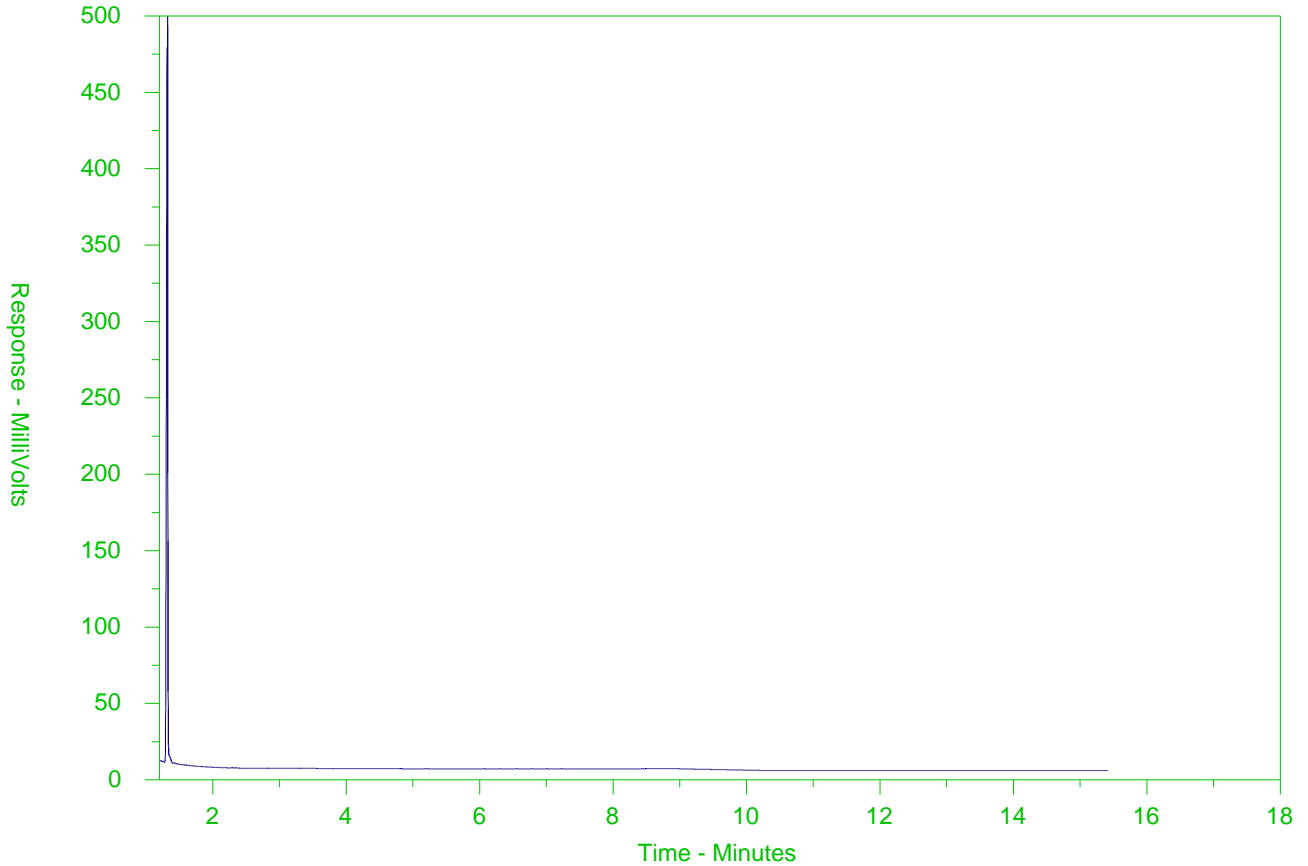
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477293-1
 Client Sample ID: FR_USSKP2_WS_2020-07-19_N



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

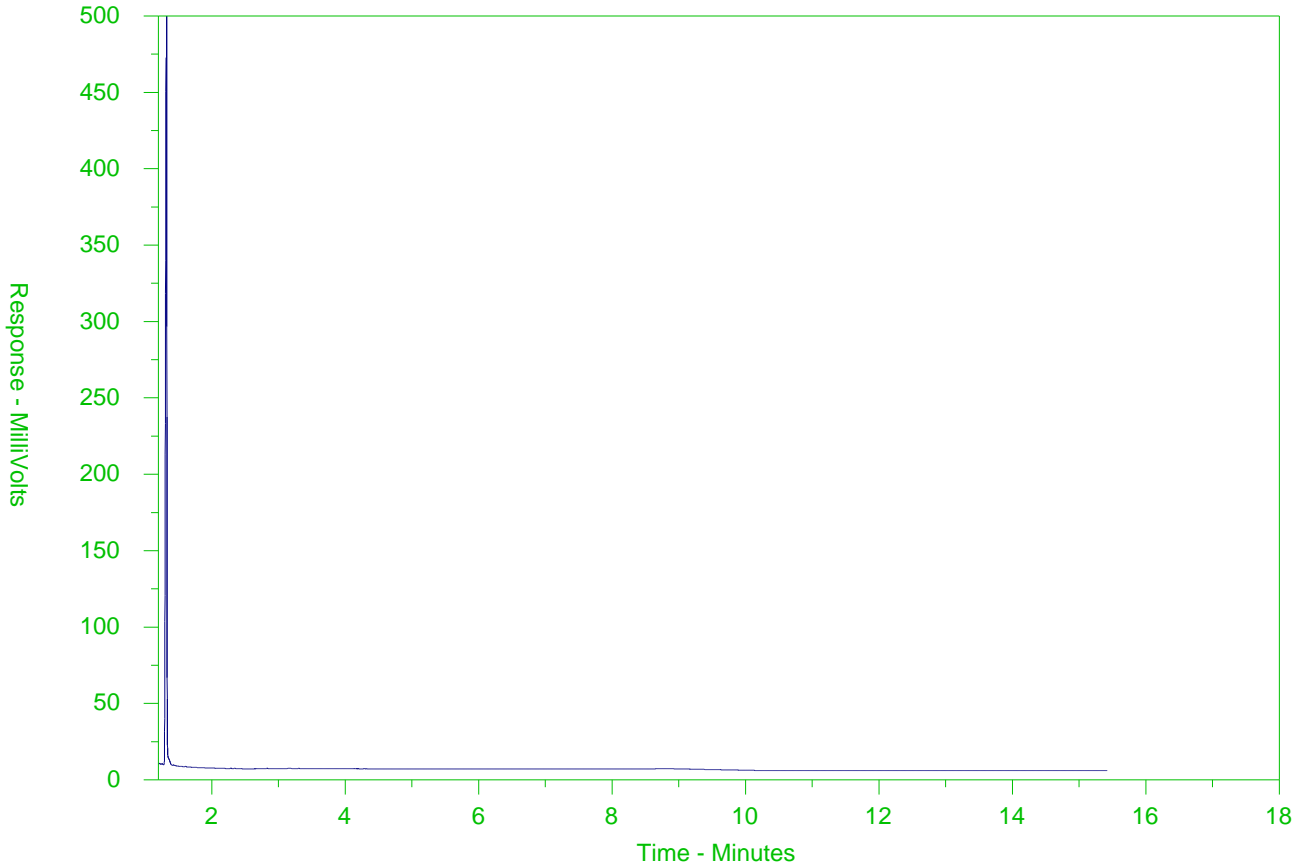
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2477293-2
 Client Sample ID: FR_SKP2H_WS_2020-07-19_N



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	20200720 - 0900	TURNAROUND TIME:	RUSH:
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PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	ali.schroeder@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	F	N	F	N	N	N	N	N	N	N	N
								PREP	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate	
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY		
1	FR_USSKP2_WS_2020-07-19_N	FR_USSKP2	WS	NO	20-Jul-20	16:00	G	10	1	1	1	1	1	1	1	2	1		1		
2	FR_SKP2H_WS_2020-07-19_N	FR_SKP2H	WS	NO	20-Jul-20	16:25	G	10	1	1	1	1	1	1	1	2	1		1		
3	FR_HMW1S_QTR_2020-07-06_N	FR_HMW1S	WS	NO	20-Jul-20	13:12	G	6	1	1	1	1	1	1	1				1		
4	FR_HMW1D_QTR_2020-07-06_N	FR_HMW1D	WS	NO	20-Jul-20	13:39	G	6	1	1	1	1	1	1	1				1		
5	FR_FLD_QTR_2020-07-06_N	FR_FLD	WS	NO	20-Jul-20	13:12	G	6	1	1	1	1	1	1	1				1		
6	FR_DC1_QTR_2020-07-06_N	FR_DC1	WS	NO	20-Jul-20	13:12	G	6	1	1	1	1	1	1	1				1		
7	FR_TRP_QTR_2020-07-06_N	FR_TRP	WS	NO	20-Jul-20	12:00	G	6	1	1	1	1	1	1	1				1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Ali Schroeder	July 20, 2020	<i>[Signature]</i>	7/21/20 9:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Ali Schroeder	250-464-9462
Priority (2-3 business days) - 50% surcharge	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge		July 20, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 22-JUL-20
Report Date: 09-FEB-21 15:09 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2478087
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200721 - 0755
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported for Sample -1, -3, -4, and -5.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2478087-1 WS 21-JUL-20 14:45 FR_GH_WELL4_Q TR_2020-07-06_N	L2478087-2 WS 21-JUL-20 13:23 FR_TT43_QTR_20 20-07-06_N	L2478087-3 WS 21-JUL-20 09:55 FR_DC2_QTR_202 0-07-06_N	L2478087-4 WS 21-JUL-20 11:57 FR_MW- 1B_QTR_2020-07- 06_N	L2478087-5 WS 21-JUL-20 09:55 FR_HMW3_QTR_2 020-07-06_N	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	972	1040	761	460	790
	Hardness (as CaCO3) (mg/L)	626	646	479	276	490
	pH (pH)	8.27	8.21	7.49	7.77	7.54
	ORP (mV)	488	517	409	348	345
	Total Suspended Solids (mg/L)	1.4	<1.0	3.0	2.7	2.7
	Total Dissolved Solids (mg/L)	712 ^{DLHC}	773 ^{DLHC}	606 ^{DLHC}	333 ^{DLHC}	624 ^{DLHC}
	Turbidity (NTU)	1.71	<0.10	3.06	3.55	3.09
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	4.4	11.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	272	337	192	146	194
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	272	337	192	146	194
	Ammonia as N (mg/L)	0.221	<0.0050	0.0914	<0.0050	0.0977
	Bicarbonate (HCO3) (mg/L)	332 ^{DLHC}		234	178	237
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}		<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	3.1 ^{DLHC}	<2.5 ^{DLHC}	<0.50	<0.50	0.56
	Fluoride (F) (mg/L)	0.11 ^{DLHC}	0.14 ^{DLHC}	0.276	0.176	0.278
	Hydroxide (OH) (mg/L)	<5.0		<5.0	<5.0	<5.0
	Ion Balance (%)	105	99.7	98.4	99.6	99.9
	Nitrate (as N) (mg/L)	23.1 ^{DLHC}	25.4 ^{DLHC}	10.2	7.29	10.2
	Nitrite (as N) (mg/L)	0.0609 ^{DLHC}	<0.0050 ^{DLHC}	0.0062	<0.0010	0.0058
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0017	0.0014	0.0024	0.0015
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}	0.0054	0.0022	0.0066
	Sulfate (SO4) (mg/L)	234	220	252	103	253
	Anion Sum (meq/L)	12.1	13.1	9.82	5.59	9.91
	Cation Sum (meq/L)	12.7	13.1	9.66	5.57	9.89
	Cation - Anion Balance (%)	2.5	-0.2	-0.8	-0.2	-0.1
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.91	1.09	1.02	1.06	<0.50
	Total Organic Carbon (mg/L)	1.62	1.09	1.79	0.97	1.02
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0115	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00040	0.00019	0.00018	0.00018
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	0.00011

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2478087-1 WS 21-JUL-20 14:45 FR_GH_WELL4_Q TR_2020-07-06_N	L2478087-2 WS 21-JUL-20 13:23 FR_TT43_QTR_20 20-07-06_N	L2478087-3 WS 21-JUL-20 09:55 FR_DC2_QTR_202 0-07-06_N	L2478087-4 WS 21-JUL-20 11:57 FR_MW- 1B_QTR_2020-07- 06_N	L2478087-5 WS 21-JUL-20 09:55 FR_HMW3_QTR_2 020-07-06_N	
Grouping	Analyte					
WATER						
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0599	0.0480	0.0310	0.0755	0.0311
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	0.028	0.016	<0.010	0.016
	Cadmium (Cd)-Dissolved (ug/L)	0.0401	0.0253	0.0220	0.0087	0.0263
	Calcium (Ca)-Dissolved (mg/L)	147	150	115	71.5	115
	Chromium (Cr)-Dissolved (mg/L)	0.00068	<0.00010	<0.00010	0.00012	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.12	<0.10	0.12	<0.10	0.12
	Copper (Cu)-Dissolved (mg/L)	0.00275	0.00137	<0.00020	0.00047	0.00037
	Iron (Fe)-Dissolved (mg/L)	0.301	<0.010	0.108	<0.010	0.104
	Lead (Pb)-Dissolved (mg/L)	0.000397	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0312	0.0590	0.0270	0.0194	0.0268
	Magnesium (Mg)-Dissolved (mg/L)	62.7	65.8	46.5	23.6	49.2
	Manganese (Mn)-Dissolved (mg/L)	0.0231	0.00013	0.0539	0.00056	0.0517
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000426	0.00112	0.00103	0.00112	0.000994
	Nickel (Ni)-Dissolved (mg/L)	0.00082	0.00057	0.00109	<0.00050	0.00115
	Potassium (K)-Dissolved (mg/L)	1.50	3.58	1.80	1.06	1.85
	Selenium (Se)-Dissolved (ug/L)	76.9	99.2	73.1	23.1	75.2
	Silicon (Si)-Dissolved (mg/L)	2.09	1.95	1.36	1.82	1.40
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.75	2.25	0.912	0.823	0.920
	Strontium (Sr)-Dissolved (mg/L)	0.190	0.148	0.118	0.117	0.117
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00263	0.00480	0.00183	0.00124	0.00179
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.136	0.0022	0.0014	0.0011	0.0023

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2478087-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2478087-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2478087-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200721 - 0755

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2478087

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5167242							
WG3370609-2	LCS							
Acidity (as CaCO3)			108.3		%		85-115	25-JUL-20
WG3370609-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	25-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5167219							
WG3370559-5	LCS							
Alkalinity, Total (as CaCO3)			98.9		%		85-115	24-JUL-20
WG3370559-8	LCS							
Alkalinity, Total (as CaCO3)			98.3		%		85-115	24-JUL-20
WG3370559-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-JUL-20
WG3370559-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-JUL-20
Batch	R5167722							
WG3371107-5	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	27-JUL-20
WG3371107-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5167698							
WG3369849-2	LCS							
Beryllium (Be)-Dissolved			102.5		%		80-120	25-JUL-20
WG3369849-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-JUL-20
BIC-CL								
	Water							
Batch	R5167722							
WG3371107-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5166746							
WG3370070-2	LCS							
Bromide (Br)			105.4		%		85-115	23-JUL-20
WG3370070-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-JUL-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch R5167516								
WG3370872-10 LCS								
Dissolved Organic Carbon			102.3		%		80-120	24-JUL-20
WG3370872-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JUL-20
Batch R5167596								
WG3370875-6 LCS								
Dissolved Organic Carbon			99.97		%		80-120	25-JUL-20
WG3370875-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-JUL-20
C-TOT-ORG-LOW-CL Water								
Batch R5167516								
WG3370872-10 LCS								
Total Organic Carbon			104.4		%		80-120	24-JUL-20
WG3370872-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	24-JUL-20
Batch R5167596								
WG3370875-6 LCS								
Total Organic Carbon			102.6		%		80-120	25-JUL-20
WG3370875-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	25-JUL-20
CL-IC-N-CL Water								
Batch R5166746								
WG3370070-2 LCS								
Chloride (Cl)			103.3		%		90-110	23-JUL-20
WG3370070-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-JUL-20
CO3-CL Water								
Batch R5167722								
WG3371107-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	27-JUL-20
EC-L-PCT-CL Water								
Batch R5167219								
WG3370559-5 LCS								
Conductivity (@ 25C)			99.5		%		90-110	24-JUL-20
WG3370559-8 LCS								
Conductivity (@ 25C)			98.4		%		90-110	24-JUL-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R5167219							
WG3370559-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-JUL-20
WG3370559-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-JUL-20
Batch	R5167722							
WG3371107-5	LCS							
Conductivity (@ 25C)			96.9		%		90-110	27-JUL-20
WG3371107-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-JUL-20
F-IC-N-CL								
Water								
Batch	R5166746							
WG3370070-2	LCS							
Fluoride (F)			102.0		%		90-110	23-JUL-20
WG3370070-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	23-JUL-20
HG-D-CVAA-VA								
Water								
Batch	R5167799							
WG3371330-6	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	27-JUL-20
WG3371330-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-JUL-20
MET-D-CCMS-VA								
Water								
Batch	R5167698							
WG3369849-2	LCS							
Aluminum (Al)-Dissolved			99.2		%		80-120	25-JUL-20
Antimony (Sb)-Dissolved			101.1		%		80-120	25-JUL-20
Arsenic (As)-Dissolved			102.6		%		80-120	25-JUL-20
Barium (Ba)-Dissolved			99.7		%		80-120	25-JUL-20
Bismuth (Bi)-Dissolved			103.1		%		80-120	25-JUL-20
Boron (B)-Dissolved			104.3		%		80-120	25-JUL-20
Cadmium (Cd)-Dissolved			103.2		%		80-120	25-JUL-20
Calcium (Ca)-Dissolved			101.7		%		80-120	25-JUL-20
Chromium (Cr)-Dissolved			103.8		%		80-120	25-JUL-20
Cobalt (Co)-Dissolved			98.7		%		80-120	25-JUL-20
Copper (Cu)-Dissolved			99.2		%		80-120	25-JUL-20
Iron (Fe)-Dissolved			92.0		%		80-120	25-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167698							
WG3369849-2	LCS							
Lead (Pb)-Dissolved			96.8		%		80-120	25-JUL-20
Lithium (Li)-Dissolved			99.3		%		80-120	25-JUL-20
Magnesium (Mg)-Dissolved			99.9		%		80-120	25-JUL-20
Manganese (Mn)-Dissolved			102.5		%		80-120	25-JUL-20
Molybdenum (Mo)-Dissolved			102.5		%		80-120	25-JUL-20
Nickel (Ni)-Dissolved			101.1		%		80-120	25-JUL-20
Potassium (K)-Dissolved			98.7		%		80-120	25-JUL-20
Selenium (Se)-Dissolved			105.0		%		80-120	25-JUL-20
Silicon (Si)-Dissolved			104.8		%		60-140	25-JUL-20
Silver (Ag)-Dissolved			100.0		%		80-120	25-JUL-20
Sodium (Na)-Dissolved			102.9		%		80-120	25-JUL-20
Strontium (Sr)-Dissolved			98.5		%		80-120	25-JUL-20
Thallium (Tl)-Dissolved			99.5		%		80-120	25-JUL-20
Tin (Sn)-Dissolved			102.1		%		80-120	25-JUL-20
Titanium (Ti)-Dissolved			92.8		%		80-120	25-JUL-20
Uranium (U)-Dissolved			94.8		%		80-120	25-JUL-20
Vanadium (V)-Dissolved			102.9		%		80-120	25-JUL-20
Zinc (Zn)-Dissolved			108.8		%		80-120	25-JUL-20
WG3369849-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167698							
WG3369849-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JUL-20
NH3-L-F-CL								
	Water							
Batch	R5171059							
WG3372159-19	DUP	L2478087-5						
Ammonia as N		0.0977	0.0996		mg/L	1.9	20	28-JUL-20
WG3372159-18	LCS							
Ammonia as N			98.5		%		85-115	28-JUL-20
WG3372159-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-JUL-20
WG3372159-20	MS	L2478087-5						
Ammonia as N			96.6		%		75-125	28-JUL-20
NO2-L-IC-N-CL								
	Water							
Batch	R5166746							
WG3370070-2	LCS							
Nitrite (as N)			101.6		%		90-110	23-JUL-20
WG3370070-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-JUL-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5166746							
WG3370070-2	LCS							
Nitrate (as N)			103.5		%		90-110	23-JUL-20
WG3370070-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-JUL-20
OH-CL	Water							
Batch	R5167722							
WG3371107-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	27-JUL-20
ORP-CL	Water							
Batch	R5168002							
WG3371470-5	CRM	CL-ORP						
ORP			224		mV		210-230	27-JUL-20
WG3371470-7	CRM	CL-ORP						
ORP			217		mV		210-230	27-JUL-20
WG3371470-8	DUP	L2478087-5						
ORP		345	357	J	mV	12.4	15	27-JUL-20
P-T-L-COL-CL	Water							
Batch	R5166548							
WG3369889-14	LCS							
Phosphorus (P)-Total			102.8		%		80-120	24-JUL-20
WG3369889-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-JUL-20
PH-CL	Water							
Batch	R5167219							
WG3370559-5	LCS							
pH			6.98		pH		6.9-7.1	24-JUL-20
WG3370559-8	LCS							
pH			6.97		pH		6.9-7.1	24-JUL-20
Batch	R5167722							
WG3371107-5	LCS							
pH			6.97		pH		6.9-7.1	27-JUL-20
PO4-DO-L-COL-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5162942							
WG3368213-18 LCS								
Orthophosphate-Dissolved (as P)			102.7		%		80-120	22-JUL-20
WG3368213-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JUL-20
SO4-IC-N-CL	Water							
Batch	R5166746							
WG3370070-2 LCS								
Sulfate (SO4)			104.2		%		90-110	23-JUL-20
WG3370070-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	23-JUL-20
SOLIDS-TDS-CL	Water							
Batch	R5167902							
WG3370638-8 LCS								
Total Dissolved Solids			98.4		%		85-115	26-JUL-20
WG3370638-7 MB								
Total Dissolved Solids			<10		mg/L		10	26-JUL-20
TKN-L-F-CL	Water							
Batch	R5167703							
WG3371135-2 LCS								
Total Kjeldahl Nitrogen			100.4		%		75-125	24-JUL-20
WG3371135-4 LCS								
Total Kjeldahl Nitrogen			97.9		%		75-125	24-JUL-20
WG3371135-6 LCS								
Total Kjeldahl Nitrogen			99.5		%		75-125	24-JUL-20
WG3371135-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JUL-20
WG3371135-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JUL-20
WG3371135-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JUL-20
TSS-L-CL	Water							
Batch	R5169563							
WG3370699-8 LCS								
Total Suspended Solids			98.0		%		85-115	27-JUL-20
WG3370699-7 MB								
Total Suspended Solids			<1.0		mg/L		1	27-JUL-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5163517							
WG3368597-11	LCS							
Turbidity			97.9		%		85-115	22-JUL-20
WG3368597-10	MB							
Turbidity			<0.10		NTU		0.1	22-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	21-JUL-20 14:45	27-JUL-20 20:00	0.25	149	hours	EHTR-FM
	2	21-JUL-20 13:23	27-JUL-20 20:00	0.25	151	hours	EHTR-FM
	3	21-JUL-20 09:55	27-JUL-20 20:00	0.25	154	hours	EHTR-FM
	4	21-JUL-20 11:57	27-JUL-20 20:00	0.25	152	hours	EHTR-FM
	5	21-JUL-20 09:55	27-JUL-20 20:00	0.25	154	hours	EHTR-FM
pH							
	1	21-JUL-20 14:45	24-JUL-20 13:00	0.25	70	hours	EHTR-FM
	2	21-JUL-20 13:23	24-JUL-20 13:00	0.25	72	hours	EHTR-FM
	3	21-JUL-20 09:55	27-JUL-20 14:00	0.25	148	hours	EHTR-FM
	4	21-JUL-20 11:57	27-JUL-20 14:00	0.25	146	hours	EHTR-FM
	5	21-JUL-20 09:55	27-JUL-20 14:00	0.25	148	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2478087 were received on 22-JUL-20 08:45.

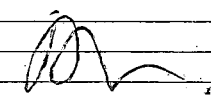
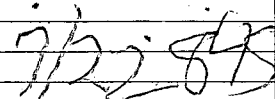
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.


The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200721 - 0755		TURNAROUND TIME:				RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com		Excel	PDF	EDD
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: britt.anderson@teck.com		X	X	X
Address				Address 2559 29 Street NE				Email 3: scott.roughead@teck.com		X	X	X
City Elkford				Province BC		City Calgary		Province AB		Email 4: teckcoal@equisonline.com		
Postal Code				Country Canada		Postal Code T1Y 7B5		Country Canada		Email 5: ali.schroeder@teck.com		
Phone Number 1-250-433-6976				Phone Number 403 407 1794				PO number		VPO00680583		

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	F	N	F	N	F	N	N	N	N	N	N	N	N		
								PREP	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate			
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY				
FR_GH_WELL4_QTR_2020-07-06_N	FR_GH_WELL4	WS	NO	21-Jul-20	14:45	G	6		1	1	1		1		1						1		
FR_TT43_QTR_2020-07-06_N	FR_TT43	WS	NO	21-Jul-20	13:23	G	6		1	1	1		1		1							1	
FR_DC2_QTR_2020-07-06_N	FR_DC2	WS	NO	21-Jul-20	9:55	G	6		1	1	1		1		1							1	
FR_MW-1B_QTR_2020-07-06_N	FR_MW-1B	WS	NO	21-Jul-20	11:57	G	6		1	1	1		1		1							1	
FR_HMW3_QTR_2020-07-06_N	FR_HMW3	WS	NO	21-Jul-20	9:55	G	6		1	1	1		1		1							1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Ali Schroeder	July 21, 2020		

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Ali Schroeder	Mobile #	250-464-9462
Sampler's Signature		Date/Time	July 21, 2020 



L2478087-COFC



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 24-JUL-20
Report Date: 09-FEB-21 15:12 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2479315
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200723 - 1510
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2479315-1	L2479315-2	L2479315-3	L2479315-4	L2479315-5
					WS	WS	WS	WS	WS
		23-JUL-20	13:35	FR_09-01-A_QTR_2020-07-06_N	23-JUL-20	23-JUL-20	23-JUL-20	23-JUL-20	23-JUL-20
					13:35	13:12	12:27	12:38	12:27
					FR_09-01-A_QTR_2020-07-06_N	FR_09-01-B_QTR_2020-07-06_N	FR_09-02-A_QTR_2020-07-06_N	FR_09-02-B_QTR_2020-07-06_N	FR_DC3_QTR_2020-07-06_N
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	1030	926	951	920	953			
	Hardness (as CaCO3) (mg/L)	644	574	625	590	649			
	pH (pH)	8.10	7.97	7.90	7.95	7.90			
	ORP (mV)	303	325	327	304	284			
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.4	1.2	1.4			
	Total Dissolved Solids (mg/L)	827 ^{DLHC}	744 ^{DLHC}	812 ^{DLHC}	773 ^{DLHC}	791 ^{DLHC}			
	Turbidity (NTU)	<0.10	0.30	1.40	0.97	0.72			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.8	3.7	4.6	3.7	4.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	295	247	254	242	261			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	295	247	254	242	261			
	Ammonia as N (mg/L)	0.0157	<0.0050	0.0063	<0.0050	<0.0050			
	Bicarbonate (HCO3) (mg/L)	359 ^{DLHC}	302 ^{DLHC}	310 ^{DLHC}	295 ^{DLHC}	319 ^{DLHC}			
	Bromide (Br) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<2.5 ^{DLHC}	<2.5 ^{DLHC}			
	Fluoride (F) (mg/L)	0.25 ^{DLHC}	0.16 ^{DLHC}	0.16 ^{DLHC}	0.19 ^{DLHC}	0.15 ^{DLHC}			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	105	105	111	107	113			
	Nitrate (as N) (mg/L)	25.8 ^{DLHC}	22.6 ^{DLHC}	21.7 ^{DLHC}	18.1 ^{DLHC}	21.7 ^{DLHC}			
	Nitrite (as N) (mg/L)	0.0059 ^{DLHC}	0.0169 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}			
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.050 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0036	0.0028	0.0048	0.0033	0.0044			
	Phosphorus (P)-Total (mg/L)	0.0033	0.0028	0.0055	0.0042	0.0065			
	Sulfate (SO4) (mg/L)	224 ^{DLHC}	220 ^{DLHC}	231 ^{DLHC}	244 ^{DLHC}	235 ^{DLHC}			
	Anion Sum (meq/L)	12.4	11.1	11.4	11.2	11.7			
	Cation Sum (meq/L)	13.1	11.6	12.7	12.0	13.2			
Cation - Anion Balance (%)	2.6	2.2	5.1	3.2	6.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.67	0.65	0.73	0.74	0.62			
	Total Organic Carbon (mg/L)	0.56	1.02	0.65	0.69	0.63			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00041	0.00014	0.00034	0.00013	0.00033			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2479315-1	L2479315-2	L2479315-3	L2479315-4	L2479315-5
					WS	WS	WS	WS	WS
		23-JUL-20	13:35	FR_09-01-A_QTR_2020-07-06_N	23-JUL-20	23-JUL-20	23-JUL-20	23-JUL-20	23-JUL-20
					13:12	13:12	12:27	12:38	12:27
					FR_09-01-A_QTR_2020-07-06_N	FR_09-01-B_QTR_2020-07-06_N	FR_09-02-A_QTR_2020-07-06_N	FR_09-02-B_QTR_2020-07-06_N	FR_DC3_QTR_2020-07-06_N
Grouping	Analyte								
WATER									
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0668	0.0861	0.163	0.156	0.159			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.022	0.016	0.019	0.014	0.027			
	Cadmium (Cd)-Dissolved (ug/L)	0.0254	0.0149	0.0290	0.0270	0.0402			
	Calcium (Ca)-Dissolved (mg/L)	147	126	138	134	146			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.14	0.27	0.13			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00022	0.00038	0.00055			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000102			
	Lithium (Li)-Dissolved (mg/L)	0.0562	0.0551	0.0550	0.0502	0.0584			
	Magnesium (Mg)-Dissolved (mg/L)	67.4	62.6	68.3	61.8	68.8			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00030			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00266	0.00115	0.00251	0.00132	0.00240			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00051	0.00078	0.00062			
	Potassium (K)-Dissolved (mg/L)	3.45	2.58	2.62	1.96	2.70			
	Selenium (Se)-Dissolved (ug/L)	101	91.4	84.9	69.5	85.5			
	Silicon (Si)-Dissolved (mg/L)	1.79	1.96	1.94	1.96	1.99			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.65	2.86	2.93	2.97	3.03			
	Strontium (Sr)-Dissolved (mg/L)	0.151	0.168	0.190	0.201	0.187			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00659	0.00489	0.00545	0.00425	0.00555			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0012	0.0048			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2479315-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2479315-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2479315-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L2479315-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200723 - 1510

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2479315

Report Date: 09-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5170220							
WG3372521-2	LCS							
Acidity (as CaCO3)			97.4		%		85-115	28-JUL-20
WG3372521-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5167388							
WG3370844-8	LCS							
Alkalinity, Total (as CaCO3)			101.6		%		85-115	24-JUL-20
WG3370844-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5167756							
WG3370684-2	LCS							
Beryllium (Be)-Dissolved			98.3		%		80-120	27-JUL-20
WG3370684-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-JUL-20
BIC-CL								
	Water							
Batch	R5167388							
WG3370844-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5166993							
WG3370378-2	LCS							
Bromide (Br)			105.1		%		85-115	24-JUL-20
WG3370378-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-JUL-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5171156							
WG3372693-6	LCS							
Dissolved Organic Carbon			91.1		%		80-120	30-JUL-20
WG3372693-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-JUL-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2479315

Report Date: 09-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5171156							
WG3372693-6	LCS							
Total Organic Carbon			90.2		%		80-120	30-JUL-20
WG3372693-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-JUL-20
CL-IC-N-CL	Water							
Batch	R5166993							
WG3370378-2	LCS							
Chloride (Cl)			104.4		%		90-110	24-JUL-20
WG3370378-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	24-JUL-20
CO3-CL	Water							
Batch	R5167388							
WG3370844-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	24-JUL-20
EC-L-PCT-CL	Water							
Batch	R5167388							
WG3370844-8	LCS							
Conductivity (@ 25C)			100.9		%		90-110	24-JUL-20
WG3370844-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-JUL-20
F-IC-N-CL	Water							
Batch	R5166993							
WG3370378-2	LCS							
Fluoride (F)			103.6		%		90-110	24-JUL-20
WG3370378-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-JUL-20
HG-D-CVAA-VA	Water							
Batch	R5168095							
WG3372051-11	DUP	L2479315-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JUL-20
WG3372051-10	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	28-JUL-20
WG3372051-14	LCS							
Mercury (Hg)-Dissolved			102.9		%		80-120	28-JUL-20
WG3372051-13	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	28-JUL-20



Quality Control Report

Workorder: L2479315

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5168095							
WG3372051-9 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-JUL-20
WG3372051-12 MS		L2479315-4						
Mercury (Hg)-Dissolved			96.2		%		70-130	28-JUL-20
MET-D-CCMS-VA								
	Water							
Batch	R5167756							
WG3370684-2 LCS								
Aluminum (Al)-Dissolved			101.1		%		80-120	27-JUL-20
Antimony (Sb)-Dissolved			98.4		%		80-120	27-JUL-20
Arsenic (As)-Dissolved			96.3		%		80-120	27-JUL-20
Barium (Ba)-Dissolved			97.7		%		80-120	27-JUL-20
Bismuth (Bi)-Dissolved			102.9		%		80-120	27-JUL-20
Boron (B)-Dissolved			97.9		%		80-120	27-JUL-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	27-JUL-20
Calcium (Ca)-Dissolved			100.8		%		80-120	27-JUL-20
Chromium (Cr)-Dissolved			102.3		%		80-120	27-JUL-20
Cobalt (Co)-Dissolved			100.7		%		80-120	27-JUL-20
Copper (Cu)-Dissolved			99.2		%		80-120	27-JUL-20
Iron (Fe)-Dissolved			100.9		%		80-120	27-JUL-20
Lead (Pb)-Dissolved			103.4		%		80-120	27-JUL-20
Lithium (Li)-Dissolved			95.6		%		80-120	27-JUL-20
Magnesium (Mg)-Dissolved			102.3		%		80-120	27-JUL-20
Manganese (Mn)-Dissolved			102.8		%		80-120	27-JUL-20
Molybdenum (Mo)-Dissolved			100.9		%		80-120	27-JUL-20
Nickel (Ni)-Dissolved			102.1		%		80-120	27-JUL-20
Potassium (K)-Dissolved			101.1		%		80-120	27-JUL-20
Selenium (Se)-Dissolved			96.0		%		80-120	27-JUL-20
Silicon (Si)-Dissolved			99.6		%		60-140	27-JUL-20
Silver (Ag)-Dissolved			103.2		%		80-120	27-JUL-20
Sodium (Na)-Dissolved			100.7		%		80-120	27-JUL-20
Strontium (Sr)-Dissolved			104.9		%		80-120	27-JUL-20
Thallium (Tl)-Dissolved			99.9		%		80-120	27-JUL-20
Tin (Sn)-Dissolved			99.2		%		80-120	27-JUL-20
Titanium (Ti)-Dissolved			97.5		%		80-120	27-JUL-20
Uranium (U)-Dissolved			102.4		%		80-120	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5167756							
WG3370684-2	LCS							
Vanadium (V)-Dissolved			101.3		%		80-120	27-JUL-20
Zinc (Zn)-Dissolved			103.8		%		80-120	27-JUL-20
WG3370684-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JUL-20

NH3-L-F-CL

Water

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5171963							
WG3373007-23	DUP	L2479315-5						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	29-JUL-20
WG3373007-18	LCS							
Ammonia as N			91.7		%		85-115	29-JUL-20
WG3373007-22	LCS							
Ammonia as N			89.9		%		85-115	29-JUL-20
WG3373007-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	29-JUL-20
WG3373007-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	29-JUL-20
WG3373007-24	MS	L2479315-5						
Ammonia as N			88.8		%		75-125	29-JUL-20
NO2-L-IC-N-CL								
Water								
Batch	R5166993							
WG3370378-2	LCS							
Nitrite (as N)			103.0		%		90-110	24-JUL-20
WG3370378-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-JUL-20
NO3-L-IC-N-CL								
Water								
Batch	R5166993							
WG3370378-2	LCS							
Nitrate (as N)			104.7		%		90-110	24-JUL-20
WG3370378-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-JUL-20
OH-CL								
Water								
Batch	R5167388							
WG3370844-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-JUL-20
ORP-CL								
Water								
Batch	R5169926							
WG3372229-5	CRM	CL-ORP						
ORP			226		mV		210-230	28-JUL-20
WG3372229-7	CRM	CL-ORP						
ORP			225		mV		210-230	28-JUL-20
WG3372229-8	DUP	L2479315-1						
ORP		303	300	J	mV	2.2	15	28-JUL-20
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5168976							
WG3371937-10 LCS								
Phosphorus (P)-Total			97.2		%		80-120	28-JUL-20
WG3371937-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-JUL-20
PH-CL	Water							
Batch	R5167388							
WG3370844-8 LCS								
pH			6.98		pH		6.9-7.1	24-JUL-20
PO4-DO-L-COL-CL	Water							
Batch	R5166881							
WG3370100-6 LCS								
Orthophosphate-Dissolved (as P)			97.0		%		80-120	24-JUL-20
WG3370100-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JUL-20
SO4-IC-N-CL	Water							
Batch	R5166993							
WG3370378-2 LCS								
Sulfate (SO4)			100.1		%		90-110	24-JUL-20
WG3370378-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-JUL-20
SOLIDS-TDS-CL	Water							
Batch	R5171670							
WG3371664-8 LCS								
Total Dissolved Solids			99.4		%		85-115	28-JUL-20
WG3371664-7 MB								
Total Dissolved Solids			<10		mg/L		10	28-JUL-20
TKN-L-F-CL	Water							
Batch	R5167981							
WG3371447-13 LCS								
Total Kjeldahl Nitrogen			80.2		%		75-125	27-JUL-20
WG3371447-17 LCS								
Total Kjeldahl Nitrogen			80.0		%		75-125	27-JUL-20
WG3371447-2 LCS								
Total Kjeldahl Nitrogen			82.1		%		75-125	27-JUL-20
WG3371447-6 LCS								
Total Kjeldahl Nitrogen			80.0		%		75-125	27-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5167981							
WG3371447-9	LCS							
Total Kjeldahl Nitrogen			78.5		%		75-125	27-JUL-20
WG3371447-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUL-20
WG3371447-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUL-20
WG3371447-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUL-20
WG3371447-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUL-20
WG3371447-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JUL-20
TSS-L-CL		Water						
Batch	R5171631							
WG3371660-2	LCS							
Total Suspended Solids			94.8		%		85-115	28-JUL-20
WG3371660-4	LCS							
Total Suspended Solids			105.0		%		85-115	28-JUL-20
WG3371660-1	MB							
Total Suspended Solids			<1.0		mg/L		1	28-JUL-20
WG3371660-3	MB							
Total Suspended Solids			<1.0		mg/L		1	28-JUL-20
TURBIDITY-CL		Water						
Batch	R5166897							
WG3370072-5	LCS							
Turbidity			98.9		%		85-115	24-JUL-20
WG3370072-4	MB							
Turbidity			<0.10		NTU		0.1	24-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2479315

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	23-JUL-20 13:35	28-JUL-20 16:00	0.25	122	hours	EHTR-FM
	2	23-JUL-20 13:12	28-JUL-20 16:00	0.25	123	hours	EHTR-FM
	3	23-JUL-20 12:27	28-JUL-20 16:00	0.25	124	hours	EHTR-FM
	4	23-JUL-20 12:38	28-JUL-20 16:00	0.25	123	hours	EHTR-FM
	5	23-JUL-20 12:27	28-JUL-20 16:00	0.25	124	hours	EHTR-FM
pH							
	1	23-JUL-20 13:35	24-JUL-20 13:00	0.25	24	hours	EHTR-FM
	2	23-JUL-20 13:12	24-JUL-20 13:00	0.25	24	hours	EHTR-FM
	3	23-JUL-20 12:27	24-JUL-20 13:00	0.25	24	hours	EHTR-FM
	4	23-JUL-20 12:38	24-JUL-20 13:00	0.25	24	hours	EHTR-FM
	5	23-JUL-20 12:27	24-JUL-20 13:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2479315 were received on 24-JUL-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200723 - 1510		TURNAROUND TIME:				RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Scott Routhead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com		Excel	PDF	EDD
Email scott.routhead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: britt.anderson@teck.com		X	X	X
Address				Address 2559 29 Street NE				Email 3: scott.routhead@teck.com		X	X	X
City Elkford				Province BC		City Calgary		Province AB		Email 4: teckcoal@equisonline.com		
Postal Code				Country Canada		Postal Code T1Y 7B5		Country Canada		Email 5: eli.schroeder@teck.com		
Phone Number 1-250-433-6976				Phone Number 403 407 1794				PO number		VPO00680583		

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N	N	N	N	N	N	N
								PREP	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY	
FR_09-01-A_QTR_2020-07-06_N	FR_09-01-A	WS	NO	23-Jul-20	13:35	G	6	1	1	1		1		1					1	
FR_09-01-B_QTR_2020-07-06_N	FR_09-01-B	WS	NO	23-Jul-20	13:12	G	6	1	1	1		1		1					1	
FR_09-02-A_QTR_2020-07-06_N	FR_09-02-A	WS	NO	23-Jul-20	12:27	G	6	1	1	1		1		1					1	
FR_09-02-B_QTR_2020-07-06_N	FR_09-02-B	WS	NO	23-Jul-20	12:38	G	6	1	1	1		1		1					1	
FR_DC3_QTR_2020-07-06_N	FR_DC3	WS	NO	23-Jul-20	12:27	G	6	1	1	1		1		1					1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kaileigh McCallum	July 23, 2020	<i>[Signature]</i>	7/23/20

SERVICE REQUEST (rush - subject to availability) <input type="checkbox"/>		Regular (default) <input checked="" type="checkbox"/>	
Priority (2-3 business days) - 50% surcharge	Sampler's Name	Kaileigh McCallum	Mobile #
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			July 23, 2020



L2479315-COFC



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 28-JUL-20
Report Date: 09-FEB-21 15:15 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2480729
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200727 - 0815
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2480729-1 WS 27-JUL-20 14:25 FR_MW- SK1A_QTR_2020- 07-06_N	L2480729-2 WS 27-JUL-20 12:51 FR_MW- SK1B_QTR_2020- 07-06_N	L2480729-3 WS 27-JUL-20 10:00 FR_GCMW- 2_QTR_2020-07- 06_N	L2480729-4 WS 27-JUL-20 11:20 FR_POTWELLS_Q TR_2020-07-06_N
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1190	980	1050	406
	Hardness (as CaCO3) (mg/L)	683	545	591	194
	pH (pH)	8.01	7.91	7.94	8.08
	ORP (mV)	421	380	379	388
	Total Suspended Solids (mg/L)	1.3	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	973 ^{DLHC}	730 ^{DLHC}	814 ^{DLHC}	257 ^{DLHC}
	Turbidity (NTU)	0.11	0.54	0.23	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.4	5.8	2.7	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	326	268	216	129
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	326	268	216	129
	Ammonia as N (mg/L)	0.0315	0.0115	0.0363	0.0339
	Bicarbonate (HCO3) (mg/L)	397 ^{DLHC}	326	264 ^{DLHC}	158
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0	<5.0 ^{DLHC}	<5.0
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	4.36	<2.5 ^{DLHC}	<0.50
	Fluoride (F) (mg/L)	<0.10 ^{DLHC}	0.116	<0.10 ^{DLHC}	0.185
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	98.6	99.1	100	96.7
	Nitrate (as N) (mg/L)	30.6 ^{DLHC}	7.05	26.0 ^{DLHC}	1.70
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0370 ^{TKNI}	<0.0050 ^{DLHC}	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}	0.252
	Orthophosphate-Dissolved (as P) (mg/L)	0.0045	0.0011	0.0025	0.0029
	Phosphorus (P)-Total (mg/L)	0.0039 ^{DLHC}	<0.0020	0.0037 ^{DLHC}	0.0046 ^{DLM}
	Sulfate (SO4) (mg/L)	258	252	280	64.5
	Anion Sum (meq/L)	14.1	11.2	12.0	4.06
	Cation Sum (meq/L)	13.9	11.1	12.0	3.93
	Cation - Anion Balance (%)	-0.7	-0.4	0.0	-1.7
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.96 ^{DTC}	1.21	1.02
Total Organic Carbon (mg/L)		1.03 ^{DTC}	1.06	1.65	0.71
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00038	0.00037	0.00046	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00012	0.00018	0.00016	0.00012

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2480729-1 WS 27-JUL-20 14:25 FR_MW- SK1A_QTR_2020- 07-06_N	L2480729-2 WS 27-JUL-20 12:51 FR_MW- SK1B_QTR_2020- 07-06_N	L2480729-3 WS 27-JUL-20 10:00 FR_GCMW- 2_QTR_2020-07- 06_N	L2480729-4 WS 27-JUL-20 11:20 FR_POTWELLS_Q TR_2020-07-06_N	
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0648	0.0381	0.0655	0.0534
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.023	0.014	0.019	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	0.0287	0.0456	0.0415	0.0079
	Calcium (Ca)-Dissolved (mg/L)	158	145	133	51.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.83	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00462	0.00064
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000056	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0551	0.0118	0.122	0.0056
	Magnesium (Mg)-Dissolved (mg/L)	70.3	44.5	62.8	16.2
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.449	0.00016	0.00013
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00192	0.000373	0.00211	0.000702
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00281	0.00216	<0.00050
	Potassium (K)-Dissolved (mg/L)	3.48	1.16	3.46	0.617
	Selenium (Se)-Dissolved (ug/L)	119	8.93	80.5	11.2
	Silicon (Si)-Dissolved (mg/L)	2.12	3.19	2.08	1.63
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.19	4.42	2.81	0.547
	Strontium (Sr)-Dissolved (mg/L)	0.163	0.258	0.209	0.0974
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000017	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00589	0.00470	0.00619	0.000739
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0017	0.0043	0.0026

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2480729-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2480729-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200727 - 0815

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2480729

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5171529							
WG3373009-5	LCS							
Acidity (as CaCO3)			103.2		%		85-115	29-JUL-20
WG3373009-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	29-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5171895							
WG3373465-12	DUP	L2480729-1						
Alkalinity, Total (as CaCO3)		326	325		mg/L	0.1	20	29-JUL-20
WG3373465-11	LCS							
Alkalinity, Total (as CaCO3)			97.5		%		85-115	29-JUL-20
WG3373465-14	LCS							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	29-JUL-20
WG3373465-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JUL-20
WG3373465-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5173072							
WG3373947-2	LCS							
Beryllium (Be)-Dissolved			95.6		%		80-120	30-JUL-20
WG3373947-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JUL-20
BIC-CL								
	Water							
Batch	R5171895							
WG3373465-12	DUP	L2480729-1						
Bicarbonate (HCO3)		397	397		mg/L	0.1	20	29-JUL-20
WG3373465-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JUL-20
WG3373465-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5171923							
WG3373492-2	LCS							
Bromide (Br)			107.2		%		85-115	29-JUL-20
WG3373492-6	LCS							
Bromide (Br)			101.0		%		85-115	29-JUL-20
WG3373492-1	MB							

Quality Control Report

Workorder: L2480729

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL	Water							
Batch	R5171923							
WG3373492-1 MB								
Bromide (Br)			<0.050		mg/L		0.05	29-JUL-20
WG3373492-5 MB								
Bromide (Br)			<0.050		mg/L		0.05	29-JUL-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5173871							
WG3375658-2 LCS								
Dissolved Organic Carbon			92.2		%		80-120	31-JUL-20
WG3375658-6 LCS								
Dissolved Organic Carbon			89.9		%		80-120	31-JUL-20
WG3375658-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
WG3375658-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5173871							
WG3375658-2 LCS								
Total Organic Carbon			92.4		%		80-120	31-JUL-20
WG3375658-6 LCS								
Total Organic Carbon			92.1		%		80-120	31-JUL-20
WG3375658-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
WG3375658-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
CL-IC-N-CL	Water							
Batch	R5171923							
WG3373492-2 LCS								
Chloride (Cl)			101.8		%		90-110	29-JUL-20
WG3373492-6 LCS								
Chloride (Cl)			100.8		%		90-110	29-JUL-20
WG3373492-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	29-JUL-20
WG3373492-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	29-JUL-20
CO3-CL	Water							

Quality Control Report

Workorder: L2480729

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL								
Water								
Batch	R5171895							
WG3373465-12	DUP	L2480729-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	29-JUL-20
WG3373465-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	29-JUL-20
WG3373465-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	29-JUL-20
EC-L-PCT-CL								
Water								
Batch	R5171895							
WG3373465-12	DUP	L2480729-1						
Conductivity (@ 25C)		1190	1200		uS/cm	0.5	10	29-JUL-20
WG3373465-11	LCS							
Conductivity (@ 25C)			98.8		%		90-110	29-JUL-20
WG3373465-14	LCS							
Conductivity (@ 25C)			100.9		%		90-110	29-JUL-20
WG3373465-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JUL-20
WG3373465-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JUL-20
F-IC-N-CL								
Water								
Batch	R5171923							
WG3373492-2	LCS							
Fluoride (F)			105.5		%		90-110	29-JUL-20
WG3373492-6	LCS							
Fluoride (F)			102.5		%		90-110	29-JUL-20
WG3373492-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	29-JUL-20
WG3373492-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	29-JUL-20
MET-D-CCMS-VA								
Water								
Batch	R5173072							
WG3373947-2	LCS							
Aluminum (Al)-Dissolved			96.9		%		80-120	30-JUL-20
Antimony (Sb)-Dissolved			99.2		%		80-120	30-JUL-20
Arsenic (As)-Dissolved			98.5		%		80-120	30-JUL-20
Barium (Ba)-Dissolved			101.2		%		80-120	30-JUL-20
Bismuth (Bi)-Dissolved			100.3		%		80-120	30-JUL-20
Boron (B)-Dissolved			91.7		%		80-120	30-JUL-20



Quality Control Report

Workorder: L2480729

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173072							
WG3373947-2	LCS							
Cadmium (Cd)-Dissolved			93.6		%		80-120	30-JUL-20
Calcium (Ca)-Dissolved			99.3		%		80-120	30-JUL-20
Chromium (Cr)-Dissolved			101.5		%		80-120	30-JUL-20
Cobalt (Co)-Dissolved			102.1		%		80-120	30-JUL-20
Copper (Cu)-Dissolved			99.9		%		80-120	30-JUL-20
Iron (Fe)-Dissolved			93.7		%		80-120	30-JUL-20
Lead (Pb)-Dissolved			100.5		%		80-120	30-JUL-20
Lithium (Li)-Dissolved			99.2		%		80-120	30-JUL-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	30-JUL-20
Manganese (Mn)-Dissolved			100.6		%		80-120	30-JUL-20
Molybdenum (Mo)-Dissolved			96.0		%		80-120	30-JUL-20
Nickel (Ni)-Dissolved			99.7		%		80-120	30-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	30-JUL-20
Selenium (Se)-Dissolved			93.3		%		80-120	30-JUL-20
Silicon (Si)-Dissolved			97.9		%		60-140	30-JUL-20
Silver (Ag)-Dissolved			101.3		%		80-120	30-JUL-20
Sodium (Na)-Dissolved			104.2		%		80-120	30-JUL-20
Strontium (Sr)-Dissolved			108.2		%		80-120	30-JUL-20
Thallium (Tl)-Dissolved			98.7		%		80-120	30-JUL-20
Tin (Sn)-Dissolved			97.7		%		80-120	30-JUL-20
Titanium (Ti)-Dissolved			92.9		%		80-120	30-JUL-20
Uranium (U)-Dissolved			101.4		%		80-120	30-JUL-20
Vanadium (V)-Dissolved			100.6		%		80-120	30-JUL-20
Zinc (Zn)-Dissolved			102.3		%		80-120	30-JUL-20
WG3373947-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173072							
WG3373947-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JUL-20
NH3-L-F-CL								
	Water							
Batch	R5175008							
WG3376944-22	LCS							
Ammonia as N			100.1		%		85-115	05-AUG-20
WG3376944-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5171923							
WG3373492-2	LCS							
Nitrite (as N)			101.7		%		90-110	29-JUL-20
WG3373492-6	LCS							
Nitrite (as N)			100.5		%		90-110	29-JUL-20
WG3373492-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-JUL-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch R5171923								
WG3373492-5 MB								
Nitrite (as N)								
			<0.0010		mg/L		0.001	29-JUL-20
NO3-L-IC-N-CL								
Water								
Batch R5171923								
WG3373492-2 LCS								
Nitrate (as N)								
			102.6		%		90-110	29-JUL-20
WG3373492-6 LCS								
Nitrate (as N)								
			102.4		%		90-110	29-JUL-20
WG3373492-1 MB								
Nitrate (as N)								
			<0.0050		mg/L		0.005	29-JUL-20
WG3373492-5 MB								
Nitrate (as N)								
			<0.0050		mg/L		0.005	29-JUL-20
OH-CL								
Water								
Batch R5171895								
WG3373465-12 DUP								
Hydroxide (OH)								
		L2480729-1	<5.0	RPD-NA	mg/L	N/A	25	29-JUL-20
WG3373465-10 MB								
Hydroxide (OH)								
			<5.0		mg/L		5	29-JUL-20
WG3373465-13 MB								
Hydroxide (OH)								
			<5.0		mg/L		5	29-JUL-20
ORP-CL								
Water								
Batch R5172332								
WG3373943-3 CRM								
ORP								
		CL-ORP	222		mV		210-230	30-JUL-20
P-T-L-COL-CL								
Water								
Batch R5172172								
WG3373762-18 LCS								
Phosphorus (P)-Total								
			99.3		%		80-120	30-JUL-20
WG3373762-17 MB								
Phosphorus (P)-Total								
			<0.0020		mg/L		0.002	30-JUL-20
Batch R5172911								
WG3374649-2 LCS								
Phosphorus (P)-Total								
			106.9		%		80-120	31-JUL-20
WG3374649-1 MB								
Phosphorus (P)-Total								
			<0.0020		mg/L		0.002	31-JUL-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch	R5171895							
WG3373465-12	DUP	L2480729-1						
pH		8.01	8.06	J	pH	0.05	0.2	29-JUL-20
WG3373465-11	LCS							
pH			6.96		pH		6.9-7.1	29-JUL-20
WG3373465-14	LCS							
pH			6.97		pH		6.9-7.1	29-JUL-20
PO4-DO-L-COL-CL								
Water								
Batch	R5169890							
WG3371921-18	LCS							
Orthophosphate-Dissolved (as P)			102.6		%		80-120	28-JUL-20
WG3371921-22	LCS							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	28-JUL-20
WG3371921-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-JUL-20
WG3371921-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-JUL-20
SO4-IC-N-CL								
Water								
Batch	R5171923							
WG3373492-2	LCS							
Sulfate (SO4)			102.3		%		90-110	29-JUL-20
WG3373492-6	LCS							
Sulfate (SO4)			101.5		%		90-110	29-JUL-20
WG3373492-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	29-JUL-20
WG3373492-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	29-JUL-20
SOLIDS-TDS-CL								
Water								
Batch	R5173103							
WG3373434-5	LCS							
Total Dissolved Solids			100.6		%		85-115	30-JUL-20
WG3373434-4	MB							
Total Dissolved Solids			<10		mg/L		10	30-JUL-20
TKN-L-F-CL								
Water								
Batch	R5172478							
WG3374122-10	LCS							
Total Kjeldahl Nitrogen			99.9		%		75-125	30-JUL-20
WG3374122-2	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5172478							
WG3374122-2	LCS							
Total Kjeldahl Nitrogen			105.4		%		75-125	30-JUL-20
WG3374122-27	LCS							
Total Kjeldahl Nitrogen			95.7		%		75-125	30-JUL-20
WG3374122-29	LCS							
Total Kjeldahl Nitrogen			96.1		%		75-125	30-JUL-20
WG3374122-6	LCS							
Total Kjeldahl Nitrogen			105.3		%		75-125	30-JUL-20
WG3374122-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-26	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-28	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
TSS-L-CL		Water						
Batch	R5173127							
WG3373426-4	LCS							
Total Suspended Solids			91.7		%		85-115	30-JUL-20
WG3373426-3	MB							
Total Suspended Solids			<1.0		mg/L		1	30-JUL-20
TURBIDITY-CL		Water						
Batch	R5169997							
WG3372146-11	LCS							
Turbidity			97.0		%		85-115	28-JUL-20
WG3372146-10	MB							
Turbidity			<0.10		NTU		0.1	28-JUL-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	27-JUL-20 14:25	30-JUL-20 10:00	0.25	68	hours	EHTR-FM
	2	27-JUL-20 12:51	30-JUL-20 10:00	0.25	69	hours	EHTR-FM
	3	27-JUL-20 10:00	30-JUL-20 10:00	0.25	72	hours	EHTR-FM
	4	27-JUL-20 11:20	30-JUL-20 10:00	0.25	71	hours	EHTR-FM
pH	1	27-JUL-20 14:25	29-JUL-20 14:00	0.25	48	hours	EHTR-FM
	2	27-JUL-20 12:51	29-JUL-20 14:00	0.25	49	hours	EHTR-FM
	3	27-JUL-20 10:00	29-JUL-20 14:00	0.25	52	hours	EHTR-FM
	4	27-JUL-20 11:20	29-JUL-20 14:00	0.25	51	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2480729 were received on 28-JUL-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID:	20200727 - 0815	TURNAROUND TIME:		RUSH:								
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO							
Facility Name / Job#	Fording River Operation		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD			
Project Manager	Scott Roughead		Lab Contact	Lyudmyla Shvets		Email 1:	david.burroughs@teck.com	X	X	X		
Email	scott.roughead@teck.com		Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	brtt.anderson@teck.com	X	X	X		
Address			Address	2559 29 Street NE		Email 3:	scott.roughead@teck.com	X	X	X		
						Email 4:	teckcoal@equisonline.com			X		
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	ali.schroeder@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	kaileigh.mccallum@teck.com	X	X	X
Phone Number	1-250-433-6976		Phone Number	403 407 1794		PO number	VPO00680583					

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, EL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N	N	N	N	N	N	
																				ALS_Package-DOC
FR_MW-SK1A_QTR_2020-07-06_N	FR_MW-SK1A	WS	NO	27-Jul-20	14:25	G	6	1	1	1		1		1					1	
FR_MW-SK1B_QTR_2020-07-06_N	FR_MW-SK1B	WS	NO	27-Jul-20	12:51	G	6	1	1	1		1		1					1	
FR_GCMW-2_QTR_2020-07-06_N	FR_GCMW-2	WS	NO	27-Jul-20	10:00	G	6	1	1	1		1		1					1	
FR_POTWELLS_QTR_2020-07-06_N	FR_POTWELLS	WS	NO	27-Jul-20	11:20	G	6	1	1	1		1		1					1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kaileigh McCallum	July 27, 2020		Mr 7/28/20

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	Kaileigh McCallum	Mobile #	250-464-9462
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	July 27, 2020
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 29-JUL-20
Report Date: 09-FEB-21 15:28 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2480978
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2480978-1 WS 28-JUL-20 10:30 FR_HMW2_QTR_2 020-07-06_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	3170			
	Hardness (as CaCO3) (mg/L)	2160			
	pH (pH)	7.67			
	ORP (mV)	400			
	Total Suspended Solids (mg/L)	5.3			
	Total Dissolved Solids (mg/L)	3340	DLHC		
	Turbidity (NTU)	5.83			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	29.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	406			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	406	DLIS		
	Ammonia as N (mg/L)	0.050			
	Bicarbonate (HCO3) (mg/L)	496	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	<0.10	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	95.9			
	Nitrate (as N) (mg/L)	63.2	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.10	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0068			
	Phosphorus (P)-Total (mg/L)	0.0140	DLHC		
	Sulfate (SO4) (mg/L)	1570			
	Anion Sum (meq/L)	45.3			
	Cation Sum (meq/L)	43.5			
	Cation - Anion Balance (%)	-2.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	1.07			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00020	DLA		
	Arsenic (As)-Dissolved (mg/L)	<0.00020	DLA		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2480978-1 WS 28-JUL-20 10:30 FR_HMW2_QTR_2 020-07-06_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0101			
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}			
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}			
	Boron (B)-Dissolved (mg/L)	0.051			
	Cadmium (Cd)-Dissolved (ug/L)	0.216			
	Calcium (Ca)-Dissolved (mg/L)	443			
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}			
	Cobalt (Co)-Dissolved (ug/L)	<0.20 ^{DLA}			
	Copper (Cu)-Dissolved (mg/L)	<0.00040 ^{DLA}			
	Iron (Fe)-Dissolved (mg/L)	<0.020 ^{DLA}			
	Lead (Pb)-Dissolved (mg/L)	<0.00010 ^{DLA}			
	Lithium (Li)-Dissolved (mg/L)	0.140			
	Magnesium (Mg)-Dissolved (mg/L)	256			
	Manganese (Mn)-Dissolved (mg/L)	0.0255			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00035			
	Nickel (Ni)-Dissolved (mg/L)	0.0125			
	Potassium (K)-Dissolved (mg/L)	6.97			
	Selenium (Se)-Dissolved (ug/L)	554			
	Silicon (Si)-Dissolved (mg/L)	1.71			
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}			
	Sodium (Na)-Dissolved (mg/L)	2.32			
	Strontium (Sr)-Dissolved (mg/L)	0.243			
	Thallium (Tl)-Dissolved (mg/L)	0.000049			
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00976			
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}			
	Zinc (Zn)-Dissolved (mg/L)	0.0079			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLA	Detection Limit adjusted for required dilution		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLIS	Detection Limit Adjusted: Insufficient Sample		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2480978

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5171529							
WG3373009-2	LCS							
Acidity (as CaCO3)			96.4		%		85-115	29-JUL-20
WG3373009-1	MB							
Acidity (as CaCO3)			1.1		mg/L		2	29-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5171895							
WG3373465-17	LCS							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	29-JUL-20
WG3373465-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5173617							
WG3375046-3	DUP	L2480978-1						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	01-AUG-20
WG3375046-2	LCS							
Beryllium (Be)-Dissolved			104.8		%		80-120	01-AUG-20
WG3375046-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-AUG-20
BIC-CL								
	Water							
Batch	R5171895							
WG3373465-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5171923							
WG3373492-10	LCS							
Bromide (Br)			107.2		%		85-115	29-JUL-20
WG3373492-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-JUL-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5174161							
WG3376123-7	DUP	L2480978-1						
Dissolved Organic Carbon		<0.50	0.58	RPD-NA	mg/L	N/A	20	04-AUG-20
WG3376123-6	LCS							
Dissolved Organic Carbon			109.2		%		80-120	04-AUG-20
WG3376123-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5174161							
WG3376123-8	MS	L2480978-1						
Dissolved Organic Carbon			123.2		%		70-130	04-AUG-20
C-TOT-ORG-LOW-CL Water								
Batch	R5174161							
WG3376123-7	DUP	L2480978-1						
Total Organic Carbon			1.14		mg/L	6.3	20	04-AUG-20
WG3376123-6	LCS							
Total Organic Carbon			114.2		%		80-120	04-AUG-20
WG3376123-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	04-AUG-20
WG3376123-8	MS	L2480978-1						
Total Organic Carbon			129.9		%		70-130	04-AUG-20
CL-IC-N-CL Water								
Batch	R5171923							
WG3373492-10	LCS							
Chloride (Cl)			100.8		%		90-110	29-JUL-20
WG3373492-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	29-JUL-20
CO3-CL Water								
Batch	R5171895							
WG3373465-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	29-JUL-20
EC-L-PCT-CL Water								
Batch	R5171895							
WG3373465-17	LCS							
Conductivity (@ 25C)			99.7		%		90-110	29-JUL-20
WG3373465-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JUL-20
F-IC-N-CL Water								
Batch	R5171923							
WG3373492-10	LCS							
Fluoride (F)			105.6		%		90-110	29-JUL-20
WG3373492-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	29-JUL-20
HG-D-CVAA-VA Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5172627							
WG3374913-2	LCS							
Mercury (Hg)-Dissolved			101.1		%		80-120	31-JUL-20
WG3374913-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	31-JUL-20
MET-D-CCMS-VA								
	Water							
Batch	R5173617							
WG3375046-3	DUP	L2480978-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-AUG-20
Antimony (Sb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-AUG-20
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-AUG-20
Barium (Ba)-Dissolved		0.0101	0.0106		mg/L	5.2	20	01-AUG-20
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-20
Boron (B)-Dissolved		0.051	0.051		mg/L	1.5	20	01-AUG-20
Cadmium (Cd)-Dissolved		0.000216	0.000238		mg/L	9.4	20	01-AUG-20
Calcium (Ca)-Dissolved		443	445		mg/L	0.3	20	01-AUG-20
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-AUG-20
Cobalt (Co)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-AUG-20
Copper (Cu)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	01-AUG-20
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	01-AUG-20
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-20
Lithium (Li)-Dissolved		0.140	0.144		mg/L	2.7	20	01-AUG-20
Magnesium (Mg)-Dissolved		256	267		mg/L	4.2	20	01-AUG-20
Manganese (Mn)-Dissolved		0.0255	0.0265		mg/L	4.0	20	01-AUG-20
Molybdenum (Mo)-Dissolved		0.00035	0.00034		mg/L	4.3	20	01-AUG-20
Nickel (Ni)-Dissolved		0.0125	0.0132		mg/L	5.3	20	01-AUG-20
Potassium (K)-Dissolved		6.97	7.24		mg/L	3.8	20	01-AUG-20
Selenium (Se)-Dissolved		0.554	0.548		mg/L	1.1	20	01-AUG-20
Silicon (Si)-Dissolved		1.71	1.64		mg/L	4.0	20	01-AUG-20
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-AUG-20
Sodium (Na)-Dissolved		2.32	2.40		mg/L	3.5	20	01-AUG-20
Strontium (Sr)-Dissolved		0.243	0.245		mg/L	0.5	20	01-AUG-20
Thallium (Tl)-Dissolved		0.000049	0.000046		mg/L	5.4	20	01-AUG-20
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-AUG-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-AUG-20
Uranium (U)-Dissolved		0.00976	0.00951		mg/L	2.6	20	01-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173617							
WG3375046-3	DUP	L2480978-1						
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-AUG-20
Zinc (Zn)-Dissolved		0.0079	0.0082		mg/L	4.1	20	01-AUG-20
WG3375046-2	LCS							
Aluminum (Al)-Dissolved			107.1		%		80-120	01-AUG-20
Antimony (Sb)-Dissolved			107.2		%		80-120	01-AUG-20
Arsenic (As)-Dissolved			98.8		%		80-120	01-AUG-20
Barium (Ba)-Dissolved			104.3		%		80-120	01-AUG-20
Bismuth (Bi)-Dissolved			105.4		%		80-120	01-AUG-20
Boron (B)-Dissolved			101.6		%		80-120	01-AUG-20
Cadmium (Cd)-Dissolved			101.8		%		80-120	01-AUG-20
Calcium (Ca)-Dissolved			105.7		%		80-120	01-AUG-20
Chromium (Cr)-Dissolved			103.4		%		80-120	01-AUG-20
Cobalt (Co)-Dissolved			101.9		%		80-120	01-AUG-20
Copper (Cu)-Dissolved			101.1		%		80-120	01-AUG-20
Iron (Fe)-Dissolved			103.1		%		80-120	01-AUG-20
Lead (Pb)-Dissolved			105.7		%		80-120	01-AUG-20
Lithium (Li)-Dissolved			109.8		%		80-120	01-AUG-20
Magnesium (Mg)-Dissolved			106.3		%		80-120	01-AUG-20
Manganese (Mn)-Dissolved			107.0		%		80-120	01-AUG-20
Molybdenum (Mo)-Dissolved			102.7		%		80-120	01-AUG-20
Nickel (Ni)-Dissolved			103.0		%		80-120	01-AUG-20
Potassium (K)-Dissolved			109.0		%		80-120	01-AUG-20
Selenium (Se)-Dissolved			103.8		%		80-120	01-AUG-20
Silicon (Si)-Dissolved			109.8		%		60-140	01-AUG-20
Silver (Ag)-Dissolved			111.4		%		80-120	01-AUG-20
Sodium (Na)-Dissolved			109.8		%		80-120	01-AUG-20
Strontium (Sr)-Dissolved			108.9		%		80-120	01-AUG-20
Thallium (Tl)-Dissolved			107.5		%		80-120	01-AUG-20
Tin (Sn)-Dissolved			101.9		%		80-120	01-AUG-20
Titanium (Ti)-Dissolved			101.4		%		80-120	01-AUG-20
Uranium (U)-Dissolved			100.5		%		80-120	01-AUG-20
Vanadium (V)-Dissolved			105.5		%		80-120	01-AUG-20
Zinc (Zn)-Dissolved			103.9		%		80-120	01-AUG-20
WG3375046-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20



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Workorder: L2480978

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173617							
WG3375046-1	MB	NP						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5175839							
WG3377951-6	LCS							
Ammonia as N			100.3		%		85-115	06-AUG-20
WG3377951-5	MB							

Quality Control Report

Workorder: L2480978

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch R5175839								
WG3377951-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	06-AUG-20
NO2-L-IC-N-CL	Water							
Batch R5171923								
WG3373492-10 LCS								
Nitrite (as N)			100.2		%		90-110	29-JUL-20
WG3373492-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	29-JUL-20
NO3-L-IC-N-CL	Water							
Batch R5171923								
WG3373492-10 LCS								
Nitrate (as N)			103.0		%		90-110	29-JUL-20
WG3373492-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	29-JUL-20
OH-CL	Water							
Batch R5171895								
WG3373465-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	29-JUL-20
ORP-CL	Water							
Batch R5173219								
WG3374884-1 CRM		CL-ORP						
ORP			217		mV		210-230	31-JUL-20
WG3374884-2 DUP		L2480978-1						
ORP		400	390	J	mV	9.3	15	31-JUL-20
P-T-L-COL-CL	Water							
Batch R5172172								
WG3373762-22 LCS								
Phosphorus (P)-Total			101.8		%		80-120	30-JUL-20
WG3373762-21 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-JUL-20
PH-CL	Water							
Batch R5171895								
WG3373465-17 LCS								
pH			6.97		pH		6.9-7.1	29-JUL-20

Quality Control Report

Workorder: L2480978

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5171748							
WG3373045-2 LCS								
Orthophosphate-Dissolved (as P)			100.0		%		80-120	29-JUL-20
WG3373045-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-JUL-20
SO4-IC-N-CL	Water							
Batch	R5171923							
WG3373492-10 LCS								
Sulfate (SO4)			101.7		%		90-110	29-JUL-20
WG3373492-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	29-JUL-20
SOLIDS-TDS-CL	Water							
Batch	R5173798							
WG3374415-5 LCS								
Total Dissolved Solids			106.5		%		85-115	31-JUL-20
WG3374415-4 MB								
Total Dissolved Solids			<10		mg/L		10	31-JUL-20
TKN-L-F-CL	Water							
Batch	R5172478							
WG3374122-10 LCS								
Total Kjeldahl Nitrogen			99.9		%		75-125	30-JUL-20
WG3374122-2 LCS								
Total Kjeldahl Nitrogen			105.4		%		75-125	30-JUL-20
WG3374122-27 LCS								
Total Kjeldahl Nitrogen			95.7		%		75-125	30-JUL-20
WG3374122-29 LCS								
Total Kjeldahl Nitrogen			96.1		%		75-125	30-JUL-20
WG3374122-6 LCS								
Total Kjeldahl Nitrogen			105.3		%		75-125	30-JUL-20
WG3374122-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-26 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-28 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20



Quality Control Report

Workorder: L2480978

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5173801							
WG3374382-2	LCS							
Total Suspended Solids			95.9		%		85-115	31-JUL-20
WG3374382-1	MB							
Total Suspended Solids			<1.0		mg/L		1	31-JUL-20
TURBIDITY-CL	Water							
Batch	R5171845							
WG3373050-2	LCS							
Turbidity			97.0		%		85-115	29-JUL-20
WG3373050-1	MB							
Turbidity			<0.10		NTU		0.1	29-JUL-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2480978

Report Date: 09-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	28-JUL-20 10:30	31-JUL-20 07:20	0.25	69	hours	EHTR-FM
pH	1	28-JUL-20 10:30	29-JUL-20 14:00	0.25	28	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2480978 were received on 29-JUL-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

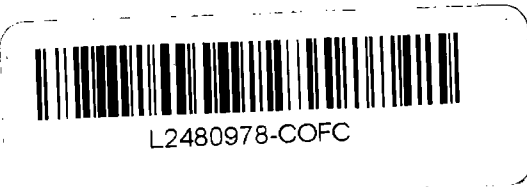
Teck

COC ID:	20200728 - 0730	TURNAROUND TIME:		RUSH:							
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address				Address	2559 29 Street NE			Email 3:	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			Email 6:	X	X	X
								PO number			VPO00680583

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PREPARED BY	F	N	F	N	F	N	N	N	N	N	N	N	N	N
								ANALYSIS														
FR_HMW2_QTR_2020-07-06_N	FR_HMW2	WS	NO	28-Jul-20	10:30	G	6		ALS_Package-DOC	1												
									ALS_Package-TKN/TOC	1												
									HG-D-CVAF-VA	1												
									HG-T-U-CVAF-VA													
									TECKCOAL-MET-D-VA	1												
									TECKCOAL-METNHG-T-CL													
									TECKCOAL-ROUTINE-VA	1												
									PAH/EPH													
									ALS_Package-Methylmercury													
									BOD / Colour													
									TSS / TURBIDITY												1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kaileigh McCallum	July 28, 2020	<i>JK</i>	28/07 9:00

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Sampler's Name	Kaileigh McCallum	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		250-464-9462
Emergency (1 Business Day) - 100% surcharge			Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			July 28, 2020



JK



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

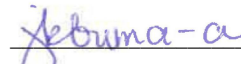
Date Received: 19-AUG-20
Report Date: 11-FEB-21 16:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2491276
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200818-1000
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on Sample -4.



Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2491276-1 WS 18-AUG-20 11:00 FR_UFR1_WS_20 20-08-18_N	L2491276-2 WS 18-AUG-20 13:30 FR_FRCP1_WS_2 020-08-18_N	L2491276-3 WS 18-AUG-20 13:00 FR_FRABCH_WS_ 2020-08-18_N	L2491276-4 WS 18-AUG-20 09:00 FR_09-04- B_QTR_2020-07- 06_N
Grouping	Analyte				
WATER					
Physical Tests	Colour, True (CU)				<5.0
	Conductivity (@ 25C) (uS/cm)	324	947	942	1120
	Hardness (as CaCO3) (mg/L)	191	597	587	714
	pH (pH)	8.36	8.40	8.32	7.98
	ORP (mV)	407	432	418	298
	Total Suspended Solids (mg/L)	<1.0	1.8	1.8	4.0
	Total Dissolved Solids (mg/L)	234 ^{DLHC}	743 ^{DLHC}	752 ^{DLHC}	883 ^{DLHC}
	Turbidity (NTU)	0.15	0.28	0.32	2.95
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	6.4
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	143	203	223	331
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.0	7.2	1.8	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	146	211	225	331
	Ammonia as N (mg/L)	0.0139	0.0106	0.0071	0.0797
	Bicarbonate (HCO3) (mg/L)				404
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)				<5.0
	Chloride (Cl) (mg/L)	<0.50	<2.5 ^{DLHC}	<2.5 ^{DLHC}	8.3 ^{DLHC}
	Fluoride (F) (mg/L)	0.149	0.20 ^{DLHC}	0.17 ^{DLHC}	0.33 ^{DLHC}
	Hydroxide (OH) (mg/L)				<5.0
	Ion Balance (%)	106	104	105	100
	Nitrate (as N) (mg/L)	0.0089	12.6 ^{DLHC}	18.8 ^{DLHC}	0.088 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	0.0109 ^{DLHC}	0.0068 ^{DLHC}	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.25 ^{TKNI}	<0.25 ^{TKNI}	0.069
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027	<0.0010	<0.0010	0.0030
	Phosphorus (P)-Total (mg/L)	0.0023	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}	0.0098 ^{DLHC}
	Sulfate (SO4) (mg/L)	34.4	311	266	379
	Anion Sum (meq/L)	3.65	11.6	11.4	14.8
	Cation Sum (meq/L)	3.85	12.1	11.9	14.8
	Cation - Anion Balance (%)	2.7	1.9	2.2	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0035	0.0035	0.0060	
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00029	0.00014	
	Arsenic (As)-Total (mg/L)	0.00011	<0.00010	<0.00010	
	Barium (Ba)-Total (mg/L)	0.0711	0.0796	0.0909	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2491276-1	L2491276-2	L2491276-3	L2491276-4
		Description	WS	WS	WS	WS
		Sampled Date	18-AUG-20	18-AUG-20	18-AUG-20	18-AUG-20
		Sampled Time	11:00	13:30	13:00	09:00
		Client ID	FR_UFR1_WS_20 20-08-18_N	FR_FRCP1_WS_2 020-08-18_N	FR_FRABCH_WS_ 2020-08-18_N	FR_09-04- B_QTR_2020-07- 06_N
Grouping	Analyte					
WATER						
Total Metals	Beryllium (Be)-Total (ug/L)	<0.020	<0.020	<0.020		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	0.011	0.011		
	Cadmium (Cd)-Total (ug/L)	0.0096	0.100	0.0407		
	Calcium (Ca)-Total (mg/L)	48.6	119	124		
	Chromium (Cr)-Total (mg/L)	0.00016	0.00011	0.00010		
	Cobalt (Co)-Total (ug/L)	<0.10	<0.10	<0.10		
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Iron (Fe)-Total (mg/L)	<0.010	0.014	0.016		
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)	0.0018	0.0329	0.0311		
	Magnesium (Mg)-Total (mg/L)	13.4	64.9	59.1		
	Manganese (Mn)-Total (mg/L)	0.00047	0.00433	0.00510		
	Mercury (Hg)-Total (ug/L)	<0.00050	<0.00050	0.00059		
	Molybdenum (Mo)-Total (mg/L)	0.000680	0.00253	0.00112		
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00526	0.00152		
	Potassium (K)-Total (mg/L)	0.440	2.04	1.80		
	Selenium (Se)-Total (ug/L)	0.605	84.9	79.5		
	Silicon (Si)-Total (mg/L)	2.14	2.07	2.21		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	0.637	1.54	2.05		
	Strontium (Sr)-Total (mg/L)	0.0989	0.150	0.150		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	0.000458	0.00370	0.00330		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0056	<0.0030		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0065	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00027	0.00014	0.00011	
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00010	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0662	0.0765	0.0870	0.0900	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.012	0.012	0.031	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2491276-1	L2491276-2	L2491276-3	L2491276-4
		Description	WS	WS	WS	WS
		Sampled Date	18-AUG-20	18-AUG-20	18-AUG-20	18-AUG-20
		Sampled Time	11:00	13:30	13:00	09:00
		Client ID	FR_UFR1_WS_20 20-08-18_N	FR_FRCP1_WS_2 020-08-18_N	FR_FRABCH_WS_ 2020-08-18_N	FR_09-04- B_QTR_2020-07- 06_N
Grouping	Analyte					
WATER						
Dissolved Metals	Cadmium (Cd)-Dissolved (ug/L)		0.0117	0.101	0.0416	1.10
	Calcium (Ca)-Dissolved (mg/L)		53.6	130	129	155
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	1.30
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00021	<0.00020	0.00040
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	0.011
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0019	0.0343	0.0319	0.0891
	Magnesium (Mg)-Dissolved (mg/L)		13.8	66.0	64.7	79.4
	Manganese (Mn)-Dissolved (mg/L)		0.00028	0.00373	0.00515	1.32
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000660	0.00264	0.00117	0.00174
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00569	0.00154	0.00855
	Potassium (K)-Dissolved (mg/L)		0.442	2.05	1.86	5.18
	Selenium (Se)-Dissolved (ug/L)		0.656	87.9	80.0	0.171
	Silicon (Si)-Dissolved (mg/L)		2.02	1.98	2.14	2.81
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.659	1.62	2.31	7.29
	Strontium (Sr)-Dissolved (mg/L)		0.104	0.161	0.159	0.225
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000056
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000443	0.00349	0.00306	0.00586
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0047	0.0024	0.0045
Aggregate Organics	Biochemical Oxygen Demand (mg/L)					<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2491276-4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2491276-4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2491276-4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2491276-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2491276-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2491276-4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O ₂ electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

COLOUR-TRUE-CL Water Colour (True) by Spectrometer APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

Reference Information

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200818-1000

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2491276

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5194480							
WG3388221-11	LCS							
Acidity (as CaCO3)			99.2		%		85-115	20-AUG-20
WG3388221-10	MB							
Acidity (as CaCO3)			1.4		mg/L		2	20-AUG-20
ALK-MAN-CL		Water						
Batch	R5198082							
WG3389563-2	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	21-AUG-20
WG3389563-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-20
BE-D-L-CCMS-VA		Water						
Batch	R5196716							
WG3388954-2	LCS							
Beryllium (Be)-Dissolved			95.9		%		80-120	22-AUG-20
WG3388954-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-AUG-20
Batch	R5200696							
WG3391228-3	DUP	L2491276-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	25-AUG-20
WG3391228-2	LCS							
Beryllium (Be)-Dissolved			110.7		%		80-120	25-AUG-20
WG3391228-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-20
BE-T-L-CCMS-VA		Water						
Batch	R5200050							
WG3388931-2	LCS							
Beryllium (Be)-Total			97.3		%		80-120	25-AUG-20
WG3388931-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	25-AUG-20
BIC-CL		Water						
Batch	R5198082							
WG3389563-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-20
BOD-BC-CL		Water						

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5198082							
WG3389563-1 MB	Carbonate (CO3)		<5.0		mg/L		5	21-AUG-20
COLOUR-TRUE-CL	Water							
Batch	R5191740							
WG3386863-2 LCS	Colour, True		103.9		%		85-115	19-AUG-20
WG3386863-1 MB	Colour, True		<5.0		CU		5	19-AUG-20
EC-L-PCT-CL	Water							
Batch	R5198082							
WG3389563-2 LCS	Conductivity (@ 25C)		97.4		%		90-110	21-AUG-20
WG3389563-1 MB	Conductivity (@ 25C)		<2.0		uS/cm		2	21-AUG-20
F-IC-N-CL	Water							
Batch	R5195422							
WG3388602-11 DUP	Fluoride (F)	L2491276-1 0.149	0.148		mg/L	0.4	20	20-AUG-20
WG3388602-10 LCS	Fluoride (F)		100.9		%		90-110	20-AUG-20
WG3388602-9 MB	Fluoride (F)		<0.020		mg/L		0.02	20-AUG-20
WG3388602-12 MS	Fluoride (F)	L2491276-1	104.7		%		75-125	20-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5200454							
WG3391237-3 DUP	Mercury (Hg)-Dissolved	L2491276-4 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391237-2 LCS	Mercury (Hg)-Dissolved		92.6		%		80-120	26-AUG-20
WG3391237-1 MB	Mercury (Hg)-Dissolved	NP	<0.0000050		mg/L		0.000005	26-AUG-20
HG-T-U-CVAF-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA		Water						
Batch	R5199161							
WG3389820-2	LCS							
Mercury (Hg)-Total			84.2		%		80-120	24-AUG-20
WG3389820-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-AUG-20
MET-D-CCMS-VA		Water						
Batch	R5196716							
WG3388954-2	LCS							
Aluminum (Al)-Dissolved			105.8		%		80-120	22-AUG-20
Antimony (Sb)-Dissolved			93.5		%		80-120	22-AUG-20
Arsenic (As)-Dissolved			100.5		%		80-120	22-AUG-20
Barium (Ba)-Dissolved			97.5		%		80-120	22-AUG-20
Bismuth (Bi)-Dissolved			104.4		%		80-120	22-AUG-20
Boron (B)-Dissolved			96.9		%		80-120	22-AUG-20
Cadmium (Cd)-Dissolved			101.5		%		80-120	22-AUG-20
Calcium (Ca)-Dissolved			101.5		%		80-120	22-AUG-20
Chromium (Cr)-Dissolved			99.2		%		80-120	22-AUG-20
Cobalt (Co)-Dissolved			101.7		%		80-120	22-AUG-20
Copper (Cu)-Dissolved			101.1		%		80-120	22-AUG-20
Iron (Fe)-Dissolved			97.1		%		80-120	22-AUG-20
Lead (Pb)-Dissolved			102.7		%		80-120	22-AUG-20
Lithium (Li)-Dissolved			99.3		%		80-120	22-AUG-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	22-AUG-20
Manganese (Mn)-Dissolved			104.2		%		80-120	22-AUG-20
Molybdenum (Mo)-Dissolved			99.1		%		80-120	22-AUG-20
Nickel (Ni)-Dissolved			100.1		%		80-120	22-AUG-20
Potassium (K)-Dissolved			96.7		%		80-120	22-AUG-20
Selenium (Se)-Dissolved			94.6		%		80-120	22-AUG-20
Silicon (Si)-Dissolved			100.6		%		60-140	22-AUG-20
Silver (Ag)-Dissolved			100.3		%		80-120	22-AUG-20
Sodium (Na)-Dissolved			112.5		%		80-120	22-AUG-20
Strontium (Sr)-Dissolved			98.5		%		80-120	22-AUG-20
Thallium (Tl)-Dissolved			103.3		%		80-120	22-AUG-20
Tin (Sn)-Dissolved			96.6		%		80-120	22-AUG-20
Titanium (Ti)-Dissolved			104.7		%		80-120	22-AUG-20
Uranium (U)-Dissolved			100.6		%		80-120	22-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5196716							
WG3388954-2	LCS							
Vanadium (V)-Dissolved			100.9		%		80-120	22-AUG-20
Zinc (Zn)-Dissolved			99.1		%		80-120	22-AUG-20
WG3388954-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5200696							
WG3391228-3	DUP	L2491276-4						
Aluminum (Al)-Dissolved		0.0065	0.0110	J	mg/L	0.0045	0.006	25-AUG-20
Antimony (Sb)-Dissolved		0.00011	0.00011		mg/L	0.2	20	25-AUG-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-AUG-20
Barium (Ba)-Dissolved		0.0900	0.0895		mg/L	0.6	20	25-AUG-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-AUG-20
Boron (B)-Dissolved		0.031	0.032		mg/L	2.7	20	25-AUG-20
Cadmium (Cd)-Dissolved		0.00110	0.00112		mg/L	1.9	20	25-AUG-20
Calcium (Ca)-Dissolved		155	154		mg/L	0.5	20	25-AUG-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-AUG-20
Cobalt (Co)-Dissolved		0.00130	0.00128		mg/L	1.4	20	25-AUG-20
Copper (Cu)-Dissolved		0.00040	0.00037		mg/L	6.3	20	25-AUG-20
Iron (Fe)-Dissolved		0.011	0.011		mg/L	6.7	20	25-AUG-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-AUG-20
Lithium (Li)-Dissolved		0.0891	0.0935		mg/L	4.8	20	25-AUG-20
Magnesium (Mg)-Dissolved		79.4	80.1		mg/L	0.8	20	25-AUG-20
Manganese (Mn)-Dissolved		1.32	1.31		mg/L	0.7	20	25-AUG-20
Molybdenum (Mo)-Dissolved		0.00174	0.00166		mg/L	4.8	20	25-AUG-20
Nickel (Ni)-Dissolved		0.00855	0.00869		mg/L	1.6	20	25-AUG-20
Potassium (K)-Dissolved		5.18	5.19		mg/L	0.2	20	25-AUG-20
Selenium (Se)-Dissolved		0.000171	0.000189		mg/L	9.6	20	25-AUG-20
Silicon (Si)-Dissolved		2.81	2.82		mg/L	0.2	20	25-AUG-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-AUG-20
Sodium (Na)-Dissolved		7.29	7.26		mg/L	0.5	20	25-AUG-20
Strontium (Sr)-Dissolved		0.225	0.229		mg/L	1.9	20	25-AUG-20
Thallium (Tl)-Dissolved		0.000056	0.000059		mg/L	4.5	20	25-AUG-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-AUG-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-AUG-20
Uranium (U)-Dissolved		0.00586	0.00575		mg/L	1.9	20	25-AUG-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-AUG-20
Zinc (Zn)-Dissolved		0.0045	0.0046		mg/L	1.7	20	25-AUG-20
WG3391228-2								
	LCS							
Aluminum (Al)-Dissolved			109.3		%		80-120	25-AUG-20
Antimony (Sb)-Dissolved			107.2		%		80-120	25-AUG-20
Arsenic (As)-Dissolved			108.2		%		80-120	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5200696							
WG3391228-2	LCS							
Barium (Ba)-Dissolved			111.9		%		80-120	25-AUG-20
Bismuth (Bi)-Dissolved			112.3		%		80-120	25-AUG-20
Boron (B)-Dissolved			109.3		%		80-120	25-AUG-20
Cadmium (Cd)-Dissolved			108.5		%		80-120	25-AUG-20
Calcium (Ca)-Dissolved			113.6		%		80-120	25-AUG-20
Chromium (Cr)-Dissolved			109.2		%		80-120	25-AUG-20
Cobalt (Co)-Dissolved			107.9		%		80-120	25-AUG-20
Copper (Cu)-Dissolved			105.5		%		80-120	25-AUG-20
Iron (Fe)-Dissolved			108.4		%		80-120	25-AUG-20
Lead (Pb)-Dissolved			108.0		%		80-120	25-AUG-20
Lithium (Li)-Dissolved			110.4		%		80-120	25-AUG-20
Magnesium (Mg)-Dissolved			106.2		%		80-120	25-AUG-20
Manganese (Mn)-Dissolved			110.3		%		80-120	25-AUG-20
Molybdenum (Mo)-Dissolved			111.2		%		80-120	25-AUG-20
Nickel (Ni)-Dissolved			106.8		%		80-120	25-AUG-20
Potassium (K)-Dissolved			110.7		%		80-120	25-AUG-20
Selenium (Se)-Dissolved			105.8		%		80-120	25-AUG-20
Silicon (Si)-Dissolved			113.6		%		60-140	25-AUG-20
Silver (Ag)-Dissolved			110.4		%		80-120	25-AUG-20
Sodium (Na)-Dissolved			109.2		%		80-120	25-AUG-20
Strontium (Sr)-Dissolved			115.6		%		80-120	25-AUG-20
Thallium (Tl)-Dissolved			110.3		%		80-120	25-AUG-20
Tin (Sn)-Dissolved			109.2		%		80-120	25-AUG-20
Titanium (Ti)-Dissolved			103.8		%		80-120	25-AUG-20
Uranium (U)-Dissolved			108.0		%		80-120	25-AUG-20
Vanadium (V)-Dissolved			108.8		%		80-120	25-AUG-20
Zinc (Zn)-Dissolved			111.3		%		80-120	25-AUG-20
WG3391228-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-20



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MET-D-CCMS-VA								
	Water							
Batch	R5200696							
WG3391228-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5200050							
WG3388931-2	LCS							
Aluminum (Al)-Total			102.2		%		80-120	25-AUG-20
Antimony (Sb)-Total			106.7		%		80-120	25-AUG-20
Arsenic (As)-Total			100.4		%		80-120	25-AUG-20
Barium (Ba)-Total			103.2		%		80-120	25-AUG-20
Bismuth (Bi)-Total			105.6		%		80-120	25-AUG-20
Boron (B)-Total			101.0		%		80-120	25-AUG-20
Cadmium (Cd)-Total			100.1		%		80-120	25-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5200050							
WG3388931-2 LCS								
Calcium (Ca)-Total			100.9		%		80-120	25-AUG-20
Chromium (Cr)-Total			101.4		%		80-120	25-AUG-20
Cobalt (Co)-Total			101.0		%		80-120	25-AUG-20
Copper (Cu)-Total			100.1		%		80-120	25-AUG-20
Iron (Fe)-Total			99.0		%		80-120	25-AUG-20
Lead (Pb)-Total			106.0		%		80-120	25-AUG-20
Lithium (Li)-Total			96.0		%		80-120	25-AUG-20
Magnesium (Mg)-Total			101.0		%		80-120	25-AUG-20
Manganese (Mn)-Total			100.6		%		80-120	25-AUG-20
Molybdenum (Mo)-Total			101.7		%		80-120	25-AUG-20
Nickel (Ni)-Total			103.8		%		80-120	25-AUG-20
Potassium (K)-Total			102.9		%		80-120	25-AUG-20
Selenium (Se)-Total			101.7		%		80-120	25-AUG-20
Silicon (Si)-Total			106.0		%		80-120	25-AUG-20
Silver (Ag)-Total			104.5		%		80-120	25-AUG-20
Sodium (Na)-Total			110.3		%		80-120	25-AUG-20
Strontium (Sr)-Total			103.4		%		80-120	25-AUG-20
Thallium (Tl)-Total			110.4		%		80-120	25-AUG-20
Tin (Sn)-Total			100.0		%		80-120	25-AUG-20
Titanium (Ti)-Total			96.9		%		80-120	25-AUG-20
Uranium (U)-Total			104.1		%		80-120	25-AUG-20
Vanadium (V)-Total			99.5		%		80-120	25-AUG-20
Zinc (Zn)-Total			98.1		%		80-120	25-AUG-20
WG3388931-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	25-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	25-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5200050							
WG3388931-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	25-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	25-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	25-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	25-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-AUG-20
Batch	R5200696							
WG3388931-1	MB							
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-AUG-20
NH3-L-F-CL		Water						
Batch	R5196697							
WG3388669-2	LCS							
Ammonia as N			103.8		%		85-115	21-AUG-20
WG3388669-6	LCS							
Ammonia as N			97.7		%		85-115	21-AUG-20
WG3388669-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
WG3388669-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
NO2-L-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch	R5195422							
WG3388602-11	DUP	L2491276-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-AUG-20
WG3388602-10	LCS							
Nitrite (as N)			100.0		%		90-110	20-AUG-20
WG3388602-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-AUG-20
WG3388602-12	MS	L2491276-1						
Nitrite (as N)			108.0		%		75-125	20-AUG-20
NO3-L-IC-N-CL								
Water								
Batch	R5195422							
WG3388602-11	DUP	L2491276-1						
Nitrate (as N)		0.0089	0.0082		mg/L	8.2	20	20-AUG-20
WG3388602-10	LCS							
Nitrate (as N)			100.4		%		90-110	20-AUG-20
WG3388602-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-AUG-20
WG3388602-12	MS	L2491276-1						
Nitrate (as N)			105.0		%		75-125	20-AUG-20
OH-CL								
Water								
Batch	R5198082							
WG3389563-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-20
ORP-CL								
Water								
Batch	R5192034							
WG3387032-9	CRM	CL-ORP						
ORP			221		mV		210-230	19-AUG-20
P-T-L-COL-CL								
Water								
Batch	R5199212							
WG3389864-2	LCS							
Phosphorus (P)-Total			104.3		%		80-120	24-AUG-20
WG3389864-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-20
PH-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5198082							
WG3389563-2	LCS							
pH			6.98		pH		6.9-7.1	21-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5192010							
WG3387013-22	LCS							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	19-AUG-20
WG3387013-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-AUG-20
SO4-IC-N-CL	Water							
Batch	R5195422							
WG3388602-11	DUP	L2491276-1						
Sulfate (SO4)		34.4	34.6		mg/L	0.4	20	20-AUG-20
WG3388602-10	LCS							
Sulfate (SO4)			99.9		%		90-110	20-AUG-20
WG3388602-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-20
WG3388602-12	MS	L2491276-1						
Sulfate (SO4)			104.0		%		75-125	20-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5200071							
WG3389532-8	LCS							
Total Dissolved Solids			102.3		%		85-115	24-AUG-20
WG3389532-7	MB							
Total Dissolved Solids			<10		mg/L		10	24-AUG-20
TKN-L-F-CL	Water							
Batch	R5192976							
WG3387766-12	LCS							
Total Kjeldahl Nitrogen			101.4		%		75-125	20-AUG-20
WG3387766-16	LCS							
Total Kjeldahl Nitrogen			103.3		%		75-125	20-AUG-20
WG3387766-19	LCS							
Total Kjeldahl Nitrogen			99.4		%		75-125	20-AUG-20
WG3387766-2	LCS							
Total Kjeldahl Nitrogen			106.6		%		75-125	20-AUG-20
WG3387766-4	LCS							
Total Kjeldahl Nitrogen			102.0		%		75-125	20-AUG-20
WG3387766-8	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5192976							
WG3387766-8	LCS							
Total Kjeldahl Nitrogen			101.9		%		75-125	20-AUG-20
WG3387766-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3387766-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3387766-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3387766-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-AUG-20
WG3387766-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3387766-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
TSS-L-CL		Water						
Batch	R5200046							
WG3389822-4	LCS							
Total Suspended Solids			90.7		%		85-115	24-AUG-20
WG3389822-3	MB							
Total Suspended Solids			<1.0		mg/L		1	24-AUG-20
TURBIDITY-CL		Water						
Batch	R5192002							
WG3387043-11	LCS							
Turbidity			97.0		%		85-115	19-AUG-20
WG3387043-10	MB							
Turbidity			<0.10		NTU		0.1	19-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	18-AUG-20 11:00	19-AUG-20 21:15	0.25	34	hours	EHTR-FM
	2	18-AUG-20 13:30	19-AUG-20 21:15	0.25	32	hours	EHTR-FM
	3	18-AUG-20 13:00	19-AUG-20 21:15	0.25	32	hours	EHTR-FM
	4	18-AUG-20 09:00	19-AUG-20 21:15	0.25	36	hours	EHTR-FM
pH	1	18-AUG-20 11:00	21-AUG-20 13:00	0.25	74	hours	EHTR-FM
	2	18-AUG-20 13:30	21-AUG-20 13:00	0.25	72	hours	EHTR-FM
	3	18-AUG-20 13:00	21-AUG-20 13:00	0.25	72	hours	EHTR-FM
	4	18-AUG-20 09:00	21-AUG-20 13:00	0.25	76	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2491276 were received on 19-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20200818-1000			TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets		Email 1:	david.burroughs@teck.com	X	X	X	
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	britt.anderson@teck.com	X	X	X	
Address				Address	2559 29 Street NE		Email 3:	teckcoal@teck.com	X	X	X	
							Email 4:	teckcoal@equisonline.com			X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	all.schroeder@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	kaileigh.mccallum@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794		PO number	VPO00680583				



L2491276-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N	N	N	N	N	N	N	N	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY				
FR_UFR1_WS_2020-08-18_N	FR_UFR1	WS	NO	18-Aug-20	11:00	G	8	1	1	1	1	1	1	1					1			
FR_FRCP1_WS_2020-08-18_N	FR_FRCP1	WS	NO	18-Aug-20	13:30	G	8	1	1	1	1	1	1	1					1			
FR_FRABCH_WS_2020-08-18_N	FR_FRABCH	WS	NO	18-Aug-20	13:00	G	8	1	1	1	1	1	1	1					1			
FR_09-04-A_QTR_2020-07-06_N	FR_09-04-A	WG	NO	18-Aug-20	9:00	G	6	1	1	1				1				1	1			
FR_09-04-B_QTR_2020-07-06_N	FR_09-04-B	WG	NO	18-Aug-20		G	6	1	1	1				1				1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	<i>[Signature]</i>	August 18, 2020	<i>[Signature]</i>	8/19 9:00

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) X		Britt Anderson	250-425-5335
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		<i>[Signature]</i>	August 18, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 21-AUG-20
Report Date: 11-FEB-21 16:06 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2492344
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200820-0700
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on Sample -3.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2492344-1	L2492344-2	L2492344-3	L2492344-4	L2492344-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20
		Sampled Time	13:00	08:50	12:15	10:15	09:20
		Client ID	FR_CIL_MON_202 0-08-03_N	FR_NL1H_MON_2 020-08-03_N	FR_09-04- A_QTR_2020-07- 06_N	FR_FR3_MON_202 0-08-03_NP	FR_FR4_MON_202 0-08-03_NP
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		1280	1190	1110	881	1010
	Hardness (as CaCO3) (mg/L)			677	680	492	577
	pH (pH)		8.06	8.36	7.97	8.44	8.45
	ORP (mV)		438	436	391	408	476
	Total Suspended Solids (mg/L)		1110	35.8	1.7	4.1	1.0
	Total Dissolved Solids (mg/L)		1000	955	886	676	795
	Turbidity (NTU)		>4000	32.2	2.29	0.37	0.61
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		3.2	<1.0	4.2	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		153	190	321	196	205
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	5.2	<1.0	9.2	10.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		153	195	321	205	216
	Ammonia as N (mg/L)		9.27	0.214	0.0052	0.0172	0.0120
	Bicarbonate (HCO3) (mg/L)				391		
	Bromide (Br) (mg/L)		2.09	<0.25	<0.25	<0.25	<0.25
	Carbonate (CO3) (mg/L)				<5.0		
	Chloride (Cl) (mg/L)		148	11.6	8.2	<2.5	<2.5
	Fluoride (F) (mg/L)		0.38	0.34	0.36	0.22	0.21
	Hydroxide (OH) (mg/L)				<5.0		
	Ion Balance (%)		108	95.6	101	94.4	94.8
	Nitrate (as N) (mg/L)		18.5	12.4	<0.025	12.6	13.4
	Nitrite (as N) (mg/L)		0.333	0.139	<0.0050	0.0062	0.0091
	Total Kjeldahl Nitrogen (mg/L)		212	0.531	<0.050	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)		0.323	0.120	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		6.61	0.272	<0.0020	<0.0020	0.0022
	Sulfate (SO4) (mg/L)		220	459	349	266	338
	Anion Sum (meq/L)		13.2	14.7	13.9	10.5	12.3
	Cation Sum (meq/L)		14.2	14.0	14.1	9.95	11.7
	Cation - Anion Balance (%)		3.6	-2.3	0.6	-2.9	-2.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)			2.08	1.09	<0.50	<0.50
	Total Organic Carbon (mg/L)		257	3.56	0.87	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)			0.0521		0.0406	0.0086
	Antimony (Sb)-Total (mg/L)			0.00260		0.00024	0.00028
	Arsenic (As)-Total (mg/L)			0.00049		0.00013	0.00010
	Barium (Ba)-Total (mg/L)			0.0663		0.0702	0.0722
	Beryllium (Be)-Total (ug/L)			<0.020		<0.020	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2492344-6 WS 20-AUG-20 14:00 FR_POTABLE_MO N_2020-08-03_N	L2492344-7 WS 20-AUG-20 13:32 FR_SHANDLEY_W S_2020-08-20_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	429	1220		
	Hardness (as CaCO3) (mg/L)	226	832		
	pH (pH)	8.29	7.91		
	ORP (mV)	449	450		
	Total Suspended Solids (mg/L)	<1.0	32.0		
	Total Dissolved Solids (mg/L)	294 ^{DLHC}	1020 ^{DLHC}		
	Turbidity (NTU)	0.59	15.4		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	6.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	138	380		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	139	380		
	Ammonia as N (mg/L)	0.0059	0.0975		
	Bicarbonate (HCO3) (mg/L)				
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}		
	Carbonate (CO3) (mg/L)				
	Chloride (Cl) (mg/L)	<0.50	<2.5 ^{DLHC}		
	Fluoride (F) (mg/L)	0.219	0.35 ^{DLHC}		
	Hydroxide (OH) (mg/L)				
	Ion Balance (%)	93.1	106		
	Nitrate (as N) (mg/L)	2.48	7.65 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0010	0.0366 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	0.195 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0177	0.0158		
	Sulfate (SO4) (mg/L)	92.5	376 ^{DLHC}		
	Anion Sum (meq/L)	4.90	16.0		
Cation Sum (meq/L)	4.56	16.9			
Cation - Anion Balance (%)	-3.6	2.8			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	4.44		
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0605		
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00051		
	Arsenic (As)-Total (mg/L)	<0.00010	0.00025		
	Barium (Ba)-Total (mg/L)	0.0644	0.0343		
	Beryllium (Be)-Total (ug/L)	<0.020	<0.020		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2492344-1	L2492344-2	L2492344-3	L2492344-4	L2492344-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20
		Sampled Time	13:00	08:50	12:15	10:15	09:20
		Client ID	FR_CIL_MON_202 0-08-03_N	FR_NL1H_MON_2 020-08-03_N	FR_09-04- A_QTR_2020-07- 06_N	FR_FR3_MON_202 0-08-03_NP	FR_FR4_MON_202 0-08-03_NP
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)			<0.000050		<0.000050	<0.000050
	Boron (B)-Total (mg/L)			0.036		0.012	0.012
	Cadmium (Cd)-Total (ug/L)			0.0715		0.107	0.149
	Calcium (Ca)-Total (mg/L)			132		121	138
	Chromium (Cr)-Total (mg/L)			<0.00040 ^{DLB}		<0.00020 ^{DLB}	<0.00010
	Cobalt (Co)-Total (ug/L)			0.89		0.11	<0.10
	Copper (Cu)-Total (mg/L)			0.00160		<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)			0.057		0.068	0.023
	Lead (Pb)-Total (mg/L)			0.000545		0.000059	<0.000050
	Lithium (Li)-Total (mg/L)			0.0758		0.0375	0.0398
	Magnesium (Mg)-Total (mg/L)			90.8		50.9	66.6
	Manganese (Mn)-Total (mg/L)			0.0222		0.0143	0.00751
	Mercury (Hg)-Total (ug/L)			<0.0020 ^{DLM}		<0.00050	<0.00050
	Molybdenum (Mo)-Total (mg/L)			0.0152		0.00199	0.00294
	Nickel (Ni)-Total (mg/L)			0.00670		0.00630	0.00843
	Potassium (K)-Total (mg/L)			5.82		2.09	2.33
	Selenium (Se)-Total (ug/L)			84.7		65.6	92.9
	Silicon (Si)-Total (mg/L)			2.45		2.14	2.13
	Silver (Ag)-Total (mg/L)			<0.000010		<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)			8.42		1.62	1.67
	Strontium (Sr)-Total (mg/L)			0.270		0.148	0.158
	Thallium (Tl)-Total (mg/L)			0.000031		<0.000010	0.000011
	Tin (Sn)-Total (mg/L)			<0.00010		<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)			<0.010		<0.010	<0.010
	Uranium (U)-Total (mg/L)			0.00756		0.00301	0.00384
	Vanadium (V)-Total (mg/L)			0.00161		<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)			0.0125		0.0059	0.0073
Dissolved Metals	Dissolved Mercury Filtration Location			FIELD		FIELD	FIELD
	Dissolved Metals Filtration Location		LAB	FIELD		FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)			0.0060		<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)			0.00258		0.00012	0.00027
	Arsenic (As)-Dissolved (mg/L)			0.00046		<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)			0.0665		0.0922	0.0704
	Beryllium (Be)-Dissolved (ug/L)			<0.020		<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)			<0.000050		<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)			0.034		0.032	0.011
	Cadmium (Cd)-Dissolved (ug/L)			0.0517		1.10	0.118

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2492344-6 WS 20-AUG-20 14:00 FR_POTABLE_MO N_2020-08-03_N	L2492344-7 WS 20-AUG-20 13:32 FR_SHANDLEY_W S_2020-08-20_NP		
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	0.013	0.038		
	Cadmium (Cd)-Total (ug/L)	0.0127	0.300		
	Calcium (Ca)-Total (mg/L)	65.7	179		
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00020 ^{DLB}		
	Cobalt (Co)-Total (ug/L)	<0.10	3.59		
	Copper (Cu)-Total (mg/L)	0.106	0.00151		
	Iron (Fe)-Total (mg/L)	0.038	0.154		
	Lead (Pb)-Total (mg/L)	0.000648	0.000408		
	Lithium (Li)-Total (mg/L)	0.0066	0.0898		
	Magnesium (Mg)-Total (mg/L)	19.3	94.8		
	Manganese (Mn)-Total (mg/L)	0.00451	0.195 ^{DLM}		
	Mercury (Hg)-Total (ug/L)	<0.00050	0.0038 ^{DLM}		
	Molybdenum (Mo)-Total (mg/L)	0.000965	0.00195		
	Nickel (Ni)-Total (mg/L)	0.00068	0.0233		
	Potassium (K)-Total (mg/L)	0.784	5.27		
	Selenium (Se)-Total (ug/L)	16.0	16.0		
	Silicon (Si)-Total (mg/L)	1.83	2.47		
	Silver (Ag)-Total (mg/L)	<0.000010	0.000011		
	Sodium (Na)-Total (mg/L)	0.624	3.47		
	Strontium (Sr)-Total (mg/L)	0.118	0.283		
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000055		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	0.000847	0.00627		
	Vanadium (V)-Total (mg/L)	<0.00050	0.00061		
	Zinc (Zn)-Total (mg/L)	0.135	0.0134		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00050		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00013		
	Barium (Ba)-Dissolved (mg/L)	0.0607	0.0307		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	0.037		
	Cadmium (Cd)-Dissolved (ug/L)	0.0075	0.188		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2492344-1	L2492344-2	L2492344-3	L2492344-4	L2492344-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20
		Sampled Time	13:00	08:50	12:15	10:15	09:20
		Client ID	FR_CIL_MON_202 0-08-03_N	FR_NL1H_MON_2 020-08-03_N	FR_09-04- A_QTR_2020-07- 06_N	FR_FR3_MON_202 0-08-03_NP	FR_FR4_MON_202 0-08-03_NP
Grouping	Analyte						
WATER							
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	157 ^{DLDS}	118	141	108	121	
	Chromium (Cr)-Dissolved (mg/L)		0.00026	<0.00010	<0.00010	0.00011	
	Cobalt (Co)-Dissolved (ug/L)		0.84	1.27	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)		0.00028	0.00054	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	0.013	0.011	
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)		0.0770	0.0905	0.0365	0.0389	
	Magnesium (Mg)-Dissolved (mg/L)	46.7 ^{DLDS}	92.8	79.8	54.0	66.7	
	Manganese (Mn)-Dissolved (mg/L)		0.0199	1.28	0.00663	0.00589	
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.0151	0.00189	0.00222	0.00302	
	Nickel (Ni)-Dissolved (mg/L)		0.00597	0.00839	0.00581	0.00798	
	Potassium (K)-Dissolved (mg/L)	8.95 ^{DLDS}	5.35	5.49	2.13	2.27	
	Selenium (Se)-Dissolved (ug/L)		93.5	0.172	78.8	108	
	Silicon (Si)-Dissolved (mg/L)		2.18	2.76	1.99	2.00	
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	36.6 ^{DLDS}	8.33	7.29	1.63	1.69	
	Strontium (Sr)-Dissolved (mg/L)		0.262	0.226	0.154	0.154	
	Thallium (Tl)-Dissolved (mg/L)		0.000030	0.000058	<0.000010	0.000012	
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	
Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010		
Uranium (U)-Dissolved (mg/L)		0.00870	0.00650	0.00329	0.00404		
Vanadium (V)-Dissolved (mg/L)		0.00123	<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Dissolved (mg/L)		0.0028	0.0049	0.0041	0.0064		
Hydrocarbons	EPH10-19 (mg/L)	2.33					
	EPH (C10-C32) (mg/L)	13.0					
	EPH19-32 (mg/L)	10.7					
	TEH (C10-C30) (mg/L)	11.7					
	Surrogate: 2-Bromobenzotrifluoride (%)	98.3					
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)	<0.15 ^{DLCI}					
	Acenaphthylene (ug/L)	<0.23 ^{DLCI}					
	Acridine (ug/L)	<0.090 ^{DLCI}					
	Anthracene (ug/L)	<0.080 ^{DLCI}					
	Benz(a)anthracene (ug/L)	<0.38 ^{DLCI}					
	Benzo(a)pyrene (ug/L)	0.114					
	Benzo(b&j)fluoranthene (ug/L)	0.285					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2492344-6 WS 20-AUG-20 14:00 FR_POTABLE_MO N_2020-08-03_N	L2492344-7 WS 20-AUG-20 13:32 FR_SHANDLEY_W S_2020-08-20_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	58.2	161		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	2.39		
	Copper (Cu)-Dissolved (mg/L)	0.0747	0.00051		
	Iron (Fe)-Dissolved (mg/L)	0.021	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.000339	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0065	0.0875		
	Magnesium (Mg)-Dissolved (mg/L)	19.5	104		
	Manganese (Mn)-Dissolved (mg/L)	0.00454	0.153		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000711	0.00214		
	Nickel (Ni)-Dissolved (mg/L)	0.00099	0.0239		
	Potassium (K)-Dissolved (mg/L)	0.773	4.80		
	Selenium (Se)-Dissolved (ug/L)	17.9	18.2		
	Silicon (Si)-Dissolved (mg/L)	1.78	2.18		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	0.600	3.61		
	Strontium (Sr)-Dissolved (mg/L)	0.112	0.281		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000050		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000878	0.00632		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.140	0.0111		
Hydrocarbons	EPH10-19 (mg/L)		<0.25		
	EPH (C10-C32) (mg/L)		<0.50		
	EPH19-32 (mg/L)		<0.25		
	TEH (C10-C30) (mg/L)		<0.25		
	Surrogate: 2-Bromobenzotrifluoride (%)		91.8		
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)		<0.010		
	Acenaphthylene (ug/L)		<0.010		
	Acridine (ug/L)		<0.010		
	Anthracene (ug/L)		<0.010		
	Benz(a)anthracene (ug/L)		<0.010		
	Benzo(a)pyrene (ug/L)		<0.0050		
	Benzo(b&j)fluoranthene (ug/L)		<0.010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2492344-1	L2492344-2	L2492344-3	L2492344-4	L2492344-5
		Description	WS	WS	WS	WS	WS
		Sampled Date	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20	20-AUG-20
		Sampled Time	13:00	08:50	12:15	10:15	09:20
		Client ID	FR_CIL_MON_202 0-08-03_N	FR_NL1H_MON_2 020-08-03_N	FR_09-04- A_QTR_2020-07- 06_N	FR_FR3_MON_202 0-08-03_NP	FR_FR4_MON_202 0-08-03_NP
Grouping	Analyte						
WATER							
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)	0.091					
	Benzo(k)fluoranthene (ug/L)	<0.030 ^{DLCl}					
	Chrysene (ug/L)	1.31					
	Dibenz(a,h)anthracene (ug/L)	<0.060 ^{DLQ}					
	Fluoranthene (ug/L)	0.445					
	Fluorene (ug/L)	3.86					
	Indeno(1,2,3-c,d)pyrene (ug/L)	0.034					
	1-Methylnaphthalene (ug/L)	19.5 ^{DLHC}					
	2-Methylnaphthalene (ug/L)	34.2 ^{DLHC}					
	Naphthalene (ug/L)	8.80					
	Phenanthrene (ug/L)	13.3 ^{DLHC}					
	Pyrene (ug/L)	0.997					
	Quinoline (ug/L)	<0.050					
	Surrogate: Acenaphthene d10 (%)	125.2					
	Surrogate: Chrysene d12 (%)	67.3					
	Surrogate: Phenanthrene d10 (%)	101.5					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2492344-6	L2492344-7			
		Description	WS	WS			
		Sampled Date	20-AUG-20	20-AUG-20			
		Sampled Time	14:00	13:32			
		Client ID	FR_POTABLE_MO N_2020-08-03_N	FR_SHANDLEY_W S_2020-08-20_NP			
Grouping	Analyte						
WATER							
Polycyclic Aromatic Hydrocarbons	Benzo(g,h,i)perylene (ug/L)			<0.010			
	Benzo(k)fluoranthene (ug/L)			<0.010			
	Chrysene (ug/L)			<0.010			
	Dibenz(a,h)anthracene (ug/L)			<0.0050			
	Fluoranthene (ug/L)			<0.010			
	Fluorene (ug/L)			<0.010			
	Indeno(1,2,3-c,d)pyrene (ug/L)			<0.010			
	1-Methylnaphthalene (ug/L)			<0.050			
	2-Methylnaphthalene (ug/L)			0.047			
	Naphthalene (ug/L)			<0.020			
	Phenanthrene (ug/L)			0.045			
	Pyrene (ug/L)			<0.010			
	Quinoline (ug/L)			<0.050			
	Surrogate: Acenaphthene d10 (%)			91.7			
	Surrogate: Chrysene d12 (%)			104.4			
Surrogate: Phenanthrene d10 (%)			105.9				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Molybdenum (Mo)-Dissolved	B	L2492344-7
Method Blank	Chromium (Cr)-Total	MB-LOR	L2492344-2, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2492344-2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Total	MS-B	L2492344-2, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Total	MS-B	L2492344-2, -4, -5, -6, -7
Matrix Spike	Copper (Cu)-Total	MS-B	L2492344-2, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2492344-2, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Total	MS-B	L2492344-2, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental

Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Reference Information

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PAH-BCCSR-CL	Water	PAHs - BC CSR Regs	EPA 3511/8270D
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Container: 250 ML AMBER-EPH/PAH			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMoe EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200820-0700

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2492344

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5200538							
WG3391329-2	LCS							
Acidity (as CaCO3)			103.6		%		85-115	25-AUG-20
WG3391329-5	LCS							
Acidity (as CaCO3)			98.9		%		85-115	25-AUG-20
WG3391329-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	25-AUG-20
WG3391329-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	25-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5198982							
WG3389872-14	LCS							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	24-AUG-20
WG3389872-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2	LCS							
Beryllium (Be)-Dissolved			95.8		%		80-120	24-AUG-20
WG3389976-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-AUG-20
Batch	R5200050							
WG3390354-2	LCS							
Beryllium (Be)-Dissolved			98.3		%		80-120	25-AUG-20
WG3390354-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5199848							
WG3389749-3	DUP	L2492344-5						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	24-AUG-20
WG3389749-2	LCS							
Beryllium (Be)-Total			97.2		%		80-120	24-AUG-20
WG3389749-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	24-AUG-20
WG3389749-4	MS	L2492344-6						
Beryllium (Be)-Total			107.7		%		70-130	24-AUG-20
BIC-CL								
	Water							

Quality Control Report

Workorder: L2492344

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL	Water							
Batch	R5198982							
WG3389872-13 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	24-AUG-20
BR-L-IC-N-CL	Water							
Batch	R5197601							
WG3389325-10 LCS								
Bromide (Br)			106.8		%		85-115	21-AUG-20
WG3389325-14 LCS								
Bromide (Br)			101.9		%		85-115	21-AUG-20
WG3389325-13 MB								
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
WG3389325-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5201720							
WG3391674-2 LCS								
Dissolved Organic Carbon			102.0		%		80-120	25-AUG-20
WG3391674-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
Batch	R5202491							
WG3391690-2 LCS								
Dissolved Organic Carbon			103.6		%		80-120	25-AUG-20
WG3391690-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
Batch	R5202582							
WG3391719-2 LCS								
Dissolved Organic Carbon			111.3		%		80-120	25-AUG-20
WG3391719-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5201720							
WG3391674-2 LCS								
Total Organic Carbon			102.0		%		80-120	25-AUG-20
WG3391674-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-20



Quality Control Report

Workorder: L2492344

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5197601							
WG3389325-13	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
WG3389325-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
HG-D-CVAA-VA								
Water								
Batch	R5199559							
WG3390759-2	LCS							
Mercury (Hg)-Dissolved			96.3		%		80-120	25-AUG-20
WG3390759-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-20
HG-T-U-CVAF-VA								
Water								
Batch	R5200029							
WG3390953-5	DUP	L2492344-4						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	25-AUG-20
WG3390953-2	LCS							
Mercury (Hg)-Total			90.8		%		80-120	25-AUG-20
WG3390953-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	25-AUG-20
WG3390953-6	MS	L2492344-5						
Mercury (Hg)-Total			74.1		%		70-130	25-AUG-20
MET-D-CCMS-CL								
Water								
Batch	R5202888							
WG3392666-2	LCS							
Calcium (Ca)-Dissolved			99.8		%		80-120	27-AUG-20
Magnesium (Mg)-Dissolved			102.4		%		80-120	27-AUG-20
Potassium (K)-Dissolved			98.8		%		80-120	27-AUG-20
Sodium (Na)-Dissolved			95.4		%		80-120	27-AUG-20
WG3392666-1	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-AUG-20
MET-D-CCMS-VA								
Water								
Batch	R5199449							
WG3389976-2	LCS							
Aluminum (Al)-Dissolved			98.1		%		80-120	24-AUG-20
Antimony (Sb)-Dissolved			96.3		%		80-120	24-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2	LCS							
Arsenic (As)-Dissolved			97.1		%		80-120	24-AUG-20
Barium (Ba)-Dissolved			98.0		%		80-120	24-AUG-20
Bismuth (Bi)-Dissolved			101.0		%		80-120	24-AUG-20
Boron (B)-Dissolved			92.7		%		80-120	24-AUG-20
Cadmium (Cd)-Dissolved			97.2		%		80-120	24-AUG-20
Calcium (Ca)-Dissolved			96.7		%		80-120	24-AUG-20
Chromium (Cr)-Dissolved			96.8		%		80-120	24-AUG-20
Cobalt (Co)-Dissolved			96.4		%		80-120	24-AUG-20
Copper (Cu)-Dissolved			95.5		%		80-120	24-AUG-20
Iron (Fe)-Dissolved			104.5		%		80-120	24-AUG-20
Lead (Pb)-Dissolved			98.6		%		80-120	24-AUG-20
Lithium (Li)-Dissolved			97.1		%		80-120	24-AUG-20
Magnesium (Mg)-Dissolved			95.4		%		80-120	24-AUG-20
Manganese (Mn)-Dissolved			99.0		%		80-120	24-AUG-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	24-AUG-20
Nickel (Ni)-Dissolved			96.7		%		80-120	24-AUG-20
Potassium (K)-Dissolved			104.1		%		80-120	24-AUG-20
Selenium (Se)-Dissolved			99.8		%		80-120	24-AUG-20
Silicon (Si)-Dissolved			112.7		%		60-140	24-AUG-20
Silver (Ag)-Dissolved			100.1		%		80-120	24-AUG-20
Sodium (Na)-Dissolved			100.3		%		80-120	24-AUG-20
Strontium (Sr)-Dissolved			100.7		%		80-120	24-AUG-20
Thallium (Tl)-Dissolved			100.4		%		80-120	24-AUG-20
Tin (Sn)-Dissolved			97.0		%		80-120	24-AUG-20
Titanium (Ti)-Dissolved			97.8		%		80-120	24-AUG-20
Uranium (U)-Dissolved			102.8		%		80-120	24-AUG-20
Vanadium (V)-Dissolved			97.5		%		80-120	24-AUG-20
Zinc (Zn)-Dissolved			97.1		%		80-120	24-AUG-20
WG3389976-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Batch	R5200050							
WG3390354-2	LCS							
Aluminum (Al)-Dissolved			101.4		%		80-120	25-AUG-20
Antimony (Sb)-Dissolved			103.8		%		80-120	25-AUG-20
Arsenic (As)-Dissolved			97.2		%		80-120	25-AUG-20
Barium (Ba)-Dissolved			103.3		%		80-120	25-AUG-20
Bismuth (Bi)-Dissolved			100.5		%		80-120	25-AUG-20
Boron (B)-Dissolved			99.7		%		80-120	25-AUG-20
Cadmium (Cd)-Dissolved			99.8		%		80-120	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5200050							
WG3390354-2	LCS							
Calcium (Ca)-Dissolved			102.7		%		80-120	25-AUG-20
Chromium (Cr)-Dissolved			100.7		%		80-120	25-AUG-20
Cobalt (Co)-Dissolved			99.4		%		80-120	25-AUG-20
Copper (Cu)-Dissolved			99.0		%		80-120	25-AUG-20
Iron (Fe)-Dissolved			99.4		%		80-120	25-AUG-20
Lead (Pb)-Dissolved			100.7		%		80-120	25-AUG-20
Lithium (Li)-Dissolved			97.4		%		80-120	25-AUG-20
Magnesium (Mg)-Dissolved			94.7		%		80-120	25-AUG-20
Manganese (Mn)-Dissolved			101.1		%		80-120	25-AUG-20
Molybdenum (Mo)-Dissolved			100.1		%		80-120	25-AUG-20
Nickel (Ni)-Dissolved			101.1		%		80-120	25-AUG-20
Potassium (K)-Dissolved			101.8		%		80-120	25-AUG-20
Selenium (Se)-Dissolved			100.7		%		80-120	25-AUG-20
Silicon (Si)-Dissolved			103.4		%		60-140	25-AUG-20
Silver (Ag)-Dissolved			103.1		%		80-120	25-AUG-20
Sodium (Na)-Dissolved			106.2		%		80-120	25-AUG-20
Strontium (Sr)-Dissolved			104.2		%		80-120	25-AUG-20
Thallium (Tl)-Dissolved			103.1		%		80-120	25-AUG-20
Tin (Sn)-Dissolved			100.9		%		80-120	25-AUG-20
Titanium (Ti)-Dissolved			99.2		%		80-120	25-AUG-20
Uranium (U)-Dissolved			99.9		%		80-120	25-AUG-20
Vanadium (V)-Dissolved			100.8		%		80-120	25-AUG-20
Zinc (Zn)-Dissolved			99.8		%		80-120	25-AUG-20
WG3390354-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5200050							
WG3390354-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Molybdenum (Mo)-Dissolved			0.000052	B	mg/L		0.00005	25-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5199848							
WG3389749-3	DUP	L2492344-5						
Aluminum (Al)-Total		0.0086	0.0139	J	mg/L	0.0053	0.006	24-AUG-20
Antimony (Sb)-Total		0.00028	0.00027		mg/L	3.5	20	24-AUG-20
Arsenic (As)-Total		0.00010	0.00012		mg/L	12	20	24-AUG-20
Barium (Ba)-Total		0.0722	0.0715		mg/L	1.0	20	24-AUG-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-AUG-20
Boron (B)-Total		0.012	0.012		mg/L	4.4	20	24-AUG-20
Cadmium (Cd)-Total		0.000149	0.000147		mg/L	1.7	20	24-AUG-20
Calcium (Ca)-Total		138	135		mg/L	2.7	20	24-AUG-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-AUG-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-AUG-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5199848							
WG3389749-3	DUP	L2492344-5						
Iron (Fe)-Total		0.023	0.025		mg/L	11	20	24-AUG-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-AUG-20
Lithium (Li)-Total		0.0398	0.0392		mg/L	1.5	20	24-AUG-20
Magnesium (Mg)-Total		66.6	65.5		mg/L	1.7	20	24-AUG-20
Manganese (Mn)-Total		0.00751	0.00824		mg/L	9.3	20	24-AUG-20
Molybdenum (Mo)-Total		0.00294	0.00285		mg/L	3.2	20	24-AUG-20
Nickel (Ni)-Total		0.00843	0.00845		mg/L	0.2	20	24-AUG-20
Potassium (K)-Total		2.33	2.33		mg/L	0.3	20	24-AUG-20
Selenium (Se)-Total		0.0929	0.0935		mg/L	0.6	20	24-AUG-20
Silicon (Si)-Total		2.13	2.10		mg/L	1.6	20	24-AUG-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-AUG-20
Sodium (Na)-Total		1.67	1.68		mg/L	0.5	20	24-AUG-20
Strontium (Sr)-Total		0.158	0.153		mg/L	3.3	20	24-AUG-20
Thallium (Tl)-Total		0.000011	0.000012		mg/L	7.1	20	24-AUG-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-AUG-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-AUG-20
Uranium (U)-Total		0.00384	0.00367		mg/L	4.8	20	24-AUG-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-AUG-20
Zinc (Zn)-Total		0.0073	0.0074		mg/L	0.2	20	24-AUG-20
WG3389749-2	LCS							
Aluminum (Al)-Total			100.3		%		80-120	24-AUG-20
Antimony (Sb)-Total			106.5		%		80-120	24-AUG-20
Arsenic (As)-Total			97.5		%		80-120	24-AUG-20
Barium (Ba)-Total			98.0		%		80-120	24-AUG-20
Bismuth (Bi)-Total			99.1		%		80-120	24-AUG-20
Boron (B)-Total			103.3		%		80-120	24-AUG-20
Cadmium (Cd)-Total			91.5		%		80-120	24-AUG-20
Calcium (Ca)-Total			106.0		%		80-120	24-AUG-20
Chromium (Cr)-Total			101.0		%		80-120	24-AUG-20
Cobalt (Co)-Total			94.9		%		80-120	24-AUG-20
Copper (Cu)-Total			99.4		%		80-120	24-AUG-20
Iron (Fe)-Total			96.0		%		80-120	24-AUG-20
Lead (Pb)-Total			107.4		%		80-120	24-AUG-20
Lithium (Li)-Total			104.1		%		80-120	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5199848							
WG3389749-2	LCS							
Magnesium (Mg)-Total			102.9		%		80-120	24-AUG-20
Manganese (Mn)-Total			102.2		%		80-120	24-AUG-20
Molybdenum (Mo)-Total			97.0		%		80-120	24-AUG-20
Nickel (Ni)-Total			98.7		%		80-120	24-AUG-20
Potassium (K)-Total			106.9		%		80-120	24-AUG-20
Selenium (Se)-Total			95.4		%		80-120	24-AUG-20
Silicon (Si)-Total			104.6		%		80-120	24-AUG-20
Silver (Ag)-Total			105.3		%		80-120	24-AUG-20
Sodium (Na)-Total			103.2		%		80-120	24-AUG-20
Strontium (Sr)-Total			103.4		%		80-120	24-AUG-20
Thallium (Tl)-Total			107.3		%		80-120	24-AUG-20
Tin (Sn)-Total			91.7		%		80-120	24-AUG-20
Titanium (Ti)-Total			101.1		%		80-120	24-AUG-20
Uranium (U)-Total			97.6		%		80-120	24-AUG-20
Vanadium (V)-Total			101.8		%		80-120	24-AUG-20
Zinc (Zn)-Total			98.3		%		80-120	24-AUG-20
WG3389749-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	24-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Total			0.00077	MB-LOR	mg/L		0.0001	24-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5199848							
WG3389749-1	MB							
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	24-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	24-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	24-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-AUG-20
WG3389749-4	MS	L2492344-6						
Aluminum (Al)-Total			100.4		%		70-130	24-AUG-20
Antimony (Sb)-Total			108.9		%		70-130	24-AUG-20
Arsenic (As)-Total			100.7		%		70-130	24-AUG-20
Barium (Ba)-Total			N/A	MS-B	%		-	24-AUG-20
Bismuth (Bi)-Total			98.8		%		70-130	24-AUG-20
Boron (B)-Total			95.1		%		70-130	24-AUG-20
Cadmium (Cd)-Total			98.2		%		70-130	24-AUG-20
Calcium (Ca)-Total			N/A	MS-B	%		-	24-AUG-20
Chromium (Cr)-Total			99.9		%		70-130	24-AUG-20
Cobalt (Co)-Total			92.1		%		70-130	24-AUG-20
Copper (Cu)-Total			N/A	MS-B	%		-	24-AUG-20
Iron (Fe)-Total			99.8		%		70-130	24-AUG-20
Lead (Pb)-Total			104.6		%		70-130	24-AUG-20
Lithium (Li)-Total			95.1		%		70-130	24-AUG-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	24-AUG-20
Manganese (Mn)-Total			101.2		%		70-130	24-AUG-20
Molybdenum (Mo)-Total			98.2		%		70-130	24-AUG-20
Nickel (Ni)-Total			95.8		%		70-130	24-AUG-20
Potassium (K)-Total			107.3		%		70-130	24-AUG-20
Selenium (Se)-Total			97.8		%		70-130	24-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5199848							
WG3389749-4	MS	L2492344-6						
Silicon (Si)-Total			99.0		%		70-130	24-AUG-20
Silver (Ag)-Total			103.8		%		70-130	24-AUG-20
Sodium (Na)-Total			101.3		%		70-130	24-AUG-20
Strontium (Sr)-Total			N/A	MS-B	%		-	24-AUG-20
Thallium (Tl)-Total			99.3		%		70-130	24-AUG-20
Tin (Sn)-Total			99.4		%		70-130	24-AUG-20
Titanium (Ti)-Total			101.3		%		70-130	24-AUG-20
Uranium (U)-Total			98.4		%		70-130	24-AUG-20
Vanadium (V)-Total			102.3		%		70-130	24-AUG-20
Zinc (Zn)-Total			95.6		%		70-130	24-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5196697							
WG3388669-26	LCS							
Ammonia as N			99.6		%		85-115	21-AUG-20
WG3388669-30	LCS							
Ammonia as N			97.2		%		85-115	21-AUG-20
WG3388669-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
WG3388669-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-10	LCS							
Nitrite (as N)			98.6		%		90-110	21-AUG-20
WG3389325-14	LCS							
Nitrite (as N)			96.2		%		90-110	21-AUG-20
WG3389325-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
WG3389325-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
NO3-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-10	LCS							
Nitrate (as N)			103.0		%		90-110	21-AUG-20
WG3389325-14	LCS							
Nitrate (as N)			102.1		%		90-110	21-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Water								
Batch R5197601								
WG3389325-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
WG3389325-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
OH-CL								
Water								
Batch R5198982								
WG3389872-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	24-AUG-20
ORP-CL								
Water								
Batch R5196696								
WG3388952-1 CRM								
ORP		CL-ORP	222		mV		210-230	21-AUG-20
WG3388952-3 CRM								
ORP		CL-ORP	221		mV		210-230	21-AUG-20
P-T-L-COL-CL								
Water								
Batch R5199828								
WG3390762-6 LCS								
Phosphorus (P)-Total			106.2		%		80-120	25-AUG-20
WG3390762-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-AUG-20
PAH-BCCSR-CL								
Water								
Batch R5200451								
WG3391362-2 LCS								
Acenaphthene			92.8		ug/L		60-130	25-AUG-20
Acenaphthylene			92.3		ug/L		60-130	25-AUG-20
Acridine			87.1		ug/L		60-130	25-AUG-20
Anthracene			92.3		ug/L		60-130	25-AUG-20
Benz(a)anthracene			93.3		ug/L		60-130	25-AUG-20
Benzo(a)pyrene			89.4		ug/L		60-130	25-AUG-20
Benzo(b&j)fluoranthene			83.3		ug/L		60-130	25-AUG-20
Benzo(g,h,i)perylene			91.6		ug/L		60-130	25-AUG-20
Benzo(k)fluoranthene			85.0		ug/L		60-130	25-AUG-20
Chrysene			86.5		ug/L		60-130	25-AUG-20
Dibenz(a,h)anthracene			90.3		ug/L		60-130	25-AUG-20
Fluoranthene			92.5		ug/L		60-130	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5200451							
WG3391362-2	LCS							
Fluorene			90.5		ug/L		60-130	25-AUG-20
Indeno(1,2,3-c,d)pyrene			89.5		ug/L		60-130	25-AUG-20
2-Methylnaphthalene			83.4		ug/L		60-130	25-AUG-20
Naphthalene			92.3		ug/L		50-130	25-AUG-20
Phenanthrene			95.8		ug/L		60-130	25-AUG-20
Pyrene			92.9		ug/L		60-130	25-AUG-20
Quinoline			93.4		ug/L		60-130	25-AUG-20
1-Methylnaphthalene			87.8		%		60-130	25-AUG-20
WG3391362-4	LCS							
Acenaphthene			93.4		ug/L		60-130	27-AUG-20
Acenaphthylene			92.1		ug/L		60-130	27-AUG-20
Acridine			86.8		ug/L		60-130	27-AUG-20
Anthracene			97.8		ug/L		60-130	27-AUG-20
Benz(a)anthracene			98.1		ug/L		60-130	27-AUG-20
Benzo(a)pyrene			97.2		ug/L		60-130	27-AUG-20
Benzo(b&j)fluoranthene			91.3		ug/L		60-130	27-AUG-20
Benzo(g,h,i)perylene			96.8		ug/L		60-130	27-AUG-20
Benzo(k)fluoranthene			96.5		ug/L		60-130	27-AUG-20
Chrysene			93.5		ug/L		60-130	27-AUG-20
Dibenz(a,h)anthracene			96.6		ug/L		60-130	27-AUG-20
Fluoranthene			99.4		ug/L		60-130	27-AUG-20
Fluorene			95.4		ug/L		60-130	27-AUG-20
Indeno(1,2,3-c,d)pyrene			99.8		ug/L		60-130	27-AUG-20
2-Methylnaphthalene			90.7		ug/L		60-130	27-AUG-20
Naphthalene			97.4		ug/L		50-130	27-AUG-20
Phenanthrene			100		ug/L		60-130	27-AUG-20
Pyrene			100		ug/L		60-130	27-AUG-20
Quinoline			106		ug/L		60-130	27-AUG-20
1-Methylnaphthalene			95.9		%		60-130	27-AUG-20
WG3391362-1	MB							
Acenaphthene			<0.010		ug/L		0.01	25-AUG-20
Acenaphthylene			<0.010		ug/L		0.01	25-AUG-20
Acridine			<0.010		ug/L		0.01	25-AUG-20
Anthracene			<0.010		ug/L		0.01	25-AUG-20
Benz(a)anthracene			<0.010		ug/L		0.01	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL		Water						
Batch	R5200451							
WG3391362-1 MB								
Benzo(a)pyrene			<0.0050		ug/L		0.005	25-AUG-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	25-AUG-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	25-AUG-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	25-AUG-20
Chrysene			<0.010		ug/L		0.01	25-AUG-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	25-AUG-20
Fluoranthene			<0.010		ug/L		0.01	25-AUG-20
Fluorene			<0.010		ug/L		0.01	25-AUG-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	25-AUG-20
2-Methylnaphthalene			<0.020		ug/L		0.02	25-AUG-20
Naphthalene			<0.020		ug/L		0.02	25-AUG-20
Phenanthrene			<0.020		ug/L		0.02	25-AUG-20
Pyrene			<0.010		ug/L		0.01	25-AUG-20
Quinoline			<0.050		ug/L		0.05	25-AUG-20
1-Methylnaphthalene			<0.050		ug/L		0.05	25-AUG-20
Surrogate: Acenaphthene d10			91.2		%		60-130	25-AUG-20
Surrogate: Chrysene d12			99.4		%		60-130	25-AUG-20
Surrogate: Phenanthrene d10			99.7		%		60-130	25-AUG-20
WG3391362-3 MB								
Acenaphthene			<0.010		ug/L		0.01	27-AUG-20
Acenaphthylene			<0.010		ug/L		0.01	27-AUG-20
Acridine			<0.010		ug/L		0.01	27-AUG-20
Anthracene			<0.010		ug/L		0.01	27-AUG-20
Benz(a)anthracene			<0.010		ug/L		0.01	27-AUG-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	27-AUG-20
Benzo(b&j)fluoranthene			<0.010		ug/L		0.01	27-AUG-20
Benzo(g,h,i)perylene			<0.010		ug/L		0.01	27-AUG-20
Benzo(k)fluoranthene			<0.010		ug/L		0.01	27-AUG-20
Chrysene			<0.010		ug/L		0.01	27-AUG-20
Dibenz(a,h)anthracene			<0.0050		ug/L		0.005	27-AUG-20
Fluoranthene			<0.010		ug/L		0.01	27-AUG-20
Fluorene			<0.010		ug/L		0.01	27-AUG-20
Indeno(1,2,3-c,d)pyrene			<0.010		ug/L		0.01	27-AUG-20
2-Methylnaphthalene			<0.020		ug/L		0.02	27-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-BCCSR-CL								
	Water							
Batch	R5200451							
WG3391362-3	MB							
Naphthalene			<0.020		ug/L		0.02	27-AUG-20
Phenanthrene			<0.020		ug/L		0.02	27-AUG-20
Pyrene			<0.010		ug/L		0.01	27-AUG-20
Quinoline			<0.050		ug/L		0.05	27-AUG-20
1-Methylnaphthalene			<0.050		ug/L		0.05	27-AUG-20
Surrogate: Acenaphthene d10			93.3		%		60-130	27-AUG-20
Surrogate: Chrysene d12			108.3		%		60-130	27-AUG-20
Surrogate: Phenanthrene d10			103.0		%		60-130	27-AUG-20
PH-CL								
	Water							
Batch	R5198982							
WG3389872-14	LCS							
pH			6.98		pH		6.9-7.1	24-AUG-20
PO4-DO-L-COL-CL								
	Water							
Batch	R5196636							
WG3388785-7	DUP	L2492344-4						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3388785-6	LCS							
Orthophosphate-Dissolved (as P)			102.8		%		80-120	21-AUG-20
WG3388785-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-AUG-20
SO4-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-10	LCS							
Sulfate (SO4)			101.1		%		90-110	21-AUG-20
WG3389325-14	LCS							
Sulfate (SO4)			100.2		%		90-110	21-AUG-20
WG3389325-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
WG3389325-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
SOLIDS-TDS-CL								
	Water							
Batch	R5202201							
WG3390367-15	DUP	L2492344-1						
Total Dissolved Solids		1000	995		mg/L	1.0	20	25-AUG-20
WG3390367-14	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5202201							
WG3390367-14	LCS							
Total Dissolved Solids			100.6		%		85-115	25-AUG-20
WG3390367-13	MB							
Total Dissolved Solids			<10		mg/L		10	25-AUG-20
TEH-BC-VA-CL		Water						
Batch	R5201036							
WG3391593-2	LCS							
EPH10-19			91.5		%		70-130	25-AUG-20
EPH19-32			88.2		%		70-130	25-AUG-20
WG3391593-4	LCS							
EPH10-19			91.6		%		70-130	27-AUG-20
EPH19-32			120.5		%		70-130	27-AUG-20
WG3391593-6	LCS							
EPH10-19			102.3		%		70-130	28-AUG-20
EPH19-32			119.9		%		70-130	28-AUG-20
WG3391593-1	MB							
EPH10-19			<0.25		mg/L		0.25	25-AUG-20
EPH19-32			<0.25		mg/L		0.25	25-AUG-20
Surrogate: 2-Bromobenzotrifluoride			87.3		%		60-140	25-AUG-20
WG3391593-3	MB							
EPH10-19			<0.25		mg/L		0.25	27-AUG-20
EPH19-32			<0.25		mg/L		0.25	27-AUG-20
Surrogate: 2-Bromobenzotrifluoride			78.8		%		60-140	27-AUG-20
WG3391593-5	MB							
EPH10-19			<0.25		mg/L		0.25	28-AUG-20
EPH19-32			<0.25		mg/L		0.25	28-AUG-20
Surrogate: 2-Bromobenzotrifluoride			67.8		%		60-140	28-AUG-20
TEH-WATER-VA-CL		Water						
Batch	R5201036							
WG3391593-2	LCS							
TEH (C10-C30)			90.5		%		70-130	25-AUG-20
WG3391593-4	LCS							
TEH (C10-C30)			99.3		%		70-130	27-AUG-20
WG3391593-6	LCS							
TEH (C10-C30)			107.3		%		70-130	28-AUG-20
WG3391593-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL		Water						
Batch	R5201036							
WG3391593-1	MB							
Surrogate: 2-Bromobenzotrifluoride			87.3		%		60-140	25-AUG-20
WG3391593-3	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	27-AUG-20
Surrogate: 2-Bromobenzotrifluoride			78.8		%		60-140	27-AUG-20
WG3391593-5	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	28-AUG-20
Surrogate: 2-Bromobenzotrifluoride			67.8		%		60-140	28-AUG-20
TKN-L-F-CL		Water						
Batch	R5197562							
WG3389289-11	LCS							
Total Kjeldahl Nitrogen			118.6		%		75-125	23-AUG-20
WG3389289-13	LCS							
Total Kjeldahl Nitrogen			107.9		%		75-125	23-AUG-20
WG3389289-2	LCS							
Total Kjeldahl Nitrogen			112.8		%		75-125	23-AUG-20
WG3389289-5	LCS							
Total Kjeldahl Nitrogen			110.9		%		75-125	23-AUG-20
WG3389289-7	LCS							
Total Kjeldahl Nitrogen			112.8		%		75-125	23-AUG-20
WG3389289-9	LCS							
Total Kjeldahl Nitrogen			110.0		%		75-125	23-AUG-20
WG3389289-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
TSS-L-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5202097							
WG3390199-6	LCS							
Total Suspended Solids			97.7		%		85-115	25-AUG-20
WG3390199-5	MB							
Total Suspended Solids			<1.0		mg/L		1	25-AUG-20
TURBIDITY-CL	Water							
Batch	R5196698							
WG3388930-9	DUP	L2492344-7						
Turbidity		15.4	16.0		NTU	3.8	15	21-AUG-20
WG3388930-5	LCS							
Turbidity			95.9		%		85-115	21-AUG-20
WG3388930-8	LCS							
Turbidity			96.4		%		85-115	21-AUG-20
WG3388930-4	MB							
Turbidity			<0.10		NTU		0.1	21-AUG-20
WG3388930-7	MB							
Turbidity			<0.10		NTU		0.1	21-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2492344

Report Date: 11-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	20-AUG-20 13:00	21-AUG-20 20:00	0.25	31	hours	EHTR-FM
	2	20-AUG-20 08:50	21-AUG-20 20:00	0.25	35	hours	EHTR-FM
	3	20-AUG-20 12:15	21-AUG-20 20:00	0.25	32	hours	EHTR-FM
	4	20-AUG-20 10:15	21-AUG-20 20:00	0.25	34	hours	EHTR-FM
	5	20-AUG-20 09:20	21-AUG-20 20:00	0.25	35	hours	EHTR-FM
	6	20-AUG-20 14:00	21-AUG-20 20:00	0.25	30	hours	EHTR-FM
	7	20-AUG-20 13:32	21-AUG-20 20:00	0.25	30	hours	EHTR-FM
pH							
	1	20-AUG-20 13:00	24-AUG-20 12:00	0.25	95	hours	EHTR-FM
	2	20-AUG-20 08:50	24-AUG-20 12:00	0.25	99	hours	EHTR-FM
	3	20-AUG-20 12:15	24-AUG-20 12:00	0.25	96	hours	EHTR-FM
	4	20-AUG-20 10:15	24-AUG-20 12:00	0.25	98	hours	EHTR-FM
	5	20-AUG-20 09:20	24-AUG-20 12:00	0.25	99	hours	EHTR-FM
	6	20-AUG-20 14:00	24-AUG-20 12:00	0.25	94	hours	EHTR-FM
	7	20-AUG-20 13:32	24-AUG-20 12:00	0.25	95	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

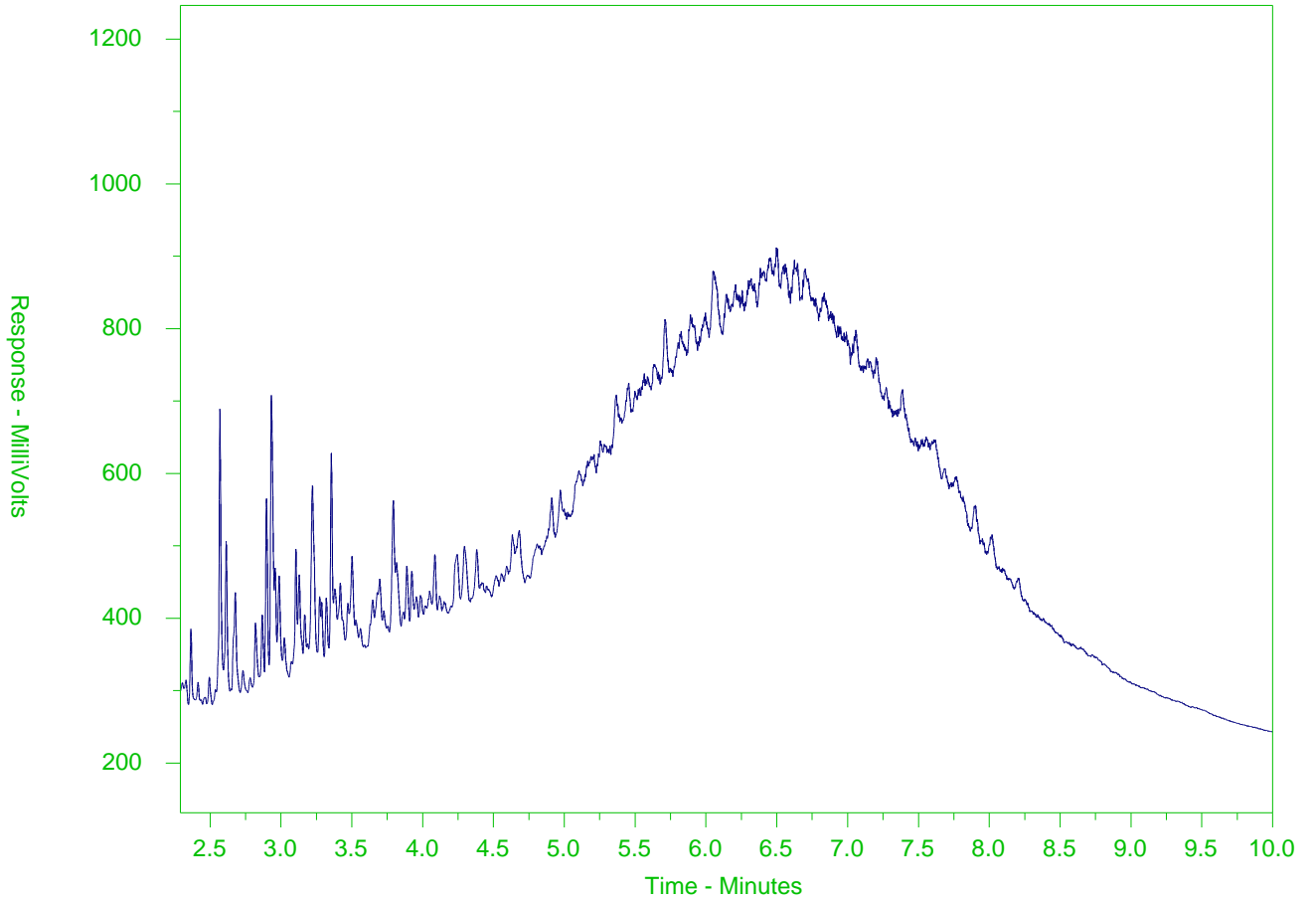
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2492344 were received on 21-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Sample ID: L2492344-1
 Client Sample ID: FR_CIL_MON_2020-08-03_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

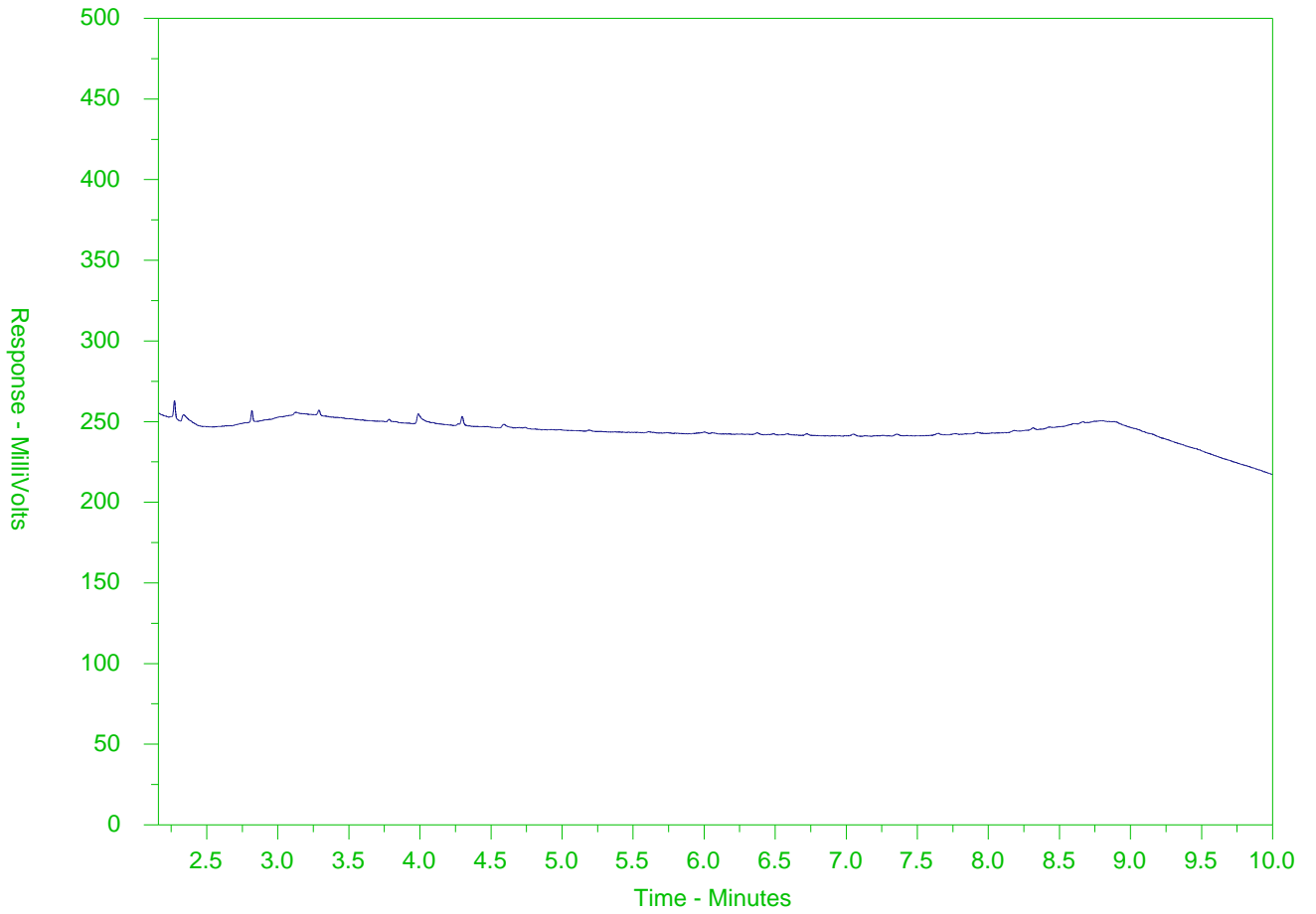
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Sample ID: L2492344-7
 Client Sample ID: FR_SHANDLEY_WS_2020-08-20_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →	← Diesel/ Jet Fuels →		← Motor Oils/ Lube Oils/ Grease →

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Teck

COC ID: 20200820-0700

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X	
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X	
Address				Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X	
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	kaileigh.mccallum@teck.com	X	X	X	
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F, Field, L: Lab, FL: Field & Lab, N: None



L2492344-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED																	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS Package-Methylmercury	BOD / Colour	TSS / TURBIDITY	None						
FR_CIL_MON_2020-08-03_N	FR_CIL	WS	NO	20-Aug-20	13:00	G	4		1																
FR_NLIH_MON_2020-08-03_N	FR_NLIH	WS	NO	20-Aug-20	8:50	G	8	1	1	1	1	1	1	1											1
FR_09-04-A_QTR_2020-07-06_N	FR_09-04-A	WS	NO	20-Aug-20	12:15	G	6	1	1	1		1		1											1
FR_FR3_MON_2020-08-03_NP	FR_FR3	WS	NO	20-Aug-20	10:15	G	8	1	1	1	1	1	1												1
FR_FR4_MON_2020-08-03_NP	FR_FR4	WS	NO	20-Aug-20	9:20	G	8	1	1	1	1	1	1												1
FR_POTABLE_MON_2020-08-03_N	FR_POTABLE	WS	NO	20-Aug-20	14:00	G	8	1	1	1	1	1	1												1
FR_SHANDLEY_WS_2020-08-20_NP	FR_SHANDLEY	WS	NO	20-Aug-20	13:32	G	9	1	1	1	1	1	1							2					4

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

Kaileigh McCallum

August 20, 2020

[Signature]

8/21 895

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Kaileigh McCallum

Mobile #

250-464-9462

Sampler's Signature

[Signature]

Date/Time

August 20, 2020

10



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 27-AUG-20
Report Date: 11-FEB-21 16:09 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2495154
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2495154-1 WG 26-AUG-20 10:56 FR_KB-3A_2020-08-26	L2495154-2 WG 26-AUG-20 12:15 FR_KB-3B_2020-08-26		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1700	1360		
	Hardness (as CaCO3) (mg/L)	996	816		
	pH (pH)	7.80	7.78		
	ORP (mV)	404	467		
	Total Suspended Solids (mg/L)	3.7	2.9		
	Total Dissolved Solids (mg/L)	1550 ^{DLHC}	1180 ^{DLHC}		
	Turbidity (NTU)	0.76	1.71		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	9.0	8.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	309	302		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	309	302		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	376 ^{DLHC}	368 ^{DLHC}		
	Bromide (Br) (mg/L)	<0.25	<0.25		
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0 ^{DLHC}		
	Chloride (Cl) (mg/L)	<2.5 ^{DLHC}	<2.5 ^{DLHC}		
	Fluoride (F) (mg/L)	<0.10 ^{DLHC}	0.12 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	88.1	92.3		
	Nitrate (as N) (mg/L)	67.2 ^{DLHC}	49.3 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	<0.050 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	0.0015		
	Phosphorus (P)-Total (mg/L)	0.0063 ^{DLHC}	<0.0020 ^{DLHC}		
	Sulfate (SO4) (mg/L)	569	398		
	Anion Sum (meq/L)	22.8	17.9		
	Cation Sum (meq/L)	20.1	16.5		
	Cation - Anion Balance (%)	-6.4	-4.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	0.67	<0.50		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	LAB		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0071		
	Antimony (Sb)-Dissolved (mg/L)	0.00014	0.00029		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2495154-1 WG 26-AUG-20 10:56 FR_KB-3A_2020-08-26	L2495154-2 WG 26-AUG-20 12:15 FR_KB-3B_2020-08-26		
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00023		
	Barium (Ba)-Dissolved (mg/L)	0.0562	0.0585		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	0.000143		
	Boron (B)-Dissolved (mg/L)	0.014	0.019		
	Cadmium (Cd)-Dissolved (ug/L)	0.0257	0.0394		
	Calcium (Ca)-Dissolved (mg/L)	239	186		
	Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00015		
	Cobalt (Co)-Dissolved (ug/L)	1.02	0.12		
	Copper (Cu)-Dissolved (mg/L)	0.00079	0.00033		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000086		
	Lithium (Li)-Dissolved (mg/L)	0.0380	0.0542		
	Magnesium (Mg)-Dissolved (mg/L)	96.9	85.2		
	Manganese (Mn)-Dissolved (mg/L)	0.00052	0.00059		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000349	0.000511		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	1.72	2.41		
	Selenium (Se)-Dissolved (ug/L)	209	170		
	Silicon (Si)-Dissolved (mg/L)	2.74	2.21		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000015		
	Sodium (Na)-Dissolved (mg/L)	3.27	2.83		
	Strontium (Sr)-Dissolved (mg/L)	0.316	0.206		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000163		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00565	0.00594		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0024	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2495154-2	FR_KB-3B_2020-08-26	SFPL	Sample was Filtered and Preserved at the laboratory - Dissolved Mercury was taken from routine and filtered and preserved in the lab.
		SPL	Sample was Preserved at the laboratory - Total Mercury was taken from routine and preserved in the lab.

QC Samples with Qualifiers & Comments:

QC Type	Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike		Calcium (Ca)-Dissolved	MS-B	L2495154-1, -2
Matrix Spike		Magnesium (Mg)-Dissolved	MS-B	L2495154-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2495154

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5207076							
WG3395419-5	LCS							
Acidity (as CaCO3)			101.4		%		85-115	31-AUG-20
WG3395419-4	MB							
Acidity (as CaCO3)			1.7		mg/L		2	31-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5204136							
WG3394208-11	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	28-AUG-20
WG3394208-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5205599							
WG3395015-2	LCS	TMRM						
Beryllium (Be)-Dissolved			101.2		%		80-120	31-AUG-20
WG3395015-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-AUG-20
BIC-CL								
	Water							
Batch	R5204136							
WG3394208-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5204329							
WG3394399-2	LCS							
Bromide (Br)			104.0		%		85-115	28-AUG-20
WG3394399-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5204266							
WG3394087-2	LCS							
Dissolved Organic Carbon			109.3		%		80-120	28-AUG-20
WG3394087-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-AUG-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5204266							
WG3394087-2	LCS							
Total Organic Carbon			106.8		%		80-120	28-AUG-20
WG3394087-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-AUG-20
CL-IC-N-CL	Water							
Batch	R5204329							
WG3394399-2	LCS							
Chloride (Cl)			104.1		%		90-110	28-AUG-20
WG3394399-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-AUG-20
CO3-CL	Water							
Batch	R5204136							
WG3394208-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-AUG-20
EC-L-PCT-CL	Water							
Batch	R5204136							
WG3394208-11	LCS							
Conductivity (@ 25C)			97.2		%		90-110	28-AUG-20
WG3394208-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-20
F-IC-N-CL	Water							
Batch	R5204329							
WG3394399-2	LCS							
Fluoride (F)			105.3		%		90-110	28-AUG-20
WG3394399-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-AUG-20
HG-D-CVAA-CL	Water							
Batch	R5209038							
WG3396871-2	LCS							
Mercury (Hg)-Dissolved			106.0		%		80-120	02-SEP-20
WG3396871-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	02-SEP-20
HG-T-CVAA-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5209038							
WG3396863-2	LCS							
Mercury (Hg)-Total			99.6		%		80-120	02-SEP-20
WG3396863-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-SEP-20
MET-D-CCMS-CL								
	Water							
Batch	R5205599							
WG3395015-2	LCS	TMRM						
Aluminum (Al)-Dissolved			106.3		%		80-120	31-AUG-20
Antimony (Sb)-Dissolved			101.0		%		80-120	31-AUG-20
Arsenic (As)-Dissolved			102.9		%		80-120	31-AUG-20
Barium (Ba)-Dissolved			103.9		%		80-120	31-AUG-20
Bismuth (Bi)-Dissolved			101.8		%		80-120	31-AUG-20
Boron (B)-Dissolved			103.2		%		80-120	31-AUG-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	31-AUG-20
Calcium (Ca)-Dissolved			103.8		%		80-120	31-AUG-20
Chromium (Cr)-Dissolved			102.1		%		80-120	31-AUG-20
Cobalt (Co)-Dissolved			101.2		%		80-120	31-AUG-20
Copper (Cu)-Dissolved			100.5		%		80-120	31-AUG-20
Iron (Fe)-Dissolved			107.4		%		80-120	31-AUG-20
Lead (Pb)-Dissolved			104.2		%		80-120	31-AUG-20
Lithium (Li)-Dissolved			101.5		%		80-120	31-AUG-20
Magnesium (Mg)-Dissolved			105.1		%		80-120	31-AUG-20
Manganese (Mn)-Dissolved			101.8		%		80-120	31-AUG-20
Molybdenum (Mo)-Dissolved			101.3		%		80-120	31-AUG-20
Nickel (Ni)-Dissolved			96.6		%		80-120	31-AUG-20
Potassium (K)-Dissolved			104.4		%		80-120	31-AUG-20
Selenium (Se)-Dissolved			101.3		%		80-120	31-AUG-20
Silicon (Si)-Dissolved			106.1		%		60-140	31-AUG-20
Silver (Ag)-Dissolved			103.6		%		80-120	31-AUG-20
Sodium (Na)-Dissolved			102.0		%		80-120	31-AUG-20
Strontium (Sr)-Dissolved			105.1		%		80-120	31-AUG-20
Thallium (Tl)-Dissolved			102.2		%		80-120	31-AUG-20
Tin (Sn)-Dissolved			101.1		%		80-120	31-AUG-20
Titanium (Ti)-Dissolved			99.8		%		80-120	31-AUG-20
Uranium (U)-Dissolved			100.2		%		80-120	31-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5205599							
WG3395015-2	LCS	TMRM						
Vanadium (V)-Dissolved			105.2		%		80-120	31-AUG-20
Zinc (Zn)-Dissolved			104.2		%		80-120	31-AUG-20
WG3395015-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20

NH3-L-F-CL

Water

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5203161							
WG3393063-18	LCS							
Ammonia as N			110.8		%		85-115	27-AUG-20
WG3393063-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-20
NO2-L-IC-N-CL	Water							
Batch	R5204329							
WG3394399-2	LCS							
Nitrite (as N)			105.2		%		90-110	28-AUG-20
WG3394399-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5204329							
WG3394399-2	LCS							
Nitrate (as N)			103.8		%		90-110	28-AUG-20
WG3394399-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-AUG-20
OH-CL	Water							
Batch	R5204136							
WG3394208-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	28-AUG-20
ORP-CL	Water							
Batch	R5203160							
WG3393003-7	CRM	CL-ORP						
ORP			220		mV		210-230	27-AUG-20
P-T-L-COL-CL	Water							
Batch	R5208926							
WG3395775-18	LCS							
Phosphorus (P)-Total			104.2		%		80-120	01-SEP-20
WG3395775-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-SEP-20
PH-CL	Water							
Batch	R5204136							
WG3394208-11	LCS							
pH			7.00		pH		6.9-7.1	28-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5203043							
WG3392814-6 LCS								
Orthophosphate-Dissolved (as P)			100.5		%		80-120	27-AUG-20
WG3392814-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-AUG-20
SO4-IC-N-CL	Water							
Batch	R5204329							
WG3394399-2 LCS								
Sulfate (SO4)			103.8		%		90-110	28-AUG-20
WG3394399-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	28-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5208273							
WG3394597-11 LCS								
Total Dissolved Solids			97.0		%		85-115	31-AUG-20
WG3394597-10 MB								
Total Dissolved Solids			<10		mg/L		10	31-AUG-20
TKN-L-F-CL	Water							
Batch	R5203509							
WG3393560-11 LCS								
Total Kjeldahl Nitrogen			93.5		%		75-125	28-AUG-20
WG3393560-13 LCS								
Total Kjeldahl Nitrogen			89.6		%		75-125	28-AUG-20
WG3393560-15 LCS								
Total Kjeldahl Nitrogen			92.3		%		75-125	28-AUG-20
WG3393560-17 LCS								
Total Kjeldahl Nitrogen			99.3		%		75-125	28-AUG-20
WG3393560-2 LCS								
Total Kjeldahl Nitrogen			88.2		%		75-125	28-AUG-20
WG3393560-21 LCS								
Total Kjeldahl Nitrogen			94.6		%		75-125	28-AUG-20
WG3393560-23 LCS								
Total Kjeldahl Nitrogen			96.2		%		75-125	28-AUG-20
WG3393560-25 LCS								
Total Kjeldahl Nitrogen			97.6		%		75-125	28-AUG-20
WG3393560-4 LCS								
Total Kjeldahl Nitrogen			90.0		%		75-125	28-AUG-20
WG3393560-9 LCS								
Total Kjeldahl Nitrogen			91.2		%		75-125	28-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5203509							
WG3393560-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-20 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-24 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
TSS-L-CL		Water						
Batch	R5208732							
WG3395435-2 LCS								
Total Suspended Solids			90.1		%		85-115	01-SEP-20
WG3395435-1 MB								
Total Suspended Solids			<1.0		mg/L		1	01-SEP-20
TURBIDITY-CL		Water						
Batch	R5203138							
WG3392952-5 LCS								
Turbidity			95.9		%		85-115	27-AUG-20
WG3392952-4 MB								
Turbidity			<0.10		NTU		0.1	27-AUG-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	26-AUG-20 10:56	27-AUG-20 20:00	0.25	33	hours	EHTR-FM
	2	26-AUG-20 12:15	27-AUG-20 20:00	0.25	32	hours	EHTR-FM
pH	1	26-AUG-20 10:56	28-AUG-20 12:00	0.25	49	hours	EHTR-FM
	2	26-AUG-20 12:15	28-AUG-20 12:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:


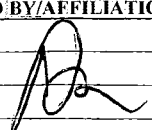
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2495154 were received on 27-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				Regular		RUSH:								
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO								
Facility Name / Job#		Fording River Operations		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD				
Project Manager		Tom Jeffery		Lab Contact		Justin Burns		Email 1:		teckcoal@equisonline.com	X	X	X			
Email		Tom.Jeffery@teck.com		Email		Justin.Burns@ALSGlobal.com		Email 2:		gregory_jones@golder.com	X	X	X			
Address		PO Box 150		Address		2559 29 Street NE		Email 3:		tom.jeffery@teck.com	X	X	X			
City		Eckford		City		Calgary		Email 4:		Scott.Roughead@teck.com	X	X	X			
Province		BC		Province		AB		Email 5:								
Postal Code		T0B 1H0		Postal Code		T1Y 7B5		Country		Canada						
Phone Number		1-250-433-6716		Phone Number		403 407 1781		PO number		VPO00683840						
SAMPLE DETAILS				ANALYSIS REQUESTED				Filtered: F: Field; L: Lab; RL: Field & Lab; N: None								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL			
FR_KB-3A_2020-08-26	FR_KB-3A	WG		2020/08/26	10:56	G	6	1	1	1	1	1	1			
FR_KB-3B_2020-08-26	FR_KB-3B	WG		2020/08/26	12:15	G	6	1	1	1	1	1	1			
 L2495154-COFC																
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				DATE/TIME				ACCEPTED BY/AFFILIATION				DATE/TIME				
												8/27/20				
SERVICE REQUEST (rush - subject to availability)				Sampler's Name				Mobile #				Date/Time				
Regular (default) X				Stearie Ann Syer								August 26 2020				
Priority (2-3 business days) - 50% surcharge				Sampler's Signature												
Emergency (1 Business Day) - 100% surcharge																
For Emergency <1 Day, ASAP or Weekend - Contact ALS																



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
SUITE 1000, 205-9TH AVE S.E
CALGARY AB T2G 0R3

Date Received: 09-SEP-20
Report Date: 11-FEB-21 16:17 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2500498
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2500498-1 WG 08-SEP-20 12:05 FR_TBSSMW- 1_2020-09-08	L2500498-2 WG 08-SEP-20 13:40 FR_TBSSMW- 2_2020-09-08			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	300	461		
	Hardness (as CaCO3) (mg/L)	128	259		
	pH (pH)	8.29	8.23		
	ORP (mV)	374	490		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	167 ^{DLHC}	345 ^{DLHC}		
	Turbidity (NTU)	1.0	0.20		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	173	142		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	173	142		
	Ammonia as N (mg/L)	2.82 ^{DLHC}	0.0464		
	Bicarbonate (HCO3) (mg/L)	211	173		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	0.41	0.22		
	Fluoride (F) (mg/L)	0.422	0.224		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	92.6	91.5		
	Nitrate (as N) (mg/L)	<0.0050	3.50		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	2.86	0.217 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0028	0.0019		
	Phosphorus (P)-Total (mg/L)	0.0038	<0.0020		
	Sulfate (SO4) (mg/L)	15.7	126		
	Anion Sum (meq/L)	3.81	5.71		
	Cation Sum (meq/L)	3.53	5.22		
	Cation - Anion Balance (%)	-3.8	-4.4		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0019	0.0012		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2500498-1 WG 08-SEP-20 12:05 FR_TBSSMW- 1_2020-09-08	L2500498-2 WG 08-SEP-20 13:40 FR_TBSSMW- 2_2020-09-08			
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00123	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	2.21 ^{RRV}	0.0706		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0131		
	Calcium (Ca)-Dissolved (mg/L)	10.8	65.0		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00022		
	Iron (Fe)-Dissolved (mg/L)	0.151	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.180	0.0089		
	Magnesium (Mg)-Dissolved (mg/L)	24.6	23.4		
	Manganese (Mn)-Dissolved (mg/L)	0.0343	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0138	0.000855		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	5.85	0.825		
	Selenium (Se)-Dissolved (ug/L)	<0.050	24.6		
	Silicon (Si)-Dissolved (mg/L)	2.26	1.70		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	13.9	0.677		
	Strontium (Sr)-Dissolved (mg/L)	0.197	0.119		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000138	0.000957		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2500498-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2500498-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2500498

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 SUITE 1000, 205-9TH AVE S.E
 CALGARY AB T2G 0R3

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5222523							
WG3403167-5	LCS							
Acidity (as CaCO3)			102.6		%		85-115	11-SEP-20
WG3403167-4	MB							
Acidity (as CaCO3)			2.0		mg/L		2	11-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5223893							
WG3404813-2	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	15-SEP-20
WG3404813-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5220997							
WG3402206-2	LCS							
Beryllium (Be)-Dissolved			99.0		%		80-120	10-SEP-20
WG3402206-6	LCS							
Beryllium (Be)-Dissolved			91.6		%		80-120	10-SEP-20
WG3402206-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-SEP-20
WG3402206-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-SEP-20
BIC-CL								
	Water							
Batch	R5223893							
WG3404813-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5220364							
WG3401714-6	LCS							
Bromide (Br)			104.6		%		85-115	09-SEP-20
WG3401714-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5222758							
WG3403453-7	DUP	L2500498-2						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-SEP-20
WG3403453-2	LCS							
Dissolved Organic Carbon			87.1		%		80-120	12-SEP-20

Quality Control Report

Workorder: L2500498

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5222758							
WG3403453-6	LCS							
Dissolved Organic Carbon			86.2		%		80-120	12-SEP-20
WG3403453-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-8	MS	L2500498-2						
Dissolved Organic Carbon			87.1		%		70-130	12-SEP-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5222758							
WG3403453-7	DUP	L2500498-2						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-SEP-20
WG3403453-2	LCS							
Total Organic Carbon			87.4		%		80-120	12-SEP-20
WG3403453-6	LCS							
Total Organic Carbon			88.4		%		80-120	12-SEP-20
WG3403453-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-8	MS	L2500498-2						
Total Organic Carbon			87.2		%		70-130	12-SEP-20
CL-L-IC-N-CL								
	Water							
Batch	R5220364							
WG3401714-6	LCS							
Chloride (Cl)			103.1		%		85-115	09-SEP-20
WG3401714-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-SEP-20
CO3-CL								
	Water							
Batch	R5223893							
WG3404813-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	15-SEP-20
EC-L-PCT-CL								
	Water							
Batch	R5223893							
WG3404813-2	LCS							
Conductivity (@ 25C)			98.2		%		90-110	15-SEP-20
WG3404813-1	MB							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL	Water							
Batch	R5223893							
WG3404813-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	15-SEP-20
F-IC-N-CL	Water							
Batch	R5220364							
WG3401714-6 LCS								
Fluoride (F)			100.3		%		90-110	09-SEP-20
WG3401714-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	09-SEP-20
HG-D-CVAA-CL	Water							
Batch	R5223996							
WG3404950-6 LCS								
Mercury (Hg)-Dissolved			104.0		%		80-120	15-SEP-20
WG3404950-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-SEP-20
HG-T-CVAA-CL	Water							
Batch	R5223996							
WG3404951-6 LCS								
Mercury (Hg)-Total			107.0		%		80-120	15-SEP-20
WG3404951-5 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-SEP-20
MET-D-CCMS-CL	Water							
Batch	R5220997							
WG3402206-2 LCS								
Aluminum (Al)-Dissolved			106.3		%		80-120	10-SEP-20
Antimony (Sb)-Dissolved			103.2		%		80-120	10-SEP-20
Arsenic (As)-Dissolved			103.6		%		80-120	10-SEP-20
Barium (Ba)-Dissolved			101.4		%		80-120	10-SEP-20
Bismuth (Bi)-Dissolved			103.6		%		80-120	10-SEP-20
Boron (B)-Dissolved			93.4		%		80-120	10-SEP-20
Cadmium (Cd)-Dissolved			99.9		%		80-120	10-SEP-20
Calcium (Ca)-Dissolved			98.6		%		80-120	10-SEP-20
Chromium (Cr)-Dissolved			101.7		%		80-120	10-SEP-20
Cobalt (Co)-Dissolved			102.2		%		80-120	10-SEP-20
Copper (Cu)-Dissolved			100.4		%		80-120	10-SEP-20
Iron (Fe)-Dissolved			96.9		%		80-120	10-SEP-20

Quality Control Report

Workorder: L2500498

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5220997							
WG3402206-2	LCS							
Lead (Pb)-Dissolved			99.2		%		80-120	10-SEP-20
Lithium (Li)-Dissolved			101.9		%		80-120	10-SEP-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	10-SEP-20
Manganese (Mn)-Dissolved			103.6		%		80-120	10-SEP-20
Molybdenum (Mo)-Dissolved			99.0		%		80-120	10-SEP-20
Nickel (Ni)-Dissolved			102.3		%		80-120	10-SEP-20
Potassium (K)-Dissolved			102.8		%		80-120	10-SEP-20
Selenium (Se)-Dissolved			97.2		%		80-120	10-SEP-20
Silicon (Si)-Dissolved			103.3		%		60-140	10-SEP-20
Silver (Ag)-Dissolved			101.8		%		80-120	10-SEP-20
Sodium (Na)-Dissolved			102.3		%		80-120	10-SEP-20
Strontium (Sr)-Dissolved			102.4		%		80-120	10-SEP-20
Thallium (Tl)-Dissolved			105.6		%		80-120	10-SEP-20
Tin (Sn)-Dissolved			101.2		%		80-120	10-SEP-20
Titanium (Ti)-Dissolved			90.9		%		80-120	10-SEP-20
Uranium (U)-Dissolved			98.8		%		80-120	10-SEP-20
Vanadium (V)-Dissolved			103.0		%		80-120	10-SEP-20
Zinc (Zn)-Dissolved			103.8		%		80-120	10-SEP-20
WG3402206-6	LCS							
Aluminum (Al)-Dissolved			99.3		%		80-120	10-SEP-20
Antimony (Sb)-Dissolved			93.2		%		80-120	10-SEP-20
Arsenic (As)-Dissolved			97.3		%		80-120	10-SEP-20
Barium (Ba)-Dissolved			96.0		%		80-120	10-SEP-20
Bismuth (Bi)-Dissolved			96.1		%		80-120	10-SEP-20
Boron (B)-Dissolved			84.3		%		80-120	10-SEP-20
Cadmium (Cd)-Dissolved			91.7		%		80-120	10-SEP-20
Calcium (Ca)-Dissolved			90.5		%		80-120	10-SEP-20
Chromium (Cr)-Dissolved			93.3		%		80-120	10-SEP-20
Cobalt (Co)-Dissolved			94.6		%		80-120	10-SEP-20
Copper (Cu)-Dissolved			93.5		%		80-120	10-SEP-20
Iron (Fe)-Dissolved			89.7		%		80-120	10-SEP-20
Lead (Pb)-Dissolved			91.2		%		80-120	10-SEP-20
Lithium (Li)-Dissolved			105.9		%		80-120	10-SEP-20
Magnesium (Mg)-Dissolved			91.6		%		80-120	10-SEP-20



Quality Control Report

Workorder: L2500498

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5220997							
WG3402206-6		LCS						
Manganese (Mn)-Dissolved			95.5		%		80-120	10-SEP-20
Molybdenum (Mo)-Dissolved			89.4		%		80-120	10-SEP-20
Nickel (Ni)-Dissolved			94.4		%		80-120	10-SEP-20
Potassium (K)-Dissolved			96.6		%		80-120	10-SEP-20
Selenium (Se)-Dissolved			88.7		%		80-120	10-SEP-20
Silicon (Si)-Dissolved			95.5		%		60-140	10-SEP-20
Silver (Ag)-Dissolved			91.7		%		80-120	10-SEP-20
Sodium (Na)-Dissolved			94.7		%		80-120	10-SEP-20
Strontium (Sr)-Dissolved			91.6		%		80-120	10-SEP-20
Thallium (Tl)-Dissolved			93.5		%		80-120	10-SEP-20
Tin (Sn)-Dissolved			91.2		%		80-120	10-SEP-20
Titanium (Ti)-Dissolved			92.1		%		80-120	10-SEP-20
Uranium (U)-Dissolved			86.6		%		80-120	10-SEP-20
Vanadium (V)-Dissolved			95.7		%		80-120	10-SEP-20
Zinc (Zn)-Dissolved			95.1		%		80-120	10-SEP-20
WG3402206-1		MB						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20



Quality Control Report

Workorder: L2500498

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5220997							
WG3402206-1 MB								
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
WG3402206-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-SEP-20



Quality Control Report

Workorder: L2500498

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5220997							
WG3402206-5 MB								
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
NH3-L-F-CL		Water						
Batch	R5219177							
WG3400960-14 LCS								
Ammonia as N			96.0		%		85-115	09-SEP-20
WG3400960-13 MB								
Ammonia as N			<0.0050		mg/L		0.005	09-SEP-20
NO2-L-IC-N-CL		Water						
Batch	R5220364							
WG3401714-6 LCS								
Nitrite (as N)			101.7		%		90-110	09-SEP-20
WG3401714-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	09-SEP-20
NO3-L-IC-N-CL		Water						
Batch	R5220364							
WG3401714-6 LCS								
Nitrate (as N)			104.0		%		90-110	09-SEP-20
WG3401714-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-SEP-20
OH-CL		Water						
Batch	R5223893							
WG3404813-1 MB								
Hydroxide (OH)			<5.0		mg/L		5	15-SEP-20
ORP-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5222472							
WG3403085-1	CRM	CL-ORP						
ORP			219		mV		210-230	11-SEP-20
P-T-L-COL-CL	Water							
Batch	R5223167							
WG3403930-14	LCS							
Phosphorus (P)-Total			99.9		%		80-120	11-SEP-20
WG3403930-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-SEP-20
PH-CL	Water							
Batch	R5223893							
WG3404813-2	LCS							
pH			6.98		pH		6.9-7.1	15-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5219157							
WG3401116-6	LCS							
Orthophosphate-Dissolved (as P)			97.6		%		80-120	09-SEP-20
WG3401116-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-SEP-20
SO4-IC-N-CL	Water							
Batch	R5220364							
WG3401714-6	LCS							
Sulfate (SO4)			105.4		%		90-110	09-SEP-20
WG3401714-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	09-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5224030							
WG3403670-2	LCS							
Total Dissolved Solids			98.5		%		85-115	14-SEP-20
WG3403670-1	MB							
Total Dissolved Solids			<10		mg/L		10	14-SEP-20
TKN-L-F-CL	Water							
Batch	R5220262							
WG3401543-10	LCS							
Total Kjeldahl Nitrogen			97.8		%		75-125	11-SEP-20
WG3401543-12	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5220262							
WG3401543-12	LCS							
Total Kjeldahl Nitrogen			96.0		%		75-125	11-SEP-20
WG3401543-2	LCS							
Total Kjeldahl Nitrogen			96.4		%		75-125	10-SEP-20
WG3401543-5	LCS							
Total Kjeldahl Nitrogen			90.6		%		75-125	11-SEP-20
WG3401543-7	LCS							
Total Kjeldahl Nitrogen			98.1		%		75-125	11-SEP-20
WG3401543-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-20
WG3401543-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
TSS-L-CL								
	Water							
Batch	R5223928							
WG3403519-2	LCS							
Total Suspended Solids			112.4		%		85-115	14-SEP-20
WG3403519-1	MB							
Total Suspended Solids			<1.0		mg/L		1	14-SEP-20
TURBIDITY-CL								
	Water							
Batch	R5219139							
WG3401103-3	LCS							
Turbidity			98.5		%		85-115	09-SEP-20
WG3401103-2	MB							
Turbidity			<0.10		NTU		0.1	09-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2500498

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	08-SEP-20 12:05	11-SEP-20 18:30	0.25	78	hours	EHTR-FM
	2	08-SEP-20 13:40	11-SEP-20 18:30	0.25	77	hours	EHTR-FM
pH	1	08-SEP-20 12:05	15-SEP-20 11:00	0.25	167	hours	EHTR-FM
	2	08-SEP-20 13:40	15-SEP-20 11:00	0.25	165	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:


Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2500498 were received on 09-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				RUSH:							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO						
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD		
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets		Email 1:	teckcoal@equisonline.com	X	X	X		
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	gregory.jones@golder.com	X	X	X		
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE		Email 3:	tom.jeffery@teck.com	X	X	X		
							Email 4:	Scott.Roughhead@teck.com	X	X	X		
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:					
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-433-6716			Phone Number	403 407 1794		PO number	VPO00683840					
SAMPLE DETAILS				ANALYSIS REQUESTED									
 L2500498-COFC	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
								N	F	N	F	F	N
Sample ID								NONE	H2SO4	H2SO4	HNO3	HNO3	HNO3
FR_TBSSMW-1_2020-09-08	FR_TBSSMW-1	WG		9/8/2020	12:05	G	6	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL
FR_TBSSMW-2_2020-09-08	FR_TBSSMW-2	WG		9/8/2020	13:40	G	6	1	1	1	1	1	1
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME					
						BRJ		9/9 8:50					
SERVICE REQUEST (rush - subject to availability)													
Regular (default) X				Sampler's Name		Katie Peterson		Mobile #		250-946-5029			
Priority (2-3 business days) - 50% surcharge				Sampler's Signature				Date/Time		September 8, 2020			
Emergency (1 Business Day) - 100% surcharge													
For Emergency <1 Day, ASAP or Weekend - Contact ALS													

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TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 16-SEP-20
Report Date: 11-FEB-21 16:20 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2504129
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 20200815 1500
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2504129-1 WS 15-SEP-20 14:30 FR_GCMW- 1B_QTR_2020-07- 06_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	746			
	Hardness (as CaCO3) (mg/L)	64.7			
	pH (pH)	8.59			
	ORP (mV)	235			
	Total Suspended Solids (mg/L)	1.3			
	Total Dissolved Solids (mg/L)	445	DLHC		
	Turbidity (NTU)	3.53			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	369			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	22.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	392			
	Ammonia as N (mg/L)	0.179			
	Bicarbonate (HCO3) (mg/L)	451			
	Bromide (Br) (mg/L)	0.121			
	Carbonate (CO3) (mg/L)	13.3			
	Chloride (Cl) (mg/L)	16.5			
	Fluoride (F) (mg/L)	1.48			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	105			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.370			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0132			
	Phosphorus (P)-Total (mg/L)	0.0126			
	Sulfate (SO4) (mg/L)	2.92			
	Anion Sum (meq/L)	8.43			
	Cation Sum (meq/L)	8.81			
	Cation - Anion Balance (%)	2.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	7.72			
	Total Organic Carbon (mg/L)	7.59			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0081			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00219			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID			
	L2504129-1 WS 15-SEP-20 14:30 FR_GCMW- 1B_QTR_2020-07- 06_N			
Grouping	Analyte			
WATER				
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.118		
	Beryllium (Be)-Dissolved (ug/L)	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.120		
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}		
	Calcium (Ca)-Dissolved (mg/L)	18.4		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.15		
	Copper (Cu)-Dissolved (mg/L)	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.129		
	Lead (Pb)-Dissolved (mg/L)	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.166		
	Magnesium (Mg)-Dissolved (mg/L)	4.57		
	Manganese (Mn)-Dissolved (mg/L)	0.261		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0449		
	Nickel (Ni)-Dissolved (mg/L)	0.00094		
	Potassium (K)-Dissolved (mg/L)	1.51		
	Selenium (Se)-Dissolved (ug/L)	0.077		
	Silicon (Si)-Dissolved (mg/L)	3.63		
	Silver (Ag)-Dissolved (mg/L)	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	171		
	Strontium (Sr)-Dissolved (mg/L)	0.141		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000240		
	Vanadium (V)-Dissolved (mg/L)	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric



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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5229719							
WG3407723-5	LCS							
Acidity (as CaCO3)			102.4		%		85-115	18-SEP-20
WG3407723-4	MB							
Acidity (as CaCO3)			1.7		mg/L		2	18-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5231714							
WG3409137-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	19-SEP-20
WG3409137-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-2	LCS							
Beryllium (Be)-Dissolved			103.7		%		80-120	19-SEP-20
WG3407962-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-SEP-20
BIC-CL								
	Water							
Batch	R5231714							
WG3409137-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5226660							
WG3406632-10	LCS							
Bromide (Br)			112.0		%		85-115	16-SEP-20
WG3406632-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	16-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5231414							
WG3408400-6	LCS							
Dissolved Organic Carbon			89.6		%		80-120	19-SEP-20
WG3408400-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-SEP-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5231414							
WG3408400-6	LCS							
Total Organic Carbon			91.6		%		80-120	19-SEP-20
WG3408400-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Chloride (Cl)			100.7		%		85-115	16-SEP-20
WG3406632-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	16-SEP-20
CO3-CL	Water							
Batch	R5231714							
WG3409137-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	19-SEP-20
EC-L-PCT-CL	Water							
Batch	R5231714							
WG3409137-5	LCS							
Conductivity (@ 25C)			98.7		%		90-110	19-SEP-20
WG3409137-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-SEP-20
F-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Fluoride (F)			95.7		%		90-110	16-SEP-20
WG3406632-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	16-SEP-20
HG-D-CVAA-VA	Water							
Batch	R5231937							
WG3409373-6	LCS							
Mercury (Hg)-Dissolved			98.2		%		80-120	22-SEP-20
WG3409373-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-SEP-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-2	LCS							
Aluminum (Al)-Dissolved			101.4		%		80-120	19-SEP-20
Antimony (Sb)-Dissolved			104.2		%		80-120	19-SEP-20
Arsenic (As)-Dissolved			99.6		%		80-120	19-SEP-20
Barium (Ba)-Dissolved			106.4		%		80-120	19-SEP-20
Bismuth (Bi)-Dissolved			96.4		%		80-120	19-SEP-20
Boron (B)-Dissolved			105.6		%		80-120	19-SEP-20
Cadmium (Cd)-Dissolved			98.9		%		80-120	19-SEP-20
Calcium (Ca)-Dissolved			106.6		%		80-120	19-SEP-20
Chromium (Cr)-Dissolved			103.3		%		80-120	19-SEP-20
Cobalt (Co)-Dissolved			98.7		%		80-120	19-SEP-20
Copper (Cu)-Dissolved			97.4		%		80-120	19-SEP-20
Iron (Fe)-Dissolved			98.9		%		80-120	19-SEP-20
Lead (Pb)-Dissolved			100.6		%		80-120	19-SEP-20
Lithium (Li)-Dissolved			110.0		%		80-120	19-SEP-20
Magnesium (Mg)-Dissolved			97.0		%		80-120	19-SEP-20
Manganese (Mn)-Dissolved			100.3		%		80-120	19-SEP-20
Molybdenum (Mo)-Dissolved			106.3		%		80-120	19-SEP-20
Nickel (Ni)-Dissolved			99.2		%		80-120	19-SEP-20
Potassium (K)-Dissolved			102.2		%		80-120	19-SEP-20
Selenium (Se)-Dissolved			97.6		%		80-120	19-SEP-20
Silicon (Si)-Dissolved			103.2		%		60-140	19-SEP-20
Silver (Ag)-Dissolved			108.9		%		80-120	19-SEP-20
Sodium (Na)-Dissolved			101.8		%		80-120	19-SEP-20
Strontium (Sr)-Dissolved			117.8		%		80-120	19-SEP-20
Thallium (Tl)-Dissolved			99.5		%		80-120	19-SEP-20
Tin (Sn)-Dissolved			101.8		%		80-120	19-SEP-20
Titanium (Ti)-Dissolved			92.9		%		80-120	19-SEP-20
Uranium (U)-Dissolved			101.6		%		80-120	19-SEP-20
Vanadium (V)-Dissolved			100.1		%		80-120	19-SEP-20
Zinc (Zn)-Dissolved			97.9		%		80-120	19-SEP-20
WG3407962-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5229599							
WG3407646-26	LCS							
Ammonia as N			97.3		%		85-115	18-SEP-20
WG3407646-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-SEP-20
NO2-L-IC-N-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Nitrite (as N)			101.2		%		90-110	16-SEP-20
WG3406632-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-SEP-20
NO3-L-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Nitrate (as N)			99.0		%		90-110	16-SEP-20
WG3406632-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-SEP-20
OH-CL	Water							
Batch	R5231714							
WG3409137-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	19-SEP-20
ORP-CL	Water							
Batch	R5228156							
WG3407057-8	CRM	CL-ORP						
ORP			223		mV		210-230	17-SEP-20
P-T-L-COL-CL	Water							
Batch	R5230972							
WG3408145-26	LCS							
Phosphorus (P)-Total			96.6		%		80-120	19-SEP-20
WG3408145-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-SEP-20
PH-CL	Water							
Batch	R5231714							
WG3409137-5	LCS							
pH			6.98		pH		6.9-7.1	19-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5226819							
WG3405836-12	LCS							
Orthophosphate-Dissolved (as P)			109.0		%		80-120	16-SEP-20
WG3405836-11	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Sulfate (SO4)			100.4		%		90-110	16-SEP-20
WG3406632-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5232371							
WG3408576-8	LCS							
Total Dissolved Solids			96.9		%		85-115	21-SEP-20
WG3408576-7	MB							
Total Dissolved Solids			<10		mg/L		10	21-SEP-20
TKN-L-F-CL	Water							
Batch	R5231129							
WG3408376-2	LCS							
Total Kjeldahl Nitrogen			101.1		%		75-125	20-SEP-20
WG3408376-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-SEP-20
TSS-L-CL	Water							
Batch	R5231562							
WG3408575-6	LCS							
Total Suspended Solids			89.6		%		85-115	21-SEP-20
WG3408575-5	MB							
Total Suspended Solids			<1.0		mg/L		1	21-SEP-20
TURBIDITY-CL	Water							
Batch	R5228150							
WG3406697-9	LCS							
Turbidity			97.5		%		85-115	17-SEP-20
WG3406697-8	MB							
Turbidity			<0.10		NTU		0.1	17-SEP-20

Quality Control Report

Workorder: L2504129

Report Date: 11-FEB-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2504129

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	15-SEP-20 14:30	17-SEP-20 13:30	0.25	47	hours	EHTR-FM
pH	1	15-SEP-20 14:30	19-SEP-20 10:00	0.25	91	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2504129 were received on 16-SEP-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 20200815 1500		TURNAROUND TIME:				RUSH:									
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO							
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary				Report Format / Distribution			Excel	PDF	EDD		
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com			X	X	X		
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: britt.anderson@teck.com			X	X	X		
Address				Address 2559 29 Street NE				Email 3: scott.roughead@teck.com			X	X	X		
City Elkford				Province BC		City Calgary		Province AB		Email 4: teckcoal@equisonline.com			X	X	X
Postal Code				Country Canada		Postal Code T1Y 7B5		Country Canada		Email 5: al.schroeder@teck.com			X	X	X
Phone Number 1-250-433-6976				Phone Number 403 407 1794				PO number			VPO00680583				

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FR	F	N	F	N	F	N	N	N	N	N	N	N
								PRESERV	H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY	
FR_GCMW-1B_QTR_2020-07-06_N	FR_GCMW-1B	WS	NO	15-Sep-20	14:30	G	6		1	1	1		1		1					1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Kaileigh McCallum	DATE/TIME September 15, 2020	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME 09/16 8:55
--	--	---------------------------------	---	-------------------------

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Kaileigh McCallum	Mobile #	250-464-9462
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	September 15, 2020
Emergency (1 Business Day) - 100% surcharge	For Emergency < 1 Day, ASAP or Weekend - Contact ALS				

[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 16-SEP-20
Report Date: 11-FEB-21 16:22 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2504133
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on sample -2.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2504133-1 WG 15-SEP-20 14:30 FR_GCMW- 1B_2020-09-15	L2504133-2 WG 15-SEP-20 12:25 FR_CB-6B_2020- 09-15		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	723	460		
	Hardness (as CaCO3) (mg/L)	59.6	263		
	pH (pH)	8.57	8.15		
	ORP (mV)	214	318		
	Total Suspended Solids (mg/L)	<1.0	1.1		
	Total Dissolved Solids (mg/L)	443 ^{DLHC}	260 ^{DLHC}		
	Turbidity (NTU)	3.83	3.82		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	373	256		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	21.4	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	394	256		
	Ammonia as N (mg/L)	0.136	0.0568		
	Bicarbonate (HCO3) (mg/L)		313		
	Bromide (Br) (mg/L)	0.117	<0.050		
	Carbonate (CO3) (mg/L)		<5.0		
	Chloride (Cl) (mg/L)	16.6	0.27		
	Fluoride (F) (mg/L)	1.48	0.852		
	Hydroxide (OH) (mg/L)		<5.0		
	Ion Balance (%)	92.2	105		
	Nitrate (as N) (mg/L)	0.0063	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.257	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0116	0.0029		
	Phosphorus (P)-Total (mg/L)	0.0101	0.0053		
	Sulfate (SO4) (mg/L)	3.09	7.82		
	Anion Sum (meq/L)	8.49	5.34		
Cation Sum (meq/L)	7.83	5.58			
Cation - Anion Balance (%)	-4.1	2.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	8.21	1.34		
	Total Organic Carbon (mg/L)	7.61	1.30		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0079	0.0021		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2504133-1 WG 15-SEP-20 14:30 FR_GCMW-1B_2020-09-15	L2504133-2 WG 15-SEP-20 12:25 FR_CB-6B_2020-09-15		
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00202	0.00086		
	Barium (Ba)-Dissolved (mg/L)	0.116	0.204		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.111	0.032		
	Cadmium (Cd)-Dissolved (ug/L)	0.0061	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	16.5	58.4		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.14	0.57		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.032	0.144		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.142	0.0152		
	Magnesium (Mg)-Dissolved (mg/L)	4.45	28.4		
	Manganese (Mn)-Dissolved (mg/L)	0.250	0.189		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0407	0.00260		
	Nickel (Ni)-Dissolved (mg/L)	0.00096	0.00103		
	Potassium (K)-Dissolved (mg/L)	1.38	1.62		
	Selenium (Se)-Dissolved (ug/L)	0.139	<0.050		
	Silicon (Si)-Dissolved (mg/L)	3.48	4.91		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	151	6.07		
	Strontium (Sr)-Dissolved (mg/L)	0.121	0.400		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000012		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000225	0.000856		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0013		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2504133-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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ACIDITY-PCT-CL Water Acidity by Automatic Titration APHA 2310 Acidity
 This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-MAN-CL Water Alkalinity (Species) by Manual Titration APHA 2320 ALKALINITY
 This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BE-D-L-CCMS-CL Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BIC-CL Water Bicarbonate (HCO₃) APHA 2320 B-Pot. Titration

BR-L-IC-N-CL Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DIS-ORG-LOW-CL Water Dissolved Organic Carbon APHA 5310 B-Instrumental
 This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B
 Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

Reference Information

HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2504133

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5229719							
WG3407723-18	DUP	L2504133-2						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	18-SEP-20
WG3407723-17	LCS							
Acidity (as CaCO3)			92.4		%		85-115	18-SEP-20
WG3407723-16	MB							
Acidity (as CaCO3)			1.8		mg/L		2	18-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5231714							
WG3409137-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	19-SEP-20
WG3409137-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5226619							
WG3407012-2	LCS	TMRM						
Beryllium (Be)-Dissolved			102.3		%		80-120	17-SEP-20
WG3407012-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-SEP-20
BIC-CL								
	Water							
Batch	R5231714							
WG3409137-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5226660							
WG3406632-10	LCS							
Bromide (Br)			112.0		%		85-115	16-SEP-20
WG3406632-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	16-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5231414							
WG3408400-6	LCS							
Dissolved Organic Carbon			89.6		%		80-120	19-SEP-20
WG3408400-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-SEP-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2504133

Report Date: 11-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5231414							
WG3408400-6	LCS							
Total Organic Carbon			91.6		%		80-120	19-SEP-20
WG3408400-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Chloride (Cl)			100.7		%		85-115	16-SEP-20
WG3406632-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	16-SEP-20
CO3-CL	Water							
Batch	R5231714							
WG3409137-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	19-SEP-20
EC-L-PCT-CL	Water							
Batch	R5231714							
WG3409137-5	LCS							
Conductivity (@ 25C)			98.7		%		90-110	19-SEP-20
WG3409137-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-SEP-20
F-IC-N-CL	Water							
Batch	R5226660							
WG3406632-10	LCS							
Fluoride (F)			95.7		%		90-110	16-SEP-20
WG3406632-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	16-SEP-20
HG-D-CVAA-CL	Water							
Batch	R5229978							
WG3407774-2	LCS							
Mercury (Hg)-Dissolved			104.0		%		80-120	18-SEP-20
WG3407774-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-SEP-20
HG-T-CVAA-CL	Water							



Quality Control Report

Workorder: L2504133

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5229978							
WG3407766-10	LCS							
Mercury (Hg)-Total			97.2		%		80-120	18-SEP-20
WG3407766-2	LCS							
Mercury (Hg)-Total			99.4		%		80-120	18-SEP-20
WG3407766-6	LCS							
Mercury (Hg)-Total			103.0		%		80-120	18-SEP-20
WG3407766-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-SEP-20
WG3407766-5	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-SEP-20
WG3407766-9	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-SEP-20
MET-D-CCMS-CL								
	Water							
Batch	R5226619							
WG3407012-2	LCS	TMRM						
Aluminum (Al)-Dissolved			103.6		%		80-120	17-SEP-20
Antimony (Sb)-Dissolved			102.7		%		80-120	17-SEP-20
Arsenic (As)-Dissolved			100.1		%		80-120	17-SEP-20
Barium (Ba)-Dissolved			105.2		%		80-120	17-SEP-20
Bismuth (Bi)-Dissolved			104.1		%		80-120	17-SEP-20
Boron (B)-Dissolved			102.0		%		80-120	17-SEP-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	17-SEP-20
Calcium (Ca)-Dissolved			102.1		%		80-120	17-SEP-20
Chromium (Cr)-Dissolved			102.0		%		80-120	17-SEP-20
Cobalt (Co)-Dissolved			99.0		%		80-120	17-SEP-20
Copper (Cu)-Dissolved			98.2		%		80-120	17-SEP-20
Iron (Fe)-Dissolved			96.2		%		80-120	17-SEP-20
Lead (Pb)-Dissolved			102.4		%		80-120	17-SEP-20
Lithium (Li)-Dissolved			105.8		%		80-120	17-SEP-20
Magnesium (Mg)-Dissolved			103.7		%		80-120	17-SEP-20
Manganese (Mn)-Dissolved			100.8		%		80-120	17-SEP-20
Molybdenum (Mo)-Dissolved			101.6		%		80-120	17-SEP-20
Nickel (Ni)-Dissolved			99.6		%		80-120	17-SEP-20
Potassium (K)-Dissolved			101.9		%		80-120	17-SEP-20
Selenium (Se)-Dissolved			103.6		%		80-120	17-SEP-20
Silicon (Si)-Dissolved			103.9		%		60-140	17-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5226619							
WG3407012-2	LCS	TMRM						
Silver (Ag)-Dissolved			102.3		%		80-120	17-SEP-20
Sodium (Na)-Dissolved			99.96		%		80-120	17-SEP-20
Strontium (Sr)-Dissolved			102.2		%		80-120	17-SEP-20
Thallium (Tl)-Dissolved			104.0		%		80-120	17-SEP-20
Tin (Sn)-Dissolved			101.8		%		80-120	17-SEP-20
Titanium (Ti)-Dissolved			90.6		%		80-120	17-SEP-20
Uranium (U)-Dissolved			97.7		%		80-120	17-SEP-20
Vanadium (V)-Dissolved			102.8		%		80-120	17-SEP-20
Zinc (Zn)-Dissolved			99.8		%		80-120	17-SEP-20
WG3407012-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-SEP-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5226619							
WG3407012-1	MB							
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5229599							
WG3407646-38	LCS							
Ammonia as N			108.8		%		85-115	18-SEP-20
WG3407646-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5226660							
WG3406632-10	LCS							
Nitrite (as N)			101.2		%		90-110	16-SEP-20
WG3406632-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5226660							
WG3406632-10	LCS							
Nitrate (as N)			99.0		%		90-110	16-SEP-20
WG3406632-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-SEP-20
OH-CL								
	Water							
Batch	R5231714							
WG3409137-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	19-SEP-20
ORP-CL								
	Water							
Batch	R5228156							
WG3407057-8	CRM	CL-ORP						
ORP			223		mV		210-230	17-SEP-20
P-T-L-COL-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R5230972							
WG3408145-26	LCS							
Phosphorus (P)-Total			96.6		%		80-120	19-SEP-20
WG3408145-30	LCS							
Phosphorus (P)-Total			99.9		%		80-120	19-SEP-20
WG3408145-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-SEP-20
WG3408145-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-SEP-20
PH-CL Water								
Batch	R5231714							
WG3409137-5	LCS							
pH			6.98		pH		6.9-7.1	19-SEP-20
PO4-DO-L-COL-CL Water								
Batch	R5226819							
WG3405836-12	LCS							
Orthophosphate-Dissolved (as P)			109.0		%		80-120	16-SEP-20
WG3405836-11	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-SEP-20
SO4-IC-N-CL Water								
Batch	R5226660							
WG3406632-10	LCS							
Sulfate (SO4)			100.4		%		90-110	16-SEP-20
WG3406632-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-SEP-20
SOLIDS-TDS-CL Water								
Batch	R5232371							
WG3408576-8	LCS							
Total Dissolved Solids			96.9		%		85-115	21-SEP-20
WG3408576-7	MB							
Total Dissolved Solids			<10		mg/L		10	21-SEP-20
TKN-L-F-CL Water								
Batch	R5228968							
WG3407350-2	LCS							
Total Kjeldahl Nitrogen			95.1		%		75-125	18-SEP-20
WG3407350-4	LCS							
Total Kjeldahl Nitrogen			117.8		%		75-125	19-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5228968							
WG3407350-6	LCS							
Total Kjeldahl Nitrogen			100.4		%		75-125	19-SEP-20
WG3407350-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-SEP-20
WG3407350-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-SEP-20
TSS-L-CL		Water						
Batch	R5231562							
WG3408575-6	LCS							
Total Suspended Solids			89.6		%		85-115	21-SEP-20
WG3408575-5	MB							
Total Suspended Solids			<1.0		mg/L		1	21-SEP-20
TURBIDITY-CL		Water						
Batch	R5228150							
WG3406697-9	LCS							
Turbidity			97.5		%		85-115	17-SEP-20
WG3406697-8	MB							
Turbidity			<0.10		NTU		0.1	17-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	15-SEP-20 14:30	17-SEP-20 13:30	0.25	47	hours	EHTR-FM
	2	15-SEP-20 12:25	17-SEP-20 13:30	0.25	49	hours	EHTR-FM
pH	1	15-SEP-20 14:30	19-SEP-20 10:00	0.25	91	hours	EHTR-FM
	2	15-SEP-20 12:25	19-SEP-20 10:00	0.25	94	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2504133 were received on 16-SEP-20 08:55.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID:		TURNAROUND TIME:		RUSH:								
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO						
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets		Email 1:	teckcoal@equisonline.com	X	X	X	
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	gregory.iones@golder.com	X	X	X	
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE		Email 3:	tom.jeffery@teck.com	X	X	X	
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughhead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	1-250-433-6716			Phone Number	403 407 1794		PO number	VPO00683840				

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Mate.	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	N	F	F	N	
 L2504133-COFC																				
FR_CB-5B-2020	FR_CB-5B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_CB-5B-2020	FR_CB-5B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_CB-5B-2020	FR_CB-5B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_CB-5B-2020	FR_CB-5B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_CB-5B-2020	FR_CB-5B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_GCMW-1B-2020-09-15	FR_GCMW-1B	WG		2020/09/15	14:30	G	6	1	1	1	1	1	1							
FR_CB-6B-2020-09-15	FR_CB-6B	WG		2020/09/15	12:25	G	6	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	09/15 8:55

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>		<i>Katie Peterson</i>	250 946 5029
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		<i>[Signature]</i>	09/15/2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

8°



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 02-OCT-20
Report Date: 11-FEB-21 16:25 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2511589
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2511589-1	L2511589-2	L2511589-3	L2511589-4
		Description	WG	WG	WG	WG
		Sampled Date	01-OCT-20	01-OCT-20	01-OCT-20	01-OCT-20
		Sampled Time	14:06	12:35	12:40	12:45
		Client ID	FR_KB-1_2020-10-01	FR_KB-2_2020-10-01	FR_DC4_2020-10-01	FR_FLD4_2020-10-01
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		1870	1780	1800	<2.0
	Hardness (as CaCO3) (mg/L)		1100	1060	1190	<0.50
	pH (pH)		7.90	7.66	7.68	5.64
	ORP (mV)		190	251	206	254
	Total Suspended Solids (mg/L)		<1.0	26.6	28.9	<1.0
	Total Dissolved Solids (mg/L)		1580 ^{DLHC}	1440 ^{DLHC}	1490 ^{DLHC}	<10
	Turbidity (NTU)		0.10	12.6	12.3	<0.10
	Anions and Nutrients	Acidity (as CaCO3) (mg/L)		12.9	17.4	19.3
Alkalinity, Bicarbonate (as CaCO3) (mg/L)			364	329	333	<1.0
Alkalinity, Carbonate (as CaCO3) (mg/L)			<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)			<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3) (mg/L)			364	329	333	<1.0
Ammonia as N (mg/L)			<0.0050	0.0075	<0.0050	<0.0050
Bicarbonate (HCO3) (mg/L)			445	401	406	<5.0
Bromide (Br) (mg/L)			<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
Carbonate (CO3) (mg/L)			<5.0	<5.0	<5.0	<5.0
Chloride (Cl) (mg/L)			1.10 ^{DLHC}	1.03 ^{DLHC}	1.08 ^{DLHC}	<0.10
Fluoride (F) (mg/L)			0.11 ^{DLHC}	0.11 ^{DLHC}	0.11 ^{DLHC}	<0.020
Hydroxide (OH) (mg/L)			<5.0	<5.0	<5.0	<5.0
Ion Balance (%)			97.3	102	110	0.0
Nitrate (as N) (mg/L)			72.1 ^{DLHC}	66.9 ^{DLHC}	69.5 ^{DLHC}	<0.0050
Nitrite (as N) (mg/L)			<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010
Total Kjeldahl Nitrogen (mg/L)			<0.050	<0.25	<0.25	<0.050
Orthophosphate-Dissolved (as P) (mg/L)			0.0021	0.0018	0.0019	<0.0010
Phosphorus (P)-Total (mg/L)			0.0023	0.0269	0.0223	<0.0020
Sulfate (SO4) (mg/L)			506 ^{DLHC}	466 ^{DLHC}	488 ^{DLHC}	<0.30
Anion Sum (meq/L)			23.0	21.1	21.8	<0.10
Cation Sum (meq/L)			22.4	21.5	24.0	<0.10
Cation - Anion Balance (%)			-1.4	1.0	4.8	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)		<0.50	0.73	0.51	<0.50
Total Metals	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0013	0.0016	<0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)		0.00054	0.00044	0.00043	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2511589-1	L2511589-2	L2511589-3	L2511589-4	
Description	WG	WG	WG	WG	
Sampled Date	01-OCT-20	01-OCT-20	01-OCT-20	01-OCT-20	
Sampled Time	14:06	12:35	12:40	12:45	
Client ID	FR_KB-1_2020-10-01	FR_KB-2_2020-10-01	FR_DC4_2020-10-01	FR_FLD4_2020-10-01	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0538	0.0601	0.0604	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.030	0.027	0.027	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	0.645	0.154	0.142	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	271	259	265	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00031	0.00022	0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.110	0.0925	0.0910	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	104	101	128	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00016	0.00036	0.00022	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00159	0.00155	0.00149	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.0260	0.00537	0.00549	<0.00050
	Potassium (K)-Dissolved (mg/L)	4.67	4.08	4.25	<0.050
	Selenium (Se)-Dissolved (ug/L)	254	258	235	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.05	1.98	2.00	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.01	3.62	3.82	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.274	0.257	0.250	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	0.000025	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0102	0.0104	0.00930	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0155	0.0040	0.0037	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511589-1, -2, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511589-1, -2, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2511589

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244631							
WG3417844-2	LCS							
Acidity (as CaCO3)			100.3		%		85-115	03-OCT-20
WG3417844-1	MB							
Acidity (as CaCO3)			1.4		mg/L		2	03-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5251289							
WG3420756-8	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	07-OCT-20
WG3420756-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-OCT-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-10	LCS	TMRM						
Beryllium (Be)-Dissolved			99.6		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Beryllium (Be)-Dissolved			100.3		%		80-120	06-OCT-20
WG3419579-18	LCS	TMRM						
Beryllium (Be)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Beryllium (Be)-Dissolved			100.7		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Beryllium (Be)-Dissolved			99.1		%		80-120	06-OCT-20
WG3419579-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-13	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-17	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
Batch	R5252131							
WG3421584-6	LCS	TMRM						
Beryllium (Be)-Dissolved			100.2		%		80-120	08-OCT-20
WG3421584-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-OCT-20
BIC-CL								
	Water							



Quality Control Report

Workorder: L2511589

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL	Water							
Batch	R5251289							
WG3420756-7 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	07-OCT-20
BR-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-6 LCS								
Bromide (Br)			106.4		%		85-115	02-OCT-20
WG3417695-5 MB								
Bromide (Br)			<0.050		mg/L		0.05	02-OCT-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5252066							
WG3421710-2 LCS								
Dissolved Organic Carbon			103.1		%		80-120	08-OCT-20
WG3421710-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
Batch	R5252529							
WG3422182-2 LCS								
Dissolved Organic Carbon			92.0		%		80-120	09-OCT-20
WG3422182-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5252066							
WG3421710-3 DUP		L2511589-1						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	08-OCT-20
WG3421710-2 LCS								
Total Organic Carbon			103.7		%		80-120	08-OCT-20
WG3421710-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
WG3421710-4 MS		L2511589-1						
Total Organic Carbon			101.2		%		70-130	08-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-6 LCS								
Chloride (Cl)			101.6		%		85-115	02-OCT-20
WG3417695-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-OCT-20
CO3-CL	Water							



Quality Control Report

Workorder: L2511589

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5251289							
WG3420756-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	07-OCT-20
EC-L-PCT-CL	Water							
Batch	R5251289							
WG3420756-8 LCS								
Conductivity (@ 25C)			98.9		%		90-110	07-OCT-20
WG3420756-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-OCT-20
F-IC-N-CL	Water							
Batch	R5244476							
WG3417695-6 LCS								
Fluoride (F)			93.2		%		90-110	02-OCT-20
WG3417695-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-OCT-20
HG-D-CVAA-CL	Water							
Batch	R5251758							
WG3421280-14 LCS								
Mercury (Hg)-Dissolved			107.0		%		80-120	08-OCT-20
WG3421280-13 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-OCT-20
HG-T-CVAA-CL	Water							
Batch	R5251758							
WG3421275-10 LCS								
Mercury (Hg)-Total			105.0		%		80-120	08-OCT-20
WG3421275-9 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	08-OCT-20
MET-D-CCMS-CL	Water							
Batch	R5248645							
WG3419579-10 LCS		TMRM						
Aluminum (Al)-Dissolved			100.9		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.3		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			101.9		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.1		%		80-120	06-OCT-20
Boron (B)-Dissolved			90.6		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			103.1		%		80-120	06-OCT-20



Quality Control Report

Workorder: L2511589

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-10	LCS	TMRM						
Calcium (Ca)-Dissolved			96.2		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			100.6		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			100.6		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.9		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			103.0		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			99.5		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			92.9		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			96.3		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			103.4		%		80-120	06-OCT-20
Nickel (Ni)-Dissolved			100.4		%		80-120	06-OCT-20
Potassium (K)-Dissolved			100.7		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			100.9		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			101.3		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			97.0		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			102.5		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			103.9		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			101.8		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			97.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			102.9		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.7		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.1		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.2		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			104.3		%		80-120	06-OCT-20
Boron (B)-Dissolved			88.4		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			97.3		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.6		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.4		%		80-120	06-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL	Water							
Batch	R5248645							
WG3419579-14 LCS		TMRM						
Copper (Cu)-Dissolved			101.8		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.4		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.7		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			101.6		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	06-OCT-20
Nickel (Ni)-Dissolved			101.6		%		80-120	06-OCT-20
Potassium (K)-Dissolved			101.9		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			96.1		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.4		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			99.8		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			95.9		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			101.1		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.7		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			95.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.7		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.5		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.6		%		80-120	06-OCT-20
WG3419579-18 LCS		TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.9		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			103.2		%		80-120	06-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.9		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			100.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			101.3		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			96.7		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.9		%		80-120	06-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-18	LCS	TMRM						
Lithium (Li)-Dissolved			101.3		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			102.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			105.7		%		80-120	06-OCT-20
Nickel (Ni)-Dissolved			102.4		%		80-120	06-OCT-20
Potassium (K)-Dissolved			104.0		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			97.4		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			101.9		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			102.5		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			105.2		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			108.3		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.3		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.6		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			91.0		%		80-120	06-OCT-20
Uranium (U)-Dissolved			106.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.0		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			105.2		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Aluminum (Al)-Dissolved			101.1		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			102.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.4		%		80-120	06-OCT-20
Boron (B)-Dissolved			98.3		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.4		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			98.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.9		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			102.1		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			101.2		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			101.9		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			102.7		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.3		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.4		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-2	LCS	TMRM						
Molybdenum (Mo)-Dissolved			103.9		%		80-120	06-OCT-20
Nickel (Ni)-Dissolved			103.5		%		80-120	06-OCT-20
Potassium (K)-Dissolved			104.3		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			98.2		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			100.4		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			106.4		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			104.5		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			99.8		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			105.2		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			102.5		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.6		%		80-120	08-OCT-20
Antimony (Sb)-Dissolved			104.7		%		80-120	08-OCT-20
Arsenic (As)-Dissolved			105.6		%		80-120	08-OCT-20
Barium (Ba)-Dissolved			104.2		%		80-120	08-OCT-20
Bismuth (Bi)-Dissolved			99.6		%		80-120	08-OCT-20
Boron (B)-Dissolved			100.3		%		80-120	08-OCT-20
Cadmium (Cd)-Dissolved			103.2		%		80-120	08-OCT-20
Calcium (Ca)-Dissolved			102.7		%		80-120	08-OCT-20
Chromium (Cr)-Dissolved			104.4		%		80-120	08-OCT-20
Cobalt (Co)-Dissolved			102.8		%		80-120	08-OCT-20
Copper (Cu)-Dissolved			102.7		%		80-120	08-OCT-20
Iron (Fe)-Dissolved			100.7		%		80-120	08-OCT-20
Lead (Pb)-Dissolved			99.98		%		80-120	08-OCT-20
Lithium (Li)-Dissolved			100.6		%		80-120	08-OCT-20
Magnesium (Mg)-Dissolved			109.2		%		80-120	08-OCT-20
Manganese (Mn)-Dissolved			104.9		%		80-120	08-OCT-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	08-OCT-20
Nickel (Ni)-Dissolved			102.3		%		80-120	08-OCT-20
Potassium (K)-Dissolved			107.3		%		80-120	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-6	LCS	TMRM						
Selenium (Se)-Dissolved			101.9		%		80-120	08-OCT-20
Silicon (Si)-Dissolved			99.3		%		60-140	08-OCT-20
Silver (Ag)-Dissolved			98.0		%		80-120	08-OCT-20
Sodium (Na)-Dissolved			104.7		%		80-120	08-OCT-20
Strontium (Sr)-Dissolved			102.4		%		80-120	08-OCT-20
Thallium (Tl)-Dissolved			98.8		%		80-120	08-OCT-20
Tin (Sn)-Dissolved			102.8		%		80-120	08-OCT-20
Titanium (Ti)-Dissolved			90.4		%		80-120	08-OCT-20
Uranium (U)-Dissolved			98.6		%		80-120	08-OCT-20
Vanadium (V)-Dissolved			106.0		%		80-120	08-OCT-20
Zinc (Zn)-Dissolved			99.6		%		80-120	08-OCT-20
WG3419579-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5248645							
WG3419579-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
WG3419579-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-13 MB								
	Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	08-OCT-20
	Uranium (U)-Dissolved		<0.000010		mg/L		0.00001	08-OCT-20
	Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	08-OCT-20
	Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	08-OCT-20
WG3419579-17 MB								
	Aluminum (Al)-Dissolved		<0.0010		mg/L		0.001	08-OCT-20
	Antimony (Sb)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Arsenic (As)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Barium (Ba)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Bismuth (Bi)-Dissolved		<0.000050		mg/L		0.00005	08-OCT-20
	Boron (B)-Dissolved		<0.010		mg/L		0.01	08-OCT-20
	Cadmium (Cd)-Dissolved		<0.0000050		mg/L		0.000005	08-OCT-20
	Calcium (Ca)-Dissolved		<0.050		mg/L		0.05	08-OCT-20
	Chromium (Cr)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Cobalt (Co)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Copper (Cu)-Dissolved		<0.00020		mg/L		0.0002	08-OCT-20
	Iron (Fe)-Dissolved		<0.010		mg/L		0.01	08-OCT-20
	Lead (Pb)-Dissolved		<0.000050		mg/L		0.00005	08-OCT-20
	Lithium (Li)-Dissolved		<0.0010		mg/L		0.001	08-OCT-20
	Magnesium (Mg)-Dissolved		<0.0050		mg/L		0.005	08-OCT-20
	Manganese (Mn)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Molybdenum (Mo)-Dissolved		<0.000050		mg/L		0.00005	08-OCT-20
	Nickel (Ni)-Dissolved		<0.00050		mg/L		0.0005	08-OCT-20
	Potassium (K)-Dissolved		<0.050		mg/L		0.05	08-OCT-20
	Selenium (Se)-Dissolved		<0.000050		mg/L		0.00005	08-OCT-20
	Silicon (Si)-Dissolved		<0.050		mg/L		0.05	08-OCT-20
	Silver (Ag)-Dissolved		<0.000010		mg/L		0.00001	08-OCT-20
	Sodium (Na)-Dissolved		<0.050		mg/L		0.05	08-OCT-20
	Strontium (Sr)-Dissolved		<0.00020		mg/L		0.0002	08-OCT-20
	Thallium (Tl)-Dissolved		<0.000010		mg/L		0.00001	08-OCT-20
	Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	08-OCT-20
	Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	08-OCT-20
	Uranium (U)-Dissolved		<0.000010		mg/L		0.00001	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5248645							
WG3419579-17 MB								
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
WG3419579-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
WG3419579-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-9	MB							
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Batch	R5252131							
WG3421584-6	LCS	TMRM						
Aluminum (Al)-Dissolved			101.1		%		80-120	08-OCT-20
Antimony (Sb)-Dissolved			106.1		%		80-120	08-OCT-20
Arsenic (As)-Dissolved			104.0		%		80-120	08-OCT-20



Quality Control Report

Workorder: L2511589

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5252131							
WG3421584-6	LCS	TMRM						
Barium (Ba)-Dissolved			104.2		%		80-120	08-OCT-20
Bismuth (Bi)-Dissolved			98.5		%		80-120	08-OCT-20
Boron (B)-Dissolved			95.6		%		80-120	08-OCT-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	08-OCT-20
Calcium (Ca)-Dissolved			101.8		%		80-120	08-OCT-20
Chromium (Cr)-Dissolved			101.3		%		80-120	08-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	08-OCT-20
Copper (Cu)-Dissolved			101.3		%		80-120	08-OCT-20
Iron (Fe)-Dissolved			100.8		%		80-120	08-OCT-20
Lead (Pb)-Dissolved			100.1		%		80-120	08-OCT-20
Lithium (Li)-Dissolved			100.2		%		80-120	08-OCT-20
Magnesium (Mg)-Dissolved			109.8		%		80-120	08-OCT-20
Manganese (Mn)-Dissolved			103.2		%		80-120	08-OCT-20
Molybdenum (Mo)-Dissolved			103.2		%		80-120	08-OCT-20
Nickel (Ni)-Dissolved			103.5		%		80-120	08-OCT-20
Potassium (K)-Dissolved			101.9		%		80-120	08-OCT-20
Selenium (Se)-Dissolved			99.5		%		80-120	08-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	08-OCT-20
Silver (Ag)-Dissolved			97.8		%		80-120	08-OCT-20
Sodium (Na)-Dissolved			102.0		%		80-120	08-OCT-20
Strontium (Sr)-Dissolved			103.7		%		80-120	08-OCT-20
Thallium (Tl)-Dissolved			100.6		%		80-120	08-OCT-20
Tin (Sn)-Dissolved			103.0		%		80-120	08-OCT-20
Titanium (Ti)-Dissolved			95.4		%		80-120	08-OCT-20
Uranium (U)-Dissolved			97.1		%		80-120	08-OCT-20
Vanadium (V)-Dissolved			102.5		%		80-120	08-OCT-20
Zinc (Zn)-Dissolved			95.4		%		80-120	08-OCT-20
WG3421584-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20



Quality Control Report

Workorder: L2511589

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5252131							
WG3421584-5	MB							
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
NH3-L-F-CL								
	Water							
Batch	R5250485							
WG3419701-11	DUP	L2511589-3						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-OCT-20
WG3419701-10	LCS							
Ammonia as N			96.8		%		85-115	06-OCT-20
WG3419701-14	LCS							
Ammonia as N			103.5		%		85-115	06-OCT-20
WG3419701-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-20
WG3419701-9	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5250485							
WG3419701-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-20
WG3419701-12 MS		L2511589-3						
Ammonia as N			105.8		%		75-125	06-OCT-20
NO2-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-6 LCS								
Nitrite (as N)			102.6		%		90-110	02-OCT-20
WG3417695-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-OCT-20
NO3-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-6 LCS								
Nitrate (as N)			102.3		%		90-110	02-OCT-20
WG3417695-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-OCT-20
OH-CL	Water							
Batch	R5251289							
WG3420756-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	07-OCT-20
ORP-CL	Water							
Batch	R5244427							
WG3417279-1 CRM		CL-ORP						
ORP			220		mV		210-230	02-OCT-20
P-T-L-COL-CL	Water							
Batch	R5251703							
WG3421132-6 LCS								
Phosphorus (P)-Total			101.4		%		80-120	08-OCT-20
WG3421132-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-OCT-20
PH-CL	Water							
Batch	R5251289							
WG3420756-8 LCS								
pH			6.98		pH		6.9-7.1	07-OCT-20

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Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch R5244229								
WG3417340-2 LCS								
Orthophosphate-Dissolved (as P)			105.0		%		80-120	02-OCT-20
WG3417340-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-OCT-20
SO4-IC-N-CL Water								
Batch R5244476								
WG3417695-6 LCS								
Sulfate (SO4)			102.2		%		90-110	02-OCT-20
WG3417695-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-OCT-20
SOLIDS-TDS-CL Water								
Batch R5251382								
WG3419850-3 DUP								
Total Dissolved Solids		L2511589-1 1580	1550		mg/L	1.7	20	07-OCT-20
WG3419850-2 LCS								
Total Dissolved Solids			98.0		%		85-115	07-OCT-20
WG3419850-1 MB								
Total Dissolved Solids			<10		mg/L		10	07-OCT-20
TKN-L-F-CL Water								
Batch R5250739								
WG3419951-3 DUP								
Total Kjeldahl Nitrogen		L2511589-4 <0.050	<0.050	RPD-NA	mg/L	N/A	20	07-OCT-20
WG3419951-2 LCS								
Total Kjeldahl Nitrogen			90.7		%		75-125	07-OCT-20
WG3419951-6 LCS								
Total Kjeldahl Nitrogen			82.8		%		75-125	07-OCT-20
WG3419951-9 LCS								
Total Kjeldahl Nitrogen			85.6		%		75-125	07-OCT-20
WG3419951-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3419951-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3419951-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3419951-4 MS								
Total Kjeldahl Nitrogen		L2511589-4	90.6		%		70-130	07-OCT-20
TSS-L-CL Water								



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Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5251420							
WG3419847-2	LCS							
Total Suspended Solids			94.9		%		85-115	07-OCT-20
WG3419847-1	MB							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-20
TURBIDITY-CL	Water							
Batch	R5244431							
WG3417280-3	DUP	L2511589-4						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	02-OCT-20
WG3417280-2	LCS							
Turbidity			98.4		%		85-115	02-OCT-20
WG3417280-1	MB							
Turbidity			<0.10		NTU		0.1	02-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	01-OCT-20 14:06	02-OCT-20 12:00	0.25	22	hours	EHTR-FM
	2	01-OCT-20 12:35	02-OCT-20 12:00	0.25	24	hours	EHTR-FM
	3	01-OCT-20 12:40	02-OCT-20 12:00	0.25	23	hours	EHTR-FM
	4	01-OCT-20 12:45	02-OCT-20 12:00	0.25	23	hours	EHTR-FM
pH	1	01-OCT-20 14:06	07-OCT-20 14:00	0.25	144	hours	EHTR-FM
	2	01-OCT-20 12:35	07-OCT-20 14:00	0.25	145	hours	EHTR-FM
	3	01-OCT-20 12:40	07-OCT-20 14:00	0.25	145	hours	EHTR-FM
	4	01-OCT-20 12:45	07-OCT-20 14:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2511589 were received on 02-OCT-20 09:40.

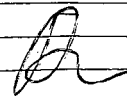
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				Regular				RUSH:					
PROJECT/CLIENT INFO								LABORATORY				OTHER INFO					
Facility Name / Job# Fording River Operations								Lab Name ALS Calgary				Report Format / Distribution			Excel	PDF	EDD
Project Manager Tom Jeffery								Lab Contact Lyudmyla Shvets				Email 1: teckcoal@equisonline.com			X	X	X
Email Tom.Jeffery@teck.com								Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: gregory.jones@golder.com			X	X	X
Address Suite 1000, 205 - 9th Ave S.E.								Address 2559 29 Street NE				Email 3: tom.jeffery@teck.com			X	X	X
												Email 4: Scott.Roughead@teck.com			X	X	X
City Calgary		Province AB		City Calgary		Province AB		Email 5:									
Postal Code T2G 0R3		Country Canada		Postal Code T1Y 7B5		Country Canada											
Phone Number 1-250-433-6716				Phone Number 403 407 1794				PO number		VPO00683840							

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL			
FR_KB-1_2020-10-01	FR_KB-1	WG		10/1/2020	14:06	G	6	1	1	1	1	1	1			
FR_KB-2_2020-10-01	FR_KB-2	WG		10/1/2020	12:35	G	6	1	1	1	1	1	1			
FR_DC4_2020-10-01	FR_DC4	WG		10/1/2020	12:40	G	6	1	1	1	1	1	1			
FR_FLD4_2020-10-01	FR_FLD4	WG		10/1/2020	12:45	G	6	1	1	1	1	1	1			
								1	1	1	1	1	1			
								1	1	1	1	1	1			
								1	1	1	1	1	1			
								1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS								DATE/TIME		ACCEPTED BY/AFFILIATION			DATE/TIME		
													10/2/2020		

SERVICE REQUEST (rush - subject to availability)																	
Regular (default) X								Sampler's Name		Katie Peterson			Mobile #		250-946-5029		
Priority (2-3 business days) - 50% surcharge								Sampler's Signature					Date/Time		October 1, 2020		
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	



L2511589-COFC



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 26-MAY-20
Report Date: 21-DEC-20 17:45 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2451671
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 0
Legal Site Desc:

Comments: 21-DEC-20:Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2451671-1 WG 25-MAY-20 14:00 FR_CB-2A_2020-05-25	L2451671-2 WG 25-MAY-20 11:45 FR_GCMW-1A_2020-05-25	L2451671-3 WG 25-MAY-20 10:00 FR_GCMW-1B_2020-05-25	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	701	582	606	
	Hardness (as CaCO3) (mg/L)	13.4	31.1	57.4	
	pH (pH)	8.84	8.64	8.54	
	ORP (mV)	406	461	273	
	Total Suspended Solids (mg/L)	2.0	1.7	2.9	
	Total Dissolved Solids (mg/L)	511 ^{DLHC}	439 ^{DLHC}	445 ^{DLHC}	
	Turbidity (NTU)	14.4	5.53	5.17	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	439	346	363	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	45.6	20.6	19.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	485	366	382	
	Ammonia as N (mg/L)	0.630 ^{DLHC}	0.297	0.124	
	Bicarbonate (HCO3) (mg/L)	535	422	443	
	Bromide (Br) (mg/L)	0.062	0.099	0.081	
	Carbonate (CO3) (mg/L)	27.4	12.4	11.4	
	Chloride (Cl) (mg/L)	12.3	17.3	16.9	
	Fluoride (F) (mg/L)	1.30	1.62	1.56	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	86.2	96.5	106	
	Nitrate (as N) (mg/L)	<0.0050	0.180	0.0051	
	Nitrite (as N) (mg/L)	<0.0010	0.0074	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.678	0.406	0.324	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0143	0.0552	0.0110	
	Phosphorus (P)-Total (mg/L)	0.0249	0.0632	0.0220	
	Sulfate (SO4) (mg/L)	<0.30	1.71	7.82	
	Anion Sum (meq/L)	10.1	7.94	8.36	
	Cation Sum (meq/L)	8.71	7.67	8.82	
	Cation - Anion Balance (%)	-7.4	-1.8	2.7	
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.00	2.62	5.67
Total Organic Carbon (mg/L)		1.33	2.59	5.41	
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0060 ^{DLM}	0.0031	0.0065	
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLM}	<0.00010	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2451671-1 WG 25-MAY-20 14:00 FR_CB-2A_2020-05-25	L2451671-2 WG 25-MAY-20 11:45 FR_GCMW-1A_2020-05-25	L2451671-3 WG 25-MAY-20 10:00 FR_GCMW-1B_2020-05-25	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLM <0.00050	0.00158	0.00184	
	Barium (Ba)-Dissolved (mg/L)	DLM 0.257	0.111	0.0935	
	Beryllium (Be)-Dissolved (ug/L)	DLM <0.10	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	DLM <0.00025	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	DLM 0.347	0.180	0.122	
	Cadmium (Cd)-Dissolved (ug/L)	DLM <0.025	0.0096	0.0097	
	Calcium (Ca)-Dissolved (mg/L)	DLM 2.99	8.25	16.4	
	Chromium (Cr)-Dissolved (mg/L)	DLM <0.00050	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	DLM <0.50	<0.10	0.14	
	Copper (Cu)-Dissolved (mg/L)	DLM <0.0010	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	DLM <0.050	<0.010	0.109	
	Lead (Pb)-Dissolved (mg/L)	DLM <0.00025	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	DLM 0.614	0.284	0.201	
	Magnesium (Mg)-Dissolved (mg/L)	DLM 1.43	2.54	3.99	
	Manganese (Mn)-Dissolved (mg/L)	DLM 0.00716	0.0672	0.222	
	Mercury (Hg)-Dissolved (mg/L)	DLM <0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	DLM <0.00025	0.0464	0.0492	
	Nickel (Ni)-Dissolved (mg/L)	DLM <0.0025	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	DLM 1.02	1.14	1.41	
	Selenium (Se)-Dissolved (ug/L)	DLM <0.25	0.543	<0.050	
	Silicon (Si)-Dissolved (mg/L)	DLM 3.11	2.77	3.71	
	Silver (Ag)-Dissolved (mg/L)	DLM <0.000050	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	DLM 193	161	175	
	Strontium (Sr)-Dissolved (mg/L)	DLM 0.299	0.141	0.134	
	Thallium (Tl)-Dissolved (mg/L)	DLM <0.000050	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	DLM <0.00050	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	DLM <0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	DLM <0.000050	0.000192	0.000285	
	Vanadium (V)-Dissolved (mg/L)	DLM <0.0025	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	DLM <0.0050	0.0027	0.0018	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2451671-1, -2, -3
Matrix Spike	Ammonia as N	MS-B	L2451671-1, -2, -3
Matrix Spike	Nitrate (as N)	MS-B	L2451671-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L2451671-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

0

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2451671

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5100397							
WG3331266-5	LCS							
Acidity (as CaCO3)			107.8		%		85-115	28-MAY-20
WG3331266-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5100539							
WG3331283-14	LCS							
Alkalinity, Total (as CaCO3)			105.0		%		85-115	28-MAY-20
WG3331283-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-MAY-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Beryllium (Be)-Dissolved			107.1		%		80-120	01-JUN-20
WG3333020-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-JUN-20
BIC-CL								
	Water							
Batch	R5100539							
WG3331283-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5103433							
WG3333601-6	LCS							
Bromide (Br)			104.5		%		85-115	26-MAY-20
WG3333601-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5102771							
WG3332315-4	LCS							
Dissolved Organic Carbon			103.1		%		80-120	31-MAY-20
WG3332315-3	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2451671

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5102771							
WG3332315-4	LCS							
Total Organic Carbon			104.6		%		80-120	31-MAY-20
WG3332315-3	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-20
CL-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Chloride (Cl)			103.2		%		90-110	26-MAY-20
WG3333601-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	26-MAY-20
CO3-CL	Water							
Batch	R5100539							
WG3331283-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-MAY-20
EC-L-PCT-CL	Water							
Batch	R5100539							
WG3331283-14	LCS							
Conductivity (@ 25C)			93.0		%		90-110	28-MAY-20
WG3331283-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-MAY-20
F-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Fluoride (F)			94.5		%		90-110	26-MAY-20
WG3333601-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-MAY-20
HG-D-CVAA-CL	Water							
Batch	R5101984							
WG3331819-2	LCS							
Mercury (Hg)-Dissolved			117.0		%		80-120	29-MAY-20
WG3331819-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-MAY-20
HG-T-CVAA-CL	Water							



Quality Control Report

Workorder: L2451671

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5101984							
WG3331820-2	LCS							
Mercury (Hg)-Total			105.0		%		80-120	29-MAY-20
WG3331820-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAY-20
MET-D-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Aluminum (Al)-Dissolved			99.4		%		80-120	01-JUN-20
Antimony (Sb)-Dissolved			102.6		%		80-120	01-JUN-20
Arsenic (As)-Dissolved			96.7		%		80-120	01-JUN-20
Barium (Ba)-Dissolved			98.0		%		80-120	01-JUN-20
Bismuth (Bi)-Dissolved			99.98		%		80-120	01-JUN-20
Boron (B)-Dissolved			101.3		%		80-120	01-JUN-20
Cadmium (Cd)-Dissolved			94.6		%		80-120	01-JUN-20
Calcium (Ca)-Dissolved			102.2		%		80-120	01-JUN-20
Chromium (Cr)-Dissolved			97.7		%		80-120	01-JUN-20
Cobalt (Co)-Dissolved			98.0		%		80-120	01-JUN-20
Copper (Cu)-Dissolved			96.3		%		80-120	01-JUN-20
Iron (Fe)-Dissolved			101.3		%		80-120	01-JUN-20
Lead (Pb)-Dissolved			99.9		%		80-120	01-JUN-20
Lithium (Li)-Dissolved			109.5		%		80-120	01-JUN-20
Magnesium (Mg)-Dissolved			95.8		%		80-120	01-JUN-20
Manganese (Mn)-Dissolved			97.9		%		80-120	01-JUN-20
Molybdenum (Mo)-Dissolved			106.3		%		80-120	01-JUN-20
Nickel (Ni)-Dissolved			97.2		%		80-120	01-JUN-20
Potassium (K)-Dissolved			102.2		%		80-120	01-JUN-20
Selenium (Se)-Dissolved			97.7		%		80-120	01-JUN-20
Silicon (Si)-Dissolved			102.7		%		60-140	01-JUN-20
Silver (Ag)-Dissolved			107.0		%		80-120	01-JUN-20
Sodium (Na)-Dissolved			104.5		%		80-120	01-JUN-20
Strontium (Sr)-Dissolved			106.3		%		80-120	01-JUN-20
Thallium (Tl)-Dissolved			100.0		%		80-120	01-JUN-20
Tin (Sn)-Dissolved			95.4		%		80-120	01-JUN-20
Titanium (Ti)-Dissolved			97.1		%		80-120	01-JUN-20
Uranium (U)-Dissolved			103.6		%		80-120	01-JUN-20



Quality Control Report

Workorder: L2451671

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5103024							
WG3333020-6	LCS	TMRM						
Vanadium (V)-Dissolved			99.5		%		80-120	01-JUN-20
Zinc (Zn)-Dissolved			93.6		%		80-120	01-JUN-20
WG3333020-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-JUN-20

NH3-L-F-CL

Water

Quality Control Report

Workorder: L2451671

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5103597								
WG3333790-7	DUP	L2451671-3						
Ammonia as N		0.124	0.123		mg/L	0.6	20	02-JUN-20
WG3333790-6	LCS							
Ammonia as N			105.7		%		85-115	02-JUN-20
WG3333790-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-JUN-20
WG3333790-8	MS	L2451671-3						
Ammonia as N			N/A	MS-B	%		-	02-JUN-20
NO2-L-IC-N-CL								
Batch R5103433								
WG3333601-6	LCS							
Nitrite (as N)			105.3		%		90-110	26-MAY-20
WG3333601-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-MAY-20
NO3-L-IC-N-CL								
Batch R5103433								
WG3333601-6	LCS							
Nitrate (as N)			103.0		%		90-110	26-MAY-20
WG3333601-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-MAY-20
OH-CL								
Batch R5100539								
WG3331283-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	28-MAY-20
ORP-CL								
Batch R5103100								
WG3333155-2	CRM	CL-ORP						
ORP			219		mV		210-230	01-JUN-20
P-T-L-COL-CL								
Batch R5100883								
WG3331303-2	LCS							
Phosphorus (P)-Total			94.4		%		80-120	29-MAY-20
WG3331303-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-MAY-20
PH-CL								
Water								

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5100539							
WG3331283-14	LCS							
pH			6.98		pH		6.9-7.1	28-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5098949							
WG3329452-6	LCS							
Orthophosphate-Dissolved (as P)			102.9		%		80-120	26-MAY-20
WG3329452-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-MAY-20
SO4-IC-N-CL	Water							
Batch	R5103433							
WG3333601-6	LCS							
Sulfate (SO4)			103.1		%		90-110	26-MAY-20
WG3333601-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5102478							
WG3332267-2	LCS							
Total Dissolved Solids			101.1		%		85-115	30-MAY-20
WG3332267-1	MB							
Total Dissolved Solids			<10		mg/L		10	30-MAY-20
TKN-L-F-CL	Water							
Batch	R5103674							
WG3333891-2	LCS							
Total Kjeldahl Nitrogen			93.4		%		75-125	02-JUN-20
WG3333891-5	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	02-JUN-20
WG3333891-9	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	02-JUN-20
WG3333891-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
WG3333891-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
WG3333891-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5102469							
WG3332256-2	LCS							
Total Suspended Solids			95.1		%		85-115	30-MAY-20
WG3332256-1	MB							
Total Suspended Solids			<1.0		mg/L		1	30-MAY-20
TURBIDITY-CL	Water							
Batch	R5100141							
WG3330378-3	DUP	L2451671-3						
Turbidity		5.17	5.25		NTU	1.5	15	27-MAY-20
WG3330378-2	LCS							
Turbidity			104.5		%		85-115	27-MAY-20
WG3330378-1	MB							
Turbidity			<0.10		NTU		0.1	27-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	25-MAY-20 14:00	01-JUN-20 19:00	0.25	173	hours	EHTR-FM
	2	25-MAY-20 11:45	01-JUN-20 19:00	0.25	175	hours	EHTR-FM
	3	25-MAY-20 10:00	01-JUN-20 19:00	0.25	177	hours	EHTR-FM
pH	1	25-MAY-20 14:00	28-MAY-20 14:00	0.25	72	hours	EHTR-FM
	2	25-MAY-20 11:45	28-MAY-20 14:00	0.25	74	hours	EHTR-FM
	3	25-MAY-20 10:00	28-MAY-20 14:00	0.25	76	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2451671 were received on 26-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: _____ TURNAROUND TIME: _____ RUSH: _____

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	gregory.jones@golder.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered	Field	Lab	Field	Lab	None	
FR_CB-1A_2020	FR_CB-1A	WG				G	6													
FR_CB-1B_2020	FR_CB-1B	WG				G	6													
FR_CB-1C_2020	FR_CB-1C	WG				G	6													
FR_CB-2A_2020-05-25	FR_CB_2A	WG		2020/05/25	14:00	G	6	1	1	1	1	1	1							
FR_GCMW-1A_2020-05-25	FR_GCMW-1A	WG		2020/05/25	11:45	G	6	1	1	1	1	1	1							
FR_GCMW-1B_2020-05-25	FR_GCMW-1B	WG		2020/05/25	10:00	G	6	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	5/26/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	250 946 5029
	Sampler's Signature	Date/Time
		May 25, 2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 09-SEP-20
Report Date: 11-FEB-21 16:12 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2500487
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2500487-1 WS 08-SEP-20 12:05 FR_TBSSMW- 1_QTR_2020-07- 06_N	L2500487-2 WS 08-SEP-20 13:40 FR_TBSSMW- 2_QTR_2020-07- 06_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	287	450		
	Hardness (as CaCO3) (mg/L)	138	287		
	pH (pH)	8.31	8.24		
	ORP (mV)	449	380		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	176 ^{DLHC}	338 ^{DLHC}		
	Turbidity (NTU)	1.05	0.43		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	170	141		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	2.2	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	172	141		
	Ammonia as N (mg/L)	0.350	0.0175		
	Bicarbonate (HCO3) (mg/L)	207	172		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	0.42	0.26		
	Fluoride (F) (mg/L)	0.403	0.238		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	94.6	101		
	Nitrate (as N) (mg/L)	<0.0050	3.60		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	3.22	<0.050 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027	0.0017		
	Phosphorus (P)-Total (mg/L)	0.0038	0.0028		
	Sulfate (SO4) (mg/L)	15.8	126		
	Anion Sum (meq/L)	3.80	5.72		
	Cation Sum (meq/L)	3.60	5.79		
	Cation - Anion Balance (%)	-2.8	0.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00137	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2500487-1 WS 08-SEP-20 12:05 FR_TBSSMW- 1_QTR_2020-07- 06_N	L2500487-2 WS 08-SEP-20 13:40 FR_TBSSMW- 2_QTR_2020-07- 06_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	2.47	0.0700		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.011	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}	0.0079		
	Calcium (Ca)-Dissolved (mg/L)	11.5	74.8		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.147	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.195	0.0083		
	Magnesium (Mg)-Dissolved (mg/L)	26.6	24.4		
	Manganese (Mn)-Dissolved (mg/L)	0.0350	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0152	0.000876		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	6.56	0.832		
	Selenium (Se)-Dissolved (ug/L)	<0.050	22.5		
	Silicon (Si)-Dissolved (mg/L)	2.28	1.65		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	14.6	0.632		
	Strontium (Sr)-Dissolved (mg/L)	0.246	0.139		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000134	0.00106		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0025	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2500487-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2500487-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2500487-1, -2
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2500487-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2500487-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2500487-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2500487

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5222523							
WG3403167-2	LCS							
Acidity (as CaCO3)			101.0		%		85-115	11-SEP-20
WG3403167-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	11-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5223893							
WG3404813-2	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	15-SEP-20
WG3404813-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-2	LCS							
Beryllium (Be)-Dissolved			91.9		%		80-120	12-SEP-20
WG3403040-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-SEP-20
BIC-CL								
	Water							
Batch	R5223893							
WG3404813-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5220364							
WG3401714-2	LCS							
Bromide (Br)			103.5		%		85-115	09-SEP-20
WG3401714-6	LCS							
Bromide (Br)			104.6		%		85-115	09-SEP-20
WG3401714-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-SEP-20
WG3401714-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5222758							
WG3403453-3	DUP	L2500487-2						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-SEP-20
WG3403453-2	LCS							
Dissolved Organic Carbon			87.1		%		80-120	12-SEP-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5222758							
WG3403453-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-4	MS	L2500487-2						
Dissolved Organic Carbon			85.0		%		70-130	12-SEP-20
C-TOT-ORG-LOW-CL Water								
Batch	R5222758							
WG3403453-3	DUP	L2500487-2						
Total Organic Carbon			<0.50	RPD-NA	mg/L	N/A	20	12-SEP-20
WG3403453-2	LCS							
Total Organic Carbon			87.4		%		80-120	12-SEP-20
WG3403453-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
WG3403453-4	MS	L2500487-2						
Total Organic Carbon			87.8		%		70-130	12-SEP-20
CL-L-IC-N-CL Water								
Batch	R5220364							
WG3401714-2	LCS							
Chloride (Cl)			102.9		%		85-115	09-SEP-20
WG3401714-6	LCS							
Chloride (Cl)			103.1		%		85-115	09-SEP-20
WG3401714-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-SEP-20
WG3401714-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-SEP-20
CO3-CL Water								
Batch	R5223893							
WG3404813-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	15-SEP-20
EC-L-PCT-CL Water								
Batch	R5223893							
WG3404813-2	LCS							
Conductivity (@ 25C)			98.2		%		90-110	15-SEP-20
WG3404813-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-SEP-20
F-IC-N-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL		Water						
Batch	R5220364							
WG3401714-2	LCS							
Fluoride (F)			105.5		%		90-110	09-SEP-20
WG3401714-6	LCS							
Fluoride (F)			100.3		%		90-110	09-SEP-20
WG3401714-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-SEP-20
WG3401714-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-SEP-20
HG-D-CVAA-VA		Water						
Batch	R5221867							
WG3402294-2	LCS							
Mercury (Hg)-Dissolved			95.3		%		80-120	11-SEP-20
WG3402294-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-20
MET-D-CCMS-VA		Water						
Batch	R5223224							
WG3403040-2	LCS							
Aluminum (Al)-Dissolved			95.2		%		80-120	12-SEP-20
Antimony (Sb)-Dissolved			96.8		%		80-120	12-SEP-20
Arsenic (As)-Dissolved			98.4		%		80-120	12-SEP-20
Barium (Ba)-Dissolved			102.1		%		80-120	12-SEP-20
Bismuth (Bi)-Dissolved			118.9		%		80-120	12-SEP-20
Boron (B)-Dissolved			96.8		%		80-120	12-SEP-20
Cadmium (Cd)-Dissolved			96.9		%		80-120	12-SEP-20
Calcium (Ca)-Dissolved			100.5		%		80-120	12-SEP-20
Chromium (Cr)-Dissolved			101.2		%		80-120	12-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	12-SEP-20
Copper (Cu)-Dissolved			94.8		%		80-120	12-SEP-20
Iron (Fe)-Dissolved			87.8		%		80-120	12-SEP-20
Lead (Pb)-Dissolved			97.4		%		80-120	12-SEP-20
Lithium (Li)-Dissolved			95.0		%		80-120	12-SEP-20
Magnesium (Mg)-Dissolved			95.6		%		80-120	12-SEP-20
Manganese (Mn)-Dissolved			98.7		%		80-120	12-SEP-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	12-SEP-20
Nickel (Ni)-Dissolved			97.1		%		80-120	12-SEP-20
Potassium (K)-Dissolved			96.3		%		80-120	12-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-2	LCS							
Selenium (Se)-Dissolved			94.6		%		80-120	12-SEP-20
Silicon (Si)-Dissolved			93.4		%		60-140	12-SEP-20
Silver (Ag)-Dissolved			102.1		%		80-120	12-SEP-20
Sodium (Na)-Dissolved			100.1		%		80-120	12-SEP-20
Strontium (Sr)-Dissolved			106.4		%		80-120	12-SEP-20
Thallium (Tl)-Dissolved			97.4		%		80-120	12-SEP-20
Tin (Sn)-Dissolved			98.2		%		80-120	12-SEP-20
Titanium (Ti)-Dissolved			98.7		%		80-120	12-SEP-20
Uranium (U)-Dissolved			102.6		%		80-120	12-SEP-20
Vanadium (V)-Dissolved			97.3		%		80-120	12-SEP-20
Zinc (Zn)-Dissolved			94.7		%		80-120	12-SEP-20
WG3403040-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5219177							
WG3400960-10	LCS							
Ammonia as N			108.2		%		85-115	10-SEP-20
WG3400960-14	LCS							
Ammonia as N			96.0		%		85-115	09-SEP-20
WG3400960-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	09-SEP-20
WG3400960-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5220364							
WG3401714-2	LCS							
Nitrite (as N)			101.9		%		90-110	09-SEP-20
WG3401714-6	LCS							
Nitrite (as N)			101.7		%		90-110	09-SEP-20
WG3401714-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-SEP-20
WG3401714-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5220364							
WG3401714-2	LCS							
Nitrate (as N)			102.5		%		90-110	09-SEP-20
WG3401714-6	LCS							
Nitrate (as N)			104.0		%		90-110	09-SEP-20
WG3401714-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5220364							
WG3401714-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-SEP-20
WG3401714-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5224030							
WG3403670-2 LCS								
Total Dissolved Solids			98.5		%		85-115	14-SEP-20
WG3403670-1 MB								
Total Dissolved Solids			<10		mg/L		10	14-SEP-20
TKN-L-F-CL	Water							
Batch	R5220262							
WG3401543-10 LCS								
Total Kjeldahl Nitrogen			97.8		%		75-125	11-SEP-20
WG3401543-12 LCS								
Total Kjeldahl Nitrogen			96.0		%		75-125	11-SEP-20
WG3401543-2 LCS								
Total Kjeldahl Nitrogen			96.4		%		75-125	10-SEP-20
WG3401543-5 LCS								
Total Kjeldahl Nitrogen			90.6		%		75-125	11-SEP-20
WG3401543-7 LCS								
Total Kjeldahl Nitrogen			98.1		%		75-125	11-SEP-20
WG3401543-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-20
WG3401543-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-6 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
WG3401543-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-20
TSS-L-CL	Water							
Batch	R5223928							
WG3403519-2 LCS								
Total Suspended Solids			112.4		%		85-115	14-SEP-20
WG3403519-1 MB								
Total Suspended Solids			<1.0		mg/L		1	14-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5219139							
WG3401103-3	LCS							
Turbidity			98.5		%		85-115	09-SEP-20
WG3401103-2	MB							
Turbidity			<0.10		NTU		0.1	09-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	08-SEP-20 12:05	10-SEP-20 18:15	0.25	54	hours	EHTR-FM
	2	08-SEP-20 13:40	10-SEP-20 18:15	0.25	53	hours	EHTR-FM
pH	1	08-SEP-20 12:05	15-SEP-20 11:00	0.25	167	hours	EHTR-FM
	2	08-SEP-20 13:40	15-SEP-20 11:00	0.25	165	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2500487 were received on 09-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 20200809 0815 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
								Email 4:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	al.schroeder@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	kaleigh.mccallum@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number	VPO00680583			

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time ^f (24hr)	G=Grab C=Comp	# Of Cont.	PREP	F	N	F	N	F	N	N	N	N	N	N	N	N	N
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	PAH/EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY				
FR_TBSSMW-1_QTR_2020-07-06_N	FR_TBSSMW-1	WS	NO	8-Sep-20	12:05	G	6	1	1	1		1		1				1				
FR_TBSSMW-2_QTR_2020-07-06_N	FR_TBSSMW-2	WS	NO	8-Sep-20	13:40	G	6	1	1	1		1		1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	September 8, 2020	<i>[Signature]</i>	9/9/2020

SERVICE REQUEST (rush - subject to availability)		SAMPLER INFORMATION	
Regular (default)	X	Sampler's Name	Britt Anderson
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge		Mobile #	250-464-9462
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	September 8, 2020



[Handwritten initials]

[Handwritten signature]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 03-NOV-20
Report Date: 05-FEB-21 13:40 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2525340
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 11/2/2020
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 12:23

5-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2525340-1 WG 02-NOV-20 10:15 FR_DC3_QTR_202 0-10-05_N	L2525340-2 WG 02-NOV-20 11:15 FR_FLD_QTR_202 0-10-05_N	L2525340-3 WG 02-NOV-20 13:25 FR_HMW1D_QTR _2020-10-05_N	L2525340-4 WG 02-NOV-20 12:25 FR_HMW1S_QTR_ 2020-10-05_N	L2525340-5 WG 02-NOV-20 10:15 FR_HMW2_QTR_2 020-10-05_N	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	2860	<2.0	3840	3730	2880
	Hardness (as CaCO3) (mg/L)	1900	<0.50	2660	2520	1900
	pH (pH)	7.80	5.83	7.79	7.90	7.78
	ORP (mV)	218	236	235	214	218
	Total Suspended Solids (mg/L)	10.0	<1.0	<1.0	1.1	11.1
	Total Dissolved Solids (mg/L)	2740 ^{DLHC}	<10	3940 ^{DLHC}	4090 ^{DLHC}	2680 ^{DLHC}
	Turbidity (NTU)	11.3	<0.10	1.50	0.70	12.6
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	23.4	<1.0	25.8	17.6	23.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	365	<1.0	429	376	362
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	365	<1.0	429	376	362
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0136	0.718 ^{DLHC}	<0.0050
	Bicarbonate (HCO3) (mg/L)	445		523 ^{DLHC}	459 ^{DLHC}	441 ^{DLHC}
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0		<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)	0.73	<0.10	2.39 ^{DLHC}	2.06 ^{DLHC}	0.83 ^{DLHC}
	Fluoride (F) (mg/L)	0.19	<0.020	0.21 ^{DLHC}	0.23 ^{DLHC}	0.19 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0		<5.0	<5.0	<5.0
	Ion Balance (%)	96.8	0.0	99.8 ^{DLHC}	98.9 ^{DLHC}	97.1 ^{DLHC}
	Nitrate (as N) (mg/L)	47.9	<0.0050	107 ^{DLHC}	110 ^{DLHC}	47.9 ^{DLHC}
	Nitrite (as N) (mg/L)	0.0167	<0.0010	0.0217 ^{DLHC}	0.0073 ^{DLHC}	0.0094 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050 ^{RRV}	<0.050 ^{TKNI}	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0087	<0.0010	0.0038 ^{RRV}	0.0015	0.0087
	Phosphorus (P)-Total (mg/L)	0.0207	<0.0020	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}	0.0271 ^{DLHC}
	Sulfate (SO4) (mg/L)	1390	<0.30	1790	1720	1380
	Anion Sum (meq/L)	39.6	<0.10	53.5	51.2	39.5
	Cation Sum (meq/L)	38.3	<0.10	53.4	50.6	38.3
Cation - Anion Balance (%)	-1.6	0.0	-0.1	-0.6	-1.5	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.56	0.81	0.60
	Total Organic Carbon (mg/L)	1.29	<0.50	1.30	0.67	2.62
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.130	<0.0030	<0.0030	<0.0030	0.158
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	0.00036	0.00032	<0.00020 ^{DLA}
	Arsenic (As)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00020 ^{DLA}	<0.00020 ^{DLA}	0.00020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2525340-6 WG 02-NOV-20 11:15 FR_HMW3_QTR_2 020-10-05_N	L2525340-7 WG 02-NOV-20 12:00 FR_TRP_QTR_202 0-10-05_N		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	948	<2.0		
	Hardness (as CaCO3) (mg/L)	508	<0.50		
	pH (pH)	8.19	5.59		
	ORP (mV)	199	243		
	Total Suspended Solids (mg/L)	12.6	<1.0		
	Total Dissolved Solids (mg/L)	742 ^{DLHC}	<10		
	Turbidity (NTU)	7.64	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	1.3		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	210	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	210	<1.0		
	Ammonia as N (mg/L)	0.194	0.0865 ^{RRV}		
	Bicarbonate (HCO3) (mg/L)	256			
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.38	<0.10		
	Fluoride (F) (mg/L)	0.205	<0.020		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	96.7	0.0		
	Nitrate (as N) (mg/L)	9.25	<0.0050		
	Nitrite (as N) (mg/L)	0.0089	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.166	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0030	<0.0020		
	Sulfate (SO4) (mg/L)	276	<0.30		
	Anion Sum (meq/L)	10.6	<0.10		
	Cation Sum (meq/L)	10.3	<0.10		
	Cation - Anion Balance (%)	-1.7	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00019	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2525340-1 WG 02-NOV-20 10:15 FR_DC3_QTR_202 0-10-05_N	L2525340-2 WG 02-NOV-20 11:15 FR_FLD_QTR_202 0-10-05_N	L2525340-3 WG 02-NOV-20 13:25 FR_HMW1D_QTR _2020-10-05_N	L2525340-4 WG 02-NOV-20 12:25 FR_HMW1S_QTR_ 2020-10-05_N	L2525340-5 WG 02-NOV-20 10:15 FR_HMW2_QTR_2 020-10-05_N	
Grouping	Analyte					
WATER						
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0180 ^{DLA}	<0.00010	0.0110 ^{DLA}	0.0100 ^{DLA}	0.0200 ^{DLA}
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}	<0.020	<0.040 ^{DLA}	<0.040 ^{DLA}	<0.040 ^{DLA}
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050	<0.00010 ^{DLA}	<0.00010 ^{DLA}	<0.00010 ^{DLA}
	Boron (B)-Dissolved (mg/L)	0.047	<0.010	0.052	0.046	0.047
	Cadmium (Cd)-Dissolved (ug/L)	0.283	<0.0050	0.097	0.107	0.298
	Calcium (Ca)-Dissolved (mg/L)	396	<0.050	573	530	401
	Chromium (Cr)-Dissolved (mg/L)	0.00029	<0.00010	<0.00020 ^{DLA}	<0.00020 ^{DLA}	0.00028
	Cobalt (Co)-Dissolved (ug/L)	0.35	<0.10	4.84 ^{DLA}	4.03 ^{DLA}	0.39
	Copper (Cu)-Dissolved (mg/L)	0.00055	<0.00020	<0.00040 ^{DLA}	<0.00040 ^{DLA}	0.00058
	Iron (Fe)-Dissolved (mg/L)	0.168	<0.010	<0.020 ^{DLA}	<0.020 ^{DLA}	0.161
	Lead (Pb)-Dissolved (mg/L)	0.00019	<0.000050	<0.00010 ^{DLA}	<0.00010 ^{DLA}	0.00021
	Lithium (Li)-Dissolved (mg/L)	0.125	<0.0010	0.0899	0.0849	0.123
	Magnesium (Mg)-Dissolved (mg/L)	222	<0.10	299	290	219
	Manganese (Mn)-Dissolved (mg/L)	0.100	<0.00010	0.744	0.344	0.118
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00050	<0.000050	0.00067	0.00090	0.00051
	Nickel (Ni)-Dissolved (mg/L)	0.0118	<0.00050	0.0309	0.0402	0.0124
	Potassium (K)-Dissolved (mg/L)	6.50	<0.050	6.04	6.92	6.63
	Selenium (Se)-Dissolved (ug/L)	371	<0.050	5.56	263	376
	Silicon (Si)-Dissolved (mg/L)	2.00	<0.050	2.83	2.26	2.09
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010	<0.000020 ^{DLA}	<0.000020 ^{DLA}	<0.000020 ^{DLA}
	Sodium (Na)-Dissolved (mg/L)	2.35	<0.050	2.23	2.19	2.42
	Strontium (Sr)-Dissolved (mg/L)	0.222	<0.00020	0.323	0.288	0.223
	Thallium (Tl)-Dissolved (mg/L)	0.000034 ^{DLA}	<0.000010	<0.000020 ^{DLA}	0.000022 ^{DLA}	0.000035 ^{DLA}
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00020 ^{DLA}	<0.00020 ^{DLA}	<0.00020 ^{DLA}
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00860	<0.000010	0.0125 ^{DLA}	0.0121 ^{DLA}	0.00838 ^{DLA}
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050	<0.0010 ^{DLA}	<0.0010 ^{DLA}	<0.0010 ^{DLA}
	Zinc (Zn)-Dissolved (mg/L)	0.0087	<0.0010	0.0082	0.0060	0.0085

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2525340-6 WG 02-NOV-20 11:15 FR_HMW3_QTR_2 020-10-05_N	L2525340-7 WG 02-NOV-20 12:00 FR_TRP_QTR_202 0-10-05_N		
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	0.0374	<0.00010		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.015	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	0.0379	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	119	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.14	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00021	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.152	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0303	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	51.0	<0.10		
	Manganese (Mn)-Dissolved (mg/L)	0.0910	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00100	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.00132	<0.00050		
	Potassium (K)-Dissolved (mg/L)	2.01	<0.050		
	Selenium (Se)-Dissolved (ug/L)	67.3	<0.050		
	Silicon (Si)-Dissolved (mg/L)	1.58	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	1.22	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	0.139	<0.00020		
	Thallium (Tl)-Dissolved (mg/L)	0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00216	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0010	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric



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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5277756							
WG3438712-14	LCS							
Acidity (as CaCO3)			104.6		%		85-115	04-NOV-20
WG3438712-17	LCS							
Acidity (as CaCO3)			109.8		%		85-115	04-NOV-20
WG3438712-13	MB							
Acidity (as CaCO3)			1.7		mg/L		2	04-NOV-20
WG3438712-16	MB							
Acidity (as CaCO3)			1.5		mg/L		2	04-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5280039							
WG3439415-18	DUP	L2525340-5						
Alkalinity, Total (as CaCO3)		362	354		mg/L	2.2	20	04-NOV-20
WG3439415-17	LCS							
Alkalinity, Total (as CaCO3)			97.7		%		85-115	04-NOV-20
WG3439415-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5282309							
WG3440093-2	LCS							
Beryllium (Be)-Dissolved			107.1		%		80-120	07-NOV-20
WG3440093-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-NOV-20
BIC-CL								
	Water							
Batch	R5280039							
WG3439415-18	DUP	L2525340-5						
Bicarbonate (HCO3)		441	431		mg/L	2.2	20	04-NOV-20
WG3439415-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5281845							
WG3440741-10	LCS							
Bromide (Br)			104.9		%		85-115	05-NOV-20
WG3440741-6	LCS							
Bromide (Br)			102.4		%		85-115	05-NOV-20
WG3440741-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-20
WG3440741-9	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Batch R5281845								
WG3440741-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-20
C-DIS-ORG-LOW-CL								
Batch R5281491								
WG3440447-7	DUP	L2525340-7						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-NOV-20
WG3440447-6	LCS							
Dissolved Organic Carbon			94.9		%		80-120	05-NOV-20
WG3440447-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-20
WG3440447-8	MS	L2525340-7						
Dissolved Organic Carbon			100.7		%		70-130	05-NOV-20
Batch R5281516								
WG3440482-6	LCS							
Dissolved Organic Carbon			98.1		%		80-120	05-NOV-20
WG3440482-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-20
Batch R5282942								
WG3442083-2	LCS							
Dissolved Organic Carbon			95.1		%		80-120	09-NOV-20
WG3442083-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-20
C-TOT-ORG-LOW-CL								
Batch R5281491								
WG3440447-7	DUP	L2525340-7						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-NOV-20
WG3440447-6	LCS							
Total Organic Carbon			100.9		%		80-120	05-NOV-20
WG3440447-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-20
WG3440447-8	MS	L2525340-7						
Total Organic Carbon			98.3		%		70-130	05-NOV-20
Batch R5281516								
WG3440482-6	LCS							
Total Organic Carbon			103.1		%		80-120	05-NOV-20
WG3440482-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-L-IC-N-CL								
Batch R5281845								
WG3440741-10	LCS							
Chloride (Cl)			101.6		%		85-115	05-NOV-20
WG3440741-6	LCS							
Chloride (Cl)			101.2		%		85-115	05-NOV-20
WG3440741-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-NOV-20
WG3440741-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-NOV-20
CO3-CL								
Batch R5280039								
WG3439415-18	DUP	L2525340-5						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	04-NOV-20
WG3439415-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	04-NOV-20
EC-L-PCT-CL								
Batch R5280039								
WG3439415-18	DUP	L2525340-5						
Conductivity (@ 25C)		2880	2870		uS/cm	0.3	10	04-NOV-20
WG3439415-17	LCS							
Conductivity (@ 25C)			99.6		%		90-110	04-NOV-20
WG3439415-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-20
F-IC-N-CL								
Batch R5281845								
WG3440741-10	LCS							
Fluoride (F)			108.4		%		90-110	05-NOV-20
WG3440741-6	LCS							
Fluoride (F)			105.4		%		90-110	05-NOV-20
WG3440741-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-20
WG3440741-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-20
HG-D-CVAA-VA								
Batch R5282117								
WG3441120-6	LCS							
Mercury (Hg)-Dissolved			96.8		%		80-120	07-NOV-20
WG3441120-5	MB	NP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5282117							
WG3441120-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5282309							
WG3440093-2 LCS								
Aluminum (Al)-Dissolved			103.1		%		80-120	07-NOV-20
Antimony (Sb)-Dissolved			101.4		%		80-120	07-NOV-20
Arsenic (As)-Dissolved			103.5		%		80-120	07-NOV-20
Barium (Ba)-Dissolved			105.3		%		80-120	07-NOV-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	07-NOV-20
Boron (B)-Dissolved			102.5		%		80-120	07-NOV-20
Cadmium (Cd)-Dissolved			99.9		%		80-120	07-NOV-20
Calcium (Ca)-Dissolved			110.6		%		80-120	07-NOV-20
Chromium (Cr)-Dissolved			100.4		%		80-120	07-NOV-20
Cobalt (Co)-Dissolved			101.4		%		80-120	07-NOV-20
Copper (Cu)-Dissolved			99.5		%		80-120	07-NOV-20
Iron (Fe)-Dissolved			100.1		%		80-120	07-NOV-20
Lead (Pb)-Dissolved			97.5		%		80-120	07-NOV-20
Lithium (Li)-Dissolved			104.8		%		80-120	07-NOV-20
Magnesium (Mg)-Dissolved			100.3		%		80-120	07-NOV-20
Manganese (Mn)-Dissolved			99.8		%		80-120	07-NOV-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	07-NOV-20
Nickel (Ni)-Dissolved			99.2		%		80-120	07-NOV-20
Potassium (K)-Dissolved			99.2		%		80-120	07-NOV-20
Selenium (Se)-Dissolved			102.5		%		80-120	07-NOV-20
Silicon (Si)-Dissolved			103.3		%		60-140	07-NOV-20
Silver (Ag)-Dissolved			101.7		%		80-120	07-NOV-20
Sodium (Na)-Dissolved			99.5		%		80-120	07-NOV-20
Strontium (Sr)-Dissolved			104.6		%		80-120	07-NOV-20
Thallium (Tl)-Dissolved			97.7		%		80-120	07-NOV-20
Tin (Sn)-Dissolved			99.4		%		80-120	07-NOV-20
Titanium (Ti)-Dissolved			98.7		%		80-120	07-NOV-20
Uranium (U)-Dissolved			105.7		%		80-120	07-NOV-20
Vanadium (V)-Dissolved			102.2		%		80-120	07-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5282309							
WG3440093-2	LCS							
Zinc (Zn)-Dissolved			101.3		%		80-120	07-NOV-20
WG3440093-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
NH3-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5281406								
WG3439699-2	LCS							
Ammonia as N			102.5		%		85-115	05-NOV-20
WG3439699-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5281845								
WG3440741-10	LCS							
Nitrite (as N)			102.2		%		90-110	05-NOV-20
WG3440741-6	LCS							
Nitrite (as N)			101.3		%		90-110	05-NOV-20
WG3440741-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-20
WG3440741-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5281845								
WG3440741-10	LCS							
Nitrate (as N)			102.9		%		90-110	05-NOV-20
WG3440741-6	LCS							
Nitrate (as N)			101.9		%		90-110	05-NOV-20
WG3440741-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-20
WG3440741-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-20
OH-CL								
Water								
Batch R5280039								
WG3439415-18	DUP	L2525340-5						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	04-NOV-20
WG3439415-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	04-NOV-20
ORP-CL								
Water								
Batch R5282086								
WG3441052-5	CRM	CL-ORP						
ORP			229		mV		210-230	06-NOV-20
P-T-L-COL-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5280883							
WG3439751-10	LCS							
Phosphorus (P)-Total			89.7		%		80-120	05-NOV-20
WG3439751-14	LCS							
Phosphorus (P)-Total			89.6		%		80-120	05-NOV-20
WG3439751-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-NOV-20
WG3439751-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-NOV-20
PH-CL								
Water								
Batch	R5280039							
WG3439415-18	DUP	L2525340-5						
pH		7.78	7.79	J	pH	0.01	0.2	04-NOV-20
WG3439415-17	LCS							
pH			6.99		pH		6.9-7.1	04-NOV-20
PO4-DO-L-COL-CL								
Water								
Batch	R5277899							
WG3437988-18	LCS							
Orthophosphate-Dissolved (as P)			111.9		%		80-120	03-NOV-20
WG3437988-22	LCS							
Orthophosphate-Dissolved (as P)			109.2		%		80-120	03-NOV-20
WG3437988-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-NOV-20
WG3437988-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-NOV-20
SO4-IC-N-CL								
Water								
Batch	R5281845							
WG3440741-10	LCS							
Sulfate (SO4)			104.1		%		90-110	05-NOV-20
WG3440741-6	LCS							
Sulfate (SO4)			102.9		%		90-110	05-NOV-20
WG3440741-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-20
WG3440741-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-20
SOLIDS-TDS-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5282264							
WG3440283-14	LCS							
Total Dissolved Solids			104.1		%		85-115	06-NOV-20
WG3440283-13	MB							
Total Dissolved Solids			<10		mg/L		10	06-NOV-20
TKN-L-F-CL								
	Water							
Batch	R5281167							
WG3439967-19	DUP	L2525340-2						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	05-NOV-20
WG3439967-10	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	05-NOV-20
WG3439967-14	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	05-NOV-20
WG3439967-18	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	05-NOV-20
WG3439967-2	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	05-NOV-20
WG3439967-22	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	05-NOV-20
WG3439967-28	LCS							
Total Kjeldahl Nitrogen			88.8		%		75-125	05-NOV-20
WG3439967-30	LCS							
Total Kjeldahl Nitrogen			90.9		%		75-125	05-NOV-20
WG3439967-32	LCS							
Total Kjeldahl Nitrogen			90.3		%		75-125	05-NOV-20
WG3439967-34	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	05-NOV-20
WG3439967-36	LCS							
Total Kjeldahl Nitrogen			90.4		%		75-125	05-NOV-20
WG3439967-6	LCS							
Total Kjeldahl Nitrogen			87.0		%		75-125	05-NOV-20
WG3439967-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-27	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5281167							
WG3439967-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-29 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-33 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-NOV-20
WG3439967-20 MS		L2525340-2						
Total Kjeldahl Nitrogen			100.0		%		70-130	05-NOV-20
TSS-L-CL								
	Water							
Batch	R5282225							
WG3440095-12 LCS								
Total Suspended Solids			109.4		%		85-115	06-NOV-20
WG3440095-11 MB								
Total Suspended Solids			<1.0		mg/L		1	06-NOV-20
TURBIDITY-CL								
	Water							
Batch	R5279338							
WG3438837-5 LCS								
Turbidity			98.4		%		85-115	04-NOV-20
WG3438837-4 MB								
Turbidity			<0.10		NTU		0.1	04-NOV-20

Quality Control Report

Workorder: L2525340

Report Date: 05-FEB-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2525340

Report Date: 05-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	02-NOV-20 10:15	06-NOV-20 16:30	0.25	102	hours	EHTR-FM
	2	02-NOV-20 11:15	06-NOV-20 16:30	0.25	101	hours	EHTR-FM
	3	02-NOV-20 13:25	06-NOV-20 16:30	0.25	99	hours	EHTR-FM
	4	02-NOV-20 12:25	06-NOV-20 16:30	0.25	100	hours	EHTR-FM
	5	02-NOV-20 10:15	06-NOV-20 16:30	0.25	102	hours	EHTR-FM
	6	02-NOV-20 11:15	06-NOV-20 16:30	0.25	101	hours	EHTR-FM
	7	02-NOV-20 12:00	06-NOV-20 16:30	0.25	101	hours	EHTR-FM
pH							
	1	02-NOV-20 10:15	04-NOV-20 14:00	0.25	52	hours	EHTR-FM
	2	02-NOV-20 11:15	04-NOV-20 14:00	0.25	51	hours	EHTR-FM
	3	02-NOV-20 13:25	04-NOV-20 14:00	0.25	48	hours	EHTR-FM
	4	02-NOV-20 12:25	04-NOV-20 14:00	0.25	50	hours	EHTR-FM
	5	02-NOV-20 10:15	04-NOV-20 14:00	0.25	52	hours	EHTR-FM
	6	02-NOV-20 11:15	04-NOV-20 14:00	0.25	51	hours	EHTR-FM
	7	02-NOV-20 12:00	04-NOV-20 14:00	0.25	50	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2525340 were received on 03-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 19-NOV-20
Report Date: 18-MAR-21 10:33 (MT)
Version: FINAL REV. 3

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2531516
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 2020-11-18
Legal Site Desc:

Comments: 18-MARCH-21: Bicarbonate, Carbonate, and Hydroxide results reported on Sample-4.
11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on sample -3.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2531516-1	L2531516-2	L2531516-3	L2531516-4	
					L2531516-1 WG 18-NOV-20 08:45 FR_LM-2B-2020-11-18	L2531516-2 WG 18-NOV-20 11:10 FR_LP-3B-2020-11-18	L2531516-3 WG 18-NOV-20 11:15 FR_FLD-2020-11-18	L2531516-4 WG 18-NOV-20 13:55 FR_GCMW-1B-2020-11-18	
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	555	740	<2.0	710				
	Hardness (as CaCO3) (mg/L)	386	431	<0.50	62.8				
	pH (pH)	8.22	8.08	5.47	8.52				
	ORP (mV)	221	430	226	261				
	Total Suspended Solids (mg/L)	<1.0	32.2	<1.0	2.6				
	Total Dissolved Solids (mg/L)	396 ^{DLHC}	560 ^{DLHC}	<10	492 ^{DLHC}				
	Turbidity (NTU)	0.57	66.5	<0.10	9.88				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.0	11.7	1.6	<1.0				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	283	358	<1.0	371				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	26.6				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	283	358	<1.0	398				
	Ammonia as N (mg/L)	0.0314	0.0677	0.0257 ^{RRV}	0.235				
	Bicarbonate (HCO3) (mg/L)			<5.0	453				
	Bromide (Br) (mg/L)	<0.050	0.072	<0.050	0.104				
	Carbonate (CO3) (mg/L)			<5.0	16.0				
	Chloride (Cl) (mg/L)	0.50	4.71	<0.10	18.3				
	Fluoride (F) (mg/L)	0.156	0.425	<0.020	1.56				
	Hydroxide (OH) (mg/L)			<5.0	<5.0				
	Ion Balance (%)	115	109	0.0	101				
	Nitrate (as N) (mg/L)	<0.0050	0.0541	<0.0050	0.0068				
	Nitrite (as N) (mg/L)	0.0013	0.0045	<0.0010	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.301	<0.050	0.358				
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	<0.0010	<0.0010	0.0095				
	Phosphorus (P)-Total (mg/L)	0.0022	0.0085	<0.0020	0.0149				
	Sulfate (SO4) (mg/L)	53.1	93.4	<0.30	4.26				
	Anion Sum (meq/L)	6.78	9.25	<0.10	8.64				
	Cation Sum (meq/L)	7.81	10.1	<0.10	8.70				
	Cation - Anion Balance (%)	7.1	4.4	0.0	0.4				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.86	7.18	<0.50	8.34				
	Total Organic Carbon (mg/L)	0.93	10.4	<0.50	7.38				
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD				
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0016	<0.0010	0.0060				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00018	<0.00010	<0.00010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2531516-1	L2531516-2	L2531516-3	L2531516-4	
Description	WG	WG	WG	WG	
Sampled Date	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	
Sampled Time	08:45	11:10	11:15	13:55	
Client ID	FR_LM-2B-2020-11-18	FR_LP-3B-2020-11-18	FR_FLD-2020-11-18	FR_GCMW-1B-2020-11-18	
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00111	0.00270	<0.00010	0.00279
	Barium (Ba)-Dissolved (mg/L)	0.161	0.0904	<0.00010	0.129
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.038	<0.010	0.118
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	0.0141
	Calcium (Ca)-Dissolved (mg/L)	99.4	131	<0.050	17.4
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.18	0.64	<0.10	0.17
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	6.48	<0.010	0.517
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0027	0.0087	<0.0010	0.176
	Magnesium (Mg)-Dissolved (mg/L)	33.4	25.1	<0.0050	4.68
	Manganese (Mn)-Dissolved (mg/L)	0.210	0.925	<0.00010	0.269
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00245	0.00194	<0.000050	0.0422
	Nickel (Ni)-Dissolved (mg/L)	0.00099	0.00497	<0.00050	0.00084
	Potassium (K)-Dissolved (mg/L)	1.07	2.42	<0.050	1.47
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.063	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	5.99	8.20	<0.050	3.69
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.58	23.9	<0.050	169
	Strontium (Sr)-Dissolved (mg/L)	0.113	4.36 ^{RRV}	<0.00020	0.128
	Thallium (Tl)-Dissolved (mg/L)	0.000016	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00014	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000941	0.00746	<0.000010	0.000262
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0120	0.0083 ^{RRV}	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
RRV	Reported Result Verified By Repeat Analysis		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)

Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-11-18

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531516

Report Date: 18-MAR-21

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5293017							
WG3449330-2	LCS							
Acidity (as CaCO3)			105.6		%		85-115	20-NOV-20
WG3449330-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	20-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-8	LCS							
Alkalinity, Total (as CaCO3)			95.5		%		85-115	21-NOV-20
WG3449971-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5298326							
WG3452476-3	DUP	L2531516-3						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452476-2	LCS	TMRM						
Beryllium (Be)-Dissolved			100.7		%		80-120	26-NOV-20
WG3452476-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-NOV-20
WG3452476-4	MS	L2531516-3						
Beryllium (Be)-Dissolved			98.5		%		70-130	26-NOV-20
BIC-CL								
	Water							
Batch	R5295078							
WG3449971-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5291457							
WG3448869-2	LCS							
Bromide (Br)			101.6		%		85-115	19-NOV-20
WG3448869-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	19-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5293102							
WG3449383-3	DUP	L2531516-4						
Dissolved Organic Carbon		8.34	6.89		mg/L	19	20	20-NOV-20
WG3449383-2	LCS							
Dissolved Organic Carbon			89.8		%		80-120	20-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5293102							
WG3449383-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-NOV-20
WG3449383-4	MS	L2531516-4						
Dissolved Organic Carbon			118.1		%		70-130	20-NOV-20
C-TOT-ORG-LOW-CL Water								
Batch	R5293102							
WG3449383-3	DUP	L2531516-4						
Total Organic Carbon			7.38	7.33	mg/L	0.6	20	20-NOV-20
WG3449383-2	LCS							
Total Organic Carbon			93.1		%		80-120	20-NOV-20
WG3449383-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-NOV-20
WG3449383-4	MS	L2531516-4						
Total Organic Carbon			115.6		%		70-130	20-NOV-20
CL-L-IC-N-CL Water								
Batch	R5291457							
WG3448869-2	LCS							
Chloride (Cl)			99.9		%		85-115	19-NOV-20
WG3448869-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	19-NOV-20
CO3-CL Water								
Batch	R5295078							
WG3449971-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL Water								
Batch	R5295078							
WG3449971-8	LCS							
Conductivity (@ 25C)			96.3		%		90-110	21-NOV-20
WG3449971-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL Water								
Batch	R5291457							
WG3448869-2	LCS							
Fluoride (F)			96.1		%		90-110	19-NOV-20
WG3448869-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	19-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL		Water						
Batch	R5297481							
WG3450848-2	LCS							
Mercury (Hg)-Dissolved			101.0		%		80-120	25-NOV-20
WG3450848-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-NOV-20
HG-T-CVAA-CL		Water						
Batch	R5297481							
WG3450847-2	LCS							
Mercury (Hg)-Total			110.0		%		80-120	25-NOV-20
WG3450847-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	25-NOV-20
MET-D-CCMS-CL		Water						
Batch	R5298326							
WG3452476-3	DUP	L2531516-3						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-NOV-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-NOV-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	26-NOV-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-NOV-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-NOV-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-NOV-20
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	26-NOV-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-NOV-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-NOV-20
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-NOV-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-NOV-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-NOV-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5298326							
WG3452476-3	DUP	L2531516-3						
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	26-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-NOV-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-NOV-20
Zinc (Zn)-Dissolved		0.0083	0.0079		mg/L	4.5	20	26-NOV-20
WG3452476-2	LCS	TMRM						
Aluminum (Al)-Dissolved			103.9		%		80-120	26-NOV-20
Antimony (Sb)-Dissolved			100.1		%		80-120	26-NOV-20
Arsenic (As)-Dissolved			102.4		%		80-120	26-NOV-20
Barium (Ba)-Dissolved			102.8		%		80-120	26-NOV-20
Bismuth (Bi)-Dissolved			100.0		%		80-120	26-NOV-20
Boron (B)-Dissolved			91.9		%		80-120	26-NOV-20
Cadmium (Cd)-Dissolved			102.1		%		80-120	26-NOV-20
Calcium (Ca)-Dissolved			101.7		%		80-120	26-NOV-20
Chromium (Cr)-Dissolved			103.8		%		80-120	26-NOV-20
Cobalt (Co)-Dissolved			102.4		%		80-120	26-NOV-20
Copper (Cu)-Dissolved			99.7		%		80-120	26-NOV-20
Iron (Fe)-Dissolved			99.6		%		80-120	26-NOV-20
Lead (Pb)-Dissolved			98.2		%		80-120	26-NOV-20
Lithium (Li)-Dissolved			101.7		%		80-120	26-NOV-20
Magnesium (Mg)-Dissolved			105.2		%		80-120	26-NOV-20
Manganese (Mn)-Dissolved			106.1		%		80-120	26-NOV-20
Molybdenum (Mo)-Dissolved			99.9		%		80-120	26-NOV-20
Nickel (Ni)-Dissolved			99.5		%		80-120	26-NOV-20
Potassium (K)-Dissolved			105.7		%		80-120	26-NOV-20
Selenium (Se)-Dissolved			95.2		%		80-120	26-NOV-20
Silicon (Si)-Dissolved			107.6		%		60-140	26-NOV-20
Silver (Ag)-Dissolved			101.4		%		80-120	26-NOV-20
Sodium (Na)-Dissolved			102.2		%		80-120	26-NOV-20
Strontium (Sr)-Dissolved			101.6		%		80-120	26-NOV-20
Thallium (Tl)-Dissolved			99.7		%		80-120	26-NOV-20
Tin (Sn)-Dissolved			99.1		%		80-120	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5298326							
WG3452476-2	LCS	TMRM						
Titanium (Ti)-Dissolved			99.8		%		80-120	26-NOV-20
Uranium (U)-Dissolved			109.7		%		80-120	26-NOV-20
Vanadium (V)-Dissolved			103.7		%		80-120	26-NOV-20
Zinc (Zn)-Dissolved			98.6		%		80-120	26-NOV-20
WG3452476-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5298326							
WG3452476-1 MB								
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-NOV-20
WG3452476-4 MS		L2531516-3						
Aluminum (Al)-Dissolved			105.5		%		70-130	26-NOV-20
Antimony (Sb)-Dissolved			104.0		%		70-130	26-NOV-20
Arsenic (As)-Dissolved			106.1		%		70-130	26-NOV-20
Barium (Ba)-Dissolved			105.7		%		70-130	26-NOV-20
Bismuth (Bi)-Dissolved			106.0		%		70-130	26-NOV-20
Boron (B)-Dissolved			88.7		%		70-130	26-NOV-20
Cadmium (Cd)-Dissolved			105.7		%		70-130	26-NOV-20
Calcium (Ca)-Dissolved			105.6		%		70-130	26-NOV-20
Chromium (Cr)-Dissolved			107.9		%		70-130	26-NOV-20
Cobalt (Co)-Dissolved			106.2		%		70-130	26-NOV-20
Copper (Cu)-Dissolved			104.2		%		70-130	26-NOV-20
Iron (Fe)-Dissolved			103.6		%		70-130	26-NOV-20
Lead (Pb)-Dissolved			105.6		%		70-130	26-NOV-20
Lithium (Li)-Dissolved			96.4		%		70-130	26-NOV-20
Magnesium (Mg)-Dissolved			104.5		%		70-130	26-NOV-20
Manganese (Mn)-Dissolved			106.6		%		70-130	26-NOV-20
Molybdenum (Mo)-Dissolved			101.6		%		70-130	26-NOV-20
Nickel (Ni)-Dissolved			104.7		%		70-130	26-NOV-20
Potassium (K)-Dissolved			106.2		%		70-130	26-NOV-20
Selenium (Se)-Dissolved			100.2		%		70-130	26-NOV-20
Silicon (Si)-Dissolved			102.2		%		70-130	26-NOV-20
Silver (Ag)-Dissolved			104.7		%		70-130	26-NOV-20
Sodium (Na)-Dissolved			104.4		%		70-130	26-NOV-20
Strontium (Sr)-Dissolved			106.4		%		70-130	26-NOV-20
Thallium (Tl)-Dissolved			102.0		%		70-130	26-NOV-20
Tin (Sn)-Dissolved			100.8		%		70-130	26-NOV-20
Titanium (Ti)-Dissolved			100.9		%		70-130	26-NOV-20
Uranium (U)-Dissolved			105.8		%		70-130	26-NOV-20
Vanadium (V)-Dissolved			104.8		%		70-130	26-NOV-20
Zinc (Zn)-Dissolved			101.2		%		70-130	26-NOV-20
NH3-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5291004								
WG3448466-6 LCS								
Ammonia as N			111.8		%		85-115	19-NOV-20
WG3448466-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5291457								
WG3448869-2 LCS								
Nitrite (as N)			100.9		%		90-110	19-NOV-20
WG3448869-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	19-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5291457								
WG3448869-2 LCS								
Nitrate (as N)			100.4		%		90-110	19-NOV-20
WG3448869-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	19-NOV-20
OH-CL								
Water								
Batch R5295078								
WG3449971-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL								
Water								
Batch R5290318								
WG3448288-2 CRM								
ORP		CL-ORP	220		mV		210-230	19-NOV-20
WG3448288-4 CRM								
ORP		CL-ORP	222		mV		210-230	19-NOV-20
WG3448288-3 DUP								
ORP		L2531516-4 261	254	J	mV	7.1	15	19-NOV-20
P-T-L-COL-CL								
Water								
Batch R5293365								
WG3449476-14 LCS								
Phosphorus (P)-Total			97.1		%		80-120	21-NOV-20
WG3449476-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
PH-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5295078							
WG3449971-8	LCS							
pH			7.02		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5290364							
WG3448407-6	LCS							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	19-NOV-20
WG3448407-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-NOV-20
SO4-IC-N-CL	Water							
Batch	R5291457							
WG3448869-2	LCS							
Sulfate (SO4)			99.5		%		90-110	19-NOV-20
WG3448869-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	19-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5296912							
WG3449735-2	LCS							
Total Dissolved Solids			101.1		%		85-115	23-NOV-20
WG3449735-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
TKN-L-F-CL	Water							
Batch	R5291038							
WG3448736-27	DUP	L2531516-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3448736-2	LCS							
Total Kjeldahl Nitrogen			87.5		%		75-125	20-NOV-20
WG3448736-22	LCS							
Total Kjeldahl Nitrogen			83.9		%		75-125	20-NOV-20
WG3448736-24	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	20-NOV-20
WG3448736-6	LCS							
Total Kjeldahl Nitrogen			87.1		%		75-125	20-NOV-20
WG3448736-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-23	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5291038							
WG3448736-23 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-28 MS		L2531516-3						
Total Kjeldahl Nitrogen			104.8		%		70-130	20-NOV-20
TSS-L-CL								
	Water							
Batch	R5296877							
WG3449736-2 LCS								
Total Suspended Solids			93.8		%		85-115	23-NOV-20
WG3449736-1 MB								
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
TURBIDITY-CL								
	Water							
Batch	R5290322							
WG3448286-9 DUP		L2531516-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	19-NOV-20
WG3448286-5 LCS								
Turbidity			96.9		%		85-115	19-NOV-20
WG3448286-8 LCS								
Turbidity			97.4		%		85-115	19-NOV-20
WG3448286-4 MB								
Turbidity			<0.10		NTU		0.1	19-NOV-20
WG3448286-7 MB								
Turbidity			<0.10		NTU		0.1	19-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	18-NOV-20 08:45	19-NOV-20 12:45	0.25	28	hours	EHTR-FM
	2	18-NOV-20 11:10	19-NOV-20 12:45	0.25	26	hours	EHTR-FM
	3	18-NOV-20 11:15	19-NOV-20 14:15	0.25	27	hours	EHTR-FM
	4	18-NOV-20 13:55	19-NOV-20 14:15	0.25	24	hours	EHTR-FM
pH							
	1	18-NOV-20 08:45	21-NOV-20 13:00	0.25	76	hours	EHTR-FM
	2	18-NOV-20 11:10	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	3	18-NOV-20 11:15	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	4	18-NOV-20 13:55	21-NOV-20 13:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531516 were received on 19-NOV-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **11/18/2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	Selenate/Selenite	TECK COAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered * F: Field, L: Lab, FL: Field & Lab, N: None
FR_LM-2B-2020-11-18	FR_LM-2B	WG		11/18/2020	8:45	G	6	1	1	1	1	1	1	1	
FR_LP-3B-2020-11-18	FR_LP-3B	WG		11/18/2020	11:10	G	6	1	1	1	1	1	1	1	
FR_FLD-2020-11-18	FR_FLD	WG		11/18/2020	11:15	G	6	1	1	1	1	1	1	1	
FR_GCMW-1B-2020-11-18	FR_GCMW-1B	WG		11/18/2020	13:55	G	6	1	1	1	1	1	1	1	



L2531516-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.		11/19	0645

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Tyler Fortin	250-464-5914
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		November 18, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

Handwritten signature/initials

COC ID: **11/18/2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	Selenate/Selenite	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
FR_LM-2B-2020-11-18	FR_LM-2B	WG		11/18/2020	8:45	G	6	1	1	1	1	1	1	1	
FR_LP-3B-2020-11-18	FR_LP-3B	WG		11/18/2020	11:10	G	6	1	1	1	1	1	1	1	
FR_FLD-2020-11-18	FR_FLD	WG		11/18/2020	11:15	G	6	1	1	1	1	1	1	1	
FR_GCMW-1B-2020-11-18	FR_GCMW-1B	WG		11/18/2020	13:55	G	6	1	1	1	1	1	1	1	



L2531516-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
*All samples field filtered and preserved as required.		11/19	0645

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin	Mobile #	250-464-5914
Sampler's Signature		Date/Time	November 18, 2020

Handwritten signature/initials



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0


Date Received: 20-NOV-20
Report Date: 11-FEB-21 16:39 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2531914
Project P.O. #: VPO00680583
Job Reference: Fording River Operations
C of C Numbers: 11/18/2020
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on samples -1 to -6.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2531914-1	L2531914-2	L2531914-3	L2531914-4	L2531914-5
		WG	WG	WG	WG	WG
		18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
		11:39	11:34	14:40	14:30	13:29
		FR_09-01- A_QTR_2020-10- 05_N	FR_09-01- B_QTR_2020-10- 05_N	FR_09-04- A_QTR_2020-10- 05_N	FR_09-04- B_QTR_2020-10- 05_N	FR_MW- SK1A_QTR_2020- 10-05_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	1680	1320	1140	1110	1620
	Hardness (as CaCO3) (mg/L)	950	756	638	643	867
	pH (pH)	7.92	7.99	8.10	7.95	8.29
	ORP (mV)	371	464	252	250	466
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<3.0 ^{DLIS}	<15 ^{DLIS}
	Total Dissolved Solids (mg/L)	1370 ^{DLHC}	1070 ^{DLHC}	897 ^{DLHC}	890 ^{DLHC}	1430 ^{DLHC}
	Turbidity (NTU)	0.28	0.63	<0.10	2.56	2.06
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	11.0	6.2	6.8	7.7	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	369	310	336	313	341
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	369	310	336	313	341
	Ammonia as N (mg/L)	<0.0050	0.0155	0.0215	0.0166	<0.0050
	Bicarbonate (HCO3) (mg/L)	450 ^{DLHC}	378 ^{DLHC}	410 ^{DLHC}	382 ^{DLHC}	416 ^{DLHC}
	Bromide (Br) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	4.30 ^{DLHC}	4.81 ^{DLHC}	7.83 ^{DLHC}	8.08 ^{DLHC}	2.74 ^{DLHC}
	Fluoride (F) (mg/L)	0.18 ^{DLHC}	0.23 ^{DLHC}	0.32 ^{DLHC}	0.31 ^{DLHC}	0.14 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	90.3	90.8	91.1	94.8	85.2 ^{BL-INT}
	Nitrate (as N) (mg/L)	52.7 ^{DLHC}	32.8 ^{DLHC}	0.025 ^{DLHC}	<0.025 ^{DLHC}	60.7 ^{DLHC}
	Nitrite (as N) (mg/L)	0.0062 ^{DLHC}	0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0035	0.0026	0.0034 ^{RRV}	0.0043 ^{RRV}	0.0119 ^{RRV}
	Phosphorus (P)-Total (mg/L)	0.0071 ^{DLM}	0.0067 ^{DLM}	<0.0020 ^{RRV}	<0.0020 ^{RRV}	0.0057 ^{RRV}
	Sulfate (SO4) (mg/L)	485 ^{DLHC}	397 ^{DLHC}	364 ^{DLHC}	365 ^{DLHC}	452 ^{DLHC}
	Anion Sum (meq/L)	21.4	16.9	14.5	14.1	20.6
	Cation Sum (meq/L)	19.3	15.4	13.2	13.4	17.6
	Cation - Anion Balance (%)	-5.1	-4.8	-4.7	-2.7	-8.0
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35 ^{DTC}	<0.50	0.79	<0.50
Total Organic Carbon (mg/L)		0.64 ^{DTC}	<0.50	0.65	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (ug/L)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2531914-6 WG 18-NOV-20 12:54 FR_MW- SK1B_QTR_2020- 10-05_N	L2531914-7 WG 18-NOV-20 10:48 FR_SKP2H_MON_ 2020-11-02_N	L2531914-8 WG 18-NOV-20 10:48 FR_DC2_MON_20 20-11-02_N	L2531914-9 WG 18-NOV-20 12:30 FR_SP1_MON_202 0-11-02_N	L2531914-10 WG 18-NOV-20 11:00 FR_MULTIPLATE_ WS_2020-11- 18_NP
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	946	1990	1980	1010	831
	Hardness (as CaCO3) (mg/L)	523	1170	1160	569	424
	pH (pH)	8.08	8.05	8.00	8.19	8.31
	ORP (mV)	334	457	297	292	300
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	714 ^{DLHC}	1700 ^{DLHC}	1690 ^{DLHC}	745 ^{DLHC}	612 ^{DLHC}
	Turbidity (NTU)	1.09	<0.10	<0.10	0.19	0.11
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.4	6.9	7.2	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	256	322	319	355	165
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	7.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	256	322	319	355	172
	Ammonia as N (mg/L)	<0.0050	0.0098	0.0067	0.0505	<0.0050
	Bicarbonate (HCO3) (mg/L)	312 ^{DLHC}				
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)	<5.0				
	Chloride (Cl) (mg/L)	4.92 ^{DLHC}	1.64 ^{DLHC}	1.63 ^{DLHC}	0.88 ^{DLHC}	0.62
	Fluoride (F) (mg/L)	0.12 ^{DLHC}	0.15 ^{DLHC}	0.15 ^{DLHC}	0.35 ^{DLHC}	0.167
	Hydroxide (OH) (mg/L)	<5.0				
	Ion Balance (%)	92.7	94.0	93.0	93.5	91.1
	Nitrate (as N) (mg/L)	7.63 ^{DLHC}	83.1 ^{DLHC}	84.3 ^{DLHC}	2.66 ^{DLHC}	12.9
	Nitrite (as N) (mg/L)	0.0676 ^{DLHC}	0.0117 ^{DLHC}	0.0073 ^{DLHC}	0.0076 ^{DLHC}	0.0024
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	0.506	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	<0.0010	<0.0010	<0.0010	0.0012
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	274 ^{DLHC}	620 ^{DLHC}	625 ^{DLHC}	240 ^{DLHC}	242
	Anion Sum (meq/L)	11.5	25.3	25.4	12.3	9.42
	Cation Sum (meq/L)	10.7	23.8	23.7	11.5	8.58
	Cation - Anion Balance (%)	-3.8	-3.1	-3.6	-3.4	-4.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.59	<0.50	0.83	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	0.87	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)		<0.0030	<0.0030	<0.0030	0.0050
	Antimony (Sb)-Total (mg/L)		0.00053	0.00051	0.00014	0.00019
	Arsenic (As)-Total (mg/L)		0.00011	0.00011	<0.00010	0.00012
	Barium (Ba)-Total (mg/L)		0.0416	0.0416	0.0229	0.0877
	Beryllium (Be)-Total (ug/L)		<0.020	<0.020	<0.020	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2531914-11 WG 18-NOV-20 12:50 FR_SHANDLEY_WS_2020-11-18_NP	L2531914-12 WG 18-NOV-20 10:50 FR_LP1_WS_2020-11-18_N	L2531914-13 WG 18-NOV-20 13:15 FR_FRNTP_WS_2020-11-18_NP	L2531914-14 WG 18-NOV-20 15:10 FR_FR2_WS_2020-11-18_N	L2531914-15 WG 18-NOV-20 12:30 FR_DC3_MON_2020-11-02_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	1230	1270	903	897	978
	Hardness (as CaCO3) (mg/L)	716	782	519	523	618
	pH (pH)	7.86	8.00	8.29	8.22	8.20
	ORP (mV)	283	435	301	318	297
	Total Suspended Solids (mg/L)	8.5	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	907 ^{DLHC}	973 ^{DLHC}	693 ^{DLHC}	681 ^{DLHC}	720 ^{DLHC}
	Turbidity (NTU)	7.16	2.47	0.70	0.61	0.21
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	12.4	8.5	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	317	325	205	211	355
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	2.8	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	317 ^{DLHC}	325 ^{DLHC}	208 ^{DLHC}	211 ^{DLHC}	355 ^{DLHC}
	Ammonia as N (mg/L)	9.89	6.14	1.14	0.814	0.0493
	Bicarbonate (HCO3) (mg/L)					
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)					
	Chloride (Cl) (mg/L)	1.47 ^{DLHC}	1.48 ^{DLHC}	1.03 ^{DLHC}	2.04 ^{DLHC}	0.87 ^{DLHC}
	Fluoride (F) (mg/L)	0.45 ^{DLHC}	0.36 ^{DLHC}	0.21 ^{DLHC}	0.22 ^{DLHC}	0.33 ^{DLHC}
	Hydroxide (OH) (mg/L)					
	Ion Balance (%)	106	105	98.1	98.3	103
	Nitrate (as N) (mg/L)	36.4 ^{DLHC}	27.8 ^{DLHC}	16.2 ^{DLHC}	15.1 ^{DLHC}	2.56 ^{DLHC}
	Nitrite (as N) (mg/L)	0.473 ^{DLHC}	0.348 ^{DLHC}	0.0744 ^{DLHC}	0.0666 ^{DLHC}	0.0051 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	4.69 ^{DLM}	4.84	0.143	0.194	0.465
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010 ^{DLM}	<0.0010 ^{DLM}	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.026 ^{DLHC}	0.014 ^{DLHC}	0.0049 ^{DLHC}	<0.0020 ^{DLHC}	<0.0020 ^{DLHC}
	Sulfate (SO4) (mg/L)	265	343	262	263	234
	Anion Sum (meq/L)	14.6	15.7	10.8	10.8	12.2
Cation Sum (meq/L)	15.5	16.5	10.6	10.7	12.5	
Cation - Anion Balance (%)	3.0	2.4	-1.0	-0.8	1.3	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.77	0.76	<0.50	<0.50	0.76
	Total Organic Carbon (mg/L)	1.13	0.79	<0.50	0.60	0.91
Total Metals	Aluminum (Al)-Total (mg/L)	0.0491	0.0231	0.0124	0.0157	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00648	0.00426	0.00092	0.00077	0.00014
	Arsenic (As)-Total (mg/L)	0.00051	0.00042	0.00019	0.00016	<0.00010
	Barium (Ba)-Total (mg/L)	0.209	0.153	0.110	0.108	0.0237
	Beryllium (Be)-Total (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2531914-16			
		WG			
		18-NOV-20			
		14:20			
		FR_WWC1_MON_2020-11-02_N			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm) Hardness (as CaCO3) (mg/L) pH (pH) ORP (mV) Total Suspended Solids (mg/L) Total Dissolved Solids (mg/L) Turbidity (NTU)				
Anions and Nutrients	Acidity (as CaCO3) (mg/L) Alkalinity, Bicarbonate (as CaCO3) (mg/L) Alkalinity, Carbonate (as CaCO3) (mg/L) Alkalinity, Hydroxide (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Ammonia as N (mg/L) Bicarbonate (HCO3) (mg/L) Bromide (Br) (mg/L) Carbonate (CO3) (mg/L) Chloride (Cl) (mg/L) Fluoride (F) (mg/L) Hydroxide (OH) (mg/L) Ion Balance (%) Nitrate (as N) (mg/L) Nitrite (as N) (mg/L) Total Kjeldahl Nitrogen (mg/L) Orthophosphate-Dissolved (as P) (mg/L) Phosphorus (P)-Total (mg/L) Sulfate (SO4) (mg/L) Anion Sum (meq/L) Cation Sum (meq/L) Cation - Anion Balance (%)				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L) Total Organic Carbon (mg/L)				
Total Metals	Aluminum (Al)-Total (mg/L) Antimony (Sb)-Total (mg/L) Arsenic (As)-Total (mg/L) Barium (Ba)-Total (mg/L) Beryllium (Be)-Total (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2531914-1	L2531914-2	L2531914-3	L2531914-4	L2531914-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
		Sampled Time	11:39	11:34	14:40	14:30	13:29
		Client ID	FR_09-01- A_QTR_2020-10- 05_N	FR_09-01- B_QTR_2020-10- 05_N	FR_09-04- A_QTR_2020-10- 05_N	FR_09-04- B_QTR_2020-10- 05_N	FR_MW- SK1A_QTR_2020- 10-05_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)						
	Boron (B)-Total (mg/L)						
	Cadmium (Cd)-Total (ug/L)						
	Calcium (Ca)-Total (mg/L)						
	Chromium (Cr)-Total (mg/L)						
	Cobalt (Co)-Total (ug/L)						
	Copper (Cu)-Total (mg/L)						
	Iron (Fe)-Total (mg/L)						
	Lead (Pb)-Total (mg/L)						
	Lithium (Li)-Total (mg/L)						
	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (ug/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (ug/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00031	0.00016	0.00012	0.00012	0.00012	0.00019
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.122	0.142	0.0943	0.0936	0.0750	0.0750
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.026	0.022	0.030	0.029	0.018	0.018
	Cadmium (Cd)-Dissolved (ug/L)	0.0607	0.0430	0.936	0.867	0.0421	0.0421

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2531914-6	L2531914-7	L2531914-8	L2531914-9	L2531914-10
		Description	WG	WG	WG	WG	WG
		Sampled Date	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
		Sampled Time	12:54	10:48	10:48	12:30	11:00
		Client ID	FR_MW-SK1B_QTR_2020-10-05_N	FR_SKP2H_MON_2020-11-02_N	FR_DC2_MON_2020-11-02_N	FR_SP1_MON_2020-11-02_N	FR_MULTIPLATE_WS_2020-11-18_NP
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)			<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)			0.036	0.032	0.020	<0.010
	Cadmium (Cd)-Total (ug/L)			0.0522	0.0534	0.157	0.0515
	Calcium (Ca)-Total (mg/L)			291	280	132	112
	Chromium (Cr)-Total (mg/L)			<0.00010	<0.00010	<0.00010	0.00012
	Cobalt (Co)-Total (ug/L)			<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Total (mg/L)			<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)			<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Total (mg/L)			<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)			0.164	0.157	0.0474	0.0353
	Magnesium (Mg)-Total (mg/L)			130	131	67.3	44.2
	Manganese (Mn)-Total (mg/L)			0.00021	0.00022	0.00092	0.00162
	Mercury (Hg)-Total (ug/L)			<0.00050	<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Total (mg/L)			0.00156	0.00151	0.000534	0.00113
	Nickel (Ni)-Total (mg/L)			0.0452	0.0450	0.00210	0.00429
	Potassium (K)-Total (mg/L)			5.24	5.21	3.36	1.45
	Selenium (Se)-Total (ug/L)			280	280	14.2	60.5
	Silicon (Si)-Total (mg/L)			2.18	2.14	2.27	1.88
	Silver (Ag)-Total (mg/L)			<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)			6.22	6.32	1.56	1.38
	Strontium (Sr)-Total (mg/L)			0.292	0.292	0.155	0.164
	Thallium (Tl)-Total (mg/L)			0.000028	0.000028	0.000012	<0.000010
	Tin (Sn)-Total (mg/L)			<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)			<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)			0.0122	0.0119	0.00412	0.00284
	Vanadium (V)-Total (mg/L)			<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)			<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00040	0.00054	0.00053	0.00014	0.00020
	Arsenic (As)-Dissolved (mg/L)		0.00012	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0379	0.0428	0.0418	0.0226	0.0873
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.013	0.027	0.027	0.017	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0360	0.0425	0.0476	0.0939	0.0521

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

11-FEB-21 16:39 (MT)

Version: FINAL REV. 2

		Sample ID	L2531914-11	L2531914-12	L2531914-13	L2531914-14	L2531914-15
		Description	WG	WG	WG	WG	WG
		Sampled Date	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
		Sampled Time	12:50	10:50	13:15	15:10	12:30
		Client ID	FR_SHANDLEY_WS_2020-11-18_NP	FR_LP1_WS_2020-11-18_N	FR_FRNTP_WS_2020-11-18_NP	FR_FR2_WS_2020-11-18_N	FR_DC3_MON_2020-11-02_N
Grouping	Analyte						
WATER							
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		0.049	0.048	0.016	0.016	0.020
	Cadmium (Cd)-Total (ug/L)		0.354	0.121	0.0597	0.0550	0.163
	Calcium (Ca)-Total (mg/L)		170	171	122	125	137
	Chromium (Cr)-Total (mg/L)		0.00015	<0.00010	0.00012	0.00014	<0.00010
	Cobalt (Co)-Total (ug/L)		19.7	11.5	1.95	1.28	0.10
	Copper (Cu)-Total (mg/L)		0.00062	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)		0.078	0.036	0.012	0.046	<0.010
	Lead (Pb)-Total (mg/L)		0.000127	0.000059	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)		0.121	0.116	0.0515	0.0520	0.0490
	Magnesium (Mg)-Total (mg/L)		72.9	89.7	53.6	53.0	68.4
	Manganese (Mn)-Total (mg/L)		0.139	0.107	0.0176	0.0240	0.00098
	Mercury (Hg)-Total (ug/L)		0.00203	0.00131	<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Total (mg/L)		0.0318	0.0209	0.00484	0.00410	0.000543
	Nickel (Ni)-Total (mg/L)		0.156	0.103	0.0218	0.0165	0.00206
	Potassium (K)-Total (mg/L)		13.5	10.8	3.16	3.01	3.43
	Selenium (Se)-Total (ug/L)		9.42	14.6	51.7	48.0	13.8
	Silicon (Si)-Total (mg/L)		3.13	3.05	2.05	2.05	2.35
	Silver (Ag)-Total (mg/L)		0.000011	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		2.33	2.97	1.72	2.03	1.52
	Strontium (Sr)-Total (mg/L)		0.358	0.329	0.198	0.193	0.160
	Thallium (Tl)-Total (mg/L)		0.000169	0.000149	0.000025	0.000022	0.000013
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.00589	0.00632	0.00348	0.00350	0.00406
	Vanadium (V)-Total (mg/L)		0.00090	0.00057	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		0.0128	0.0060	<0.0030	<0.0030	<0.0030
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00626	0.00415	0.00091	0.00076	0.00014
	Arsenic (As)-Dissolved (mg/L)		0.00042	0.00035	0.00012	0.00012	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.215	0.155	0.0958	0.0961	0.0231
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.041	0.041	0.014	0.013	0.017
	Cadmium (Cd)-Dissolved (ug/L)		0.320	0.0549	0.0493	0.0517	0.104

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2531914-16 WG 18-NOV-20 14:20 FR_WWC1_MON_ 2020-11-02_N			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L) Boron (B)-Total (mg/L) Cadmium (Cd)-Total (ug/L) Calcium (Ca)-Total (mg/L) Chromium (Cr)-Total (mg/L) Cobalt (Co)-Total (ug/L) Copper (Cu)-Total (mg/L) Iron (Fe)-Total (mg/L) Lead (Pb)-Total (mg/L) Lithium (Li)-Total (mg/L) Magnesium (Mg)-Total (mg/L) Manganese (Mn)-Total (mg/L) Mercury (Hg)-Total (ug/L) Molybdenum (Mo)-Total (mg/L) Nickel (Ni)-Total (mg/L) Potassium (K)-Total (mg/L) Selenium (Se)-Total (ug/L) Silicon (Si)-Total (mg/L) Silver (Ag)-Total (mg/L) Sodium (Na)-Total (mg/L) Strontium (Sr)-Total (mg/L) Thallium (Tl)-Total (mg/L) Tin (Sn)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L)				
Dissolved Metals	Dissolved Mercury Filtration Location Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L) Antimony (Sb)-Dissolved (mg/L) Arsenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Be)-Dissolved (ug/L) Bismuth (Bi)-Dissolved (mg/L) Boron (B)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (ug/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2531914-1 WG 18-NOV-20 11:39 FR_09-01- A_QTR_2020-10- 05_N	L2531914-2 WG 18-NOV-20 11:34 FR_09-01- B_QTR_2020-10- 05_N	L2531914-3 WG 18-NOV-20 14:40 FR_09-04- A_QTR_2020-10- 05_N	L2531914-4 WG 18-NOV-20 14:30 FR_09-04- B_QTR_2020-10- 05_N	L2531914-5 WG 18-NOV-20 13:29 FR_MW- SK1A_QTR_2020- 10-05_N
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	219	175	140	137	210
	Chromium (Cr)-Dissolved (mg/L)	0.00017	0.00017	<0.00010	<0.00010	0.00015
	Cobalt (Co)-Dissolved (ug/L)	0.24	0.32	1.02	0.99	0.27
	Copper (Cu)-Dissolved (mg/L)	0.00090	0.00311	0.00038	0.00032	0.00060
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0724	0.0603	0.0869	0.0839	0.0438
	Magnesium (Mg)-Dissolved (mg/L)	97.9	77.7	69.9	72.9	83.2
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00013	1.17	1.20	0.0716
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000610	0.00108	0.00190	0.00178	0.000485
	Nickel (Ni)-Dissolved (mg/L)	0.00160	0.00148	0.00781	0.00791	0.00093
	Potassium (K)-Dissolved (mg/L)	4.16	3.57	5.13	5.03	2.50
	Selenium (Se)-Dissolved (ug/L)	201	115	0.191	0.275	202
	Silicon (Si)-Dissolved (mg/L)	3.06	2.57	2.78	2.86	3.09
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.52	4.15	7.49	7.72	4.62
	Strontium (Sr)-Dissolved (mg/L)	0.297	0.250	0.232	0.237	0.253
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000055	0.000054	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00577	0.00597	0.00611	0.00588	0.00555
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0024	0.0039	0.0048	0.0040	0.0013
Hydrocarbons	EPH10-19 (mg/L)					
	EPH (C10-C32) (mg/L)					
	EPH19-32 (mg/L)					
	TEH (C10-C30) (mg/L)					
	Surrogate: 2-Bromobenzotrifluoride (%)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2531914-6	L2531914-7	L2531914-8	L2531914-9	L2531914-10
					WG	WG	WG	WG	WG
		18-NOV-20	12:54	FR_MW-SK1B_QTR_2020-10-05_N	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
						10:48	10:48	12:30	11:00
						FR_SKP2H_MON_2020-11-02_N	FR_DC2_MON_2020-11-02_N	FR_SP1_MON_2020-11-02_N	FR_MULTIPLATE_WS_2020-11-18_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	143	268	269	125	101			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00012			
	Cobalt (Co)-Dissolved (ug/L)	0.89	<0.10	<0.10	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00075	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0107	0.145	0.149	0.0431	0.0305			
	Magnesium (Mg)-Dissolved (mg/L)	40.5	122	120	62.4	41.6			
	Manganese (Mn)-Dissolved (mg/L)	0.418	0.00015	0.00016	0.00086	0.00129			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000211	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000394	0.00147	0.00147	0.000519	0.00112			
	Nickel (Ni)-Dissolved (mg/L)	0.00320	0.0415	0.0404	0.00218	0.00349			
	Potassium (K)-Dissolved (mg/L)	1.09	5.03	5.03	3.36	1.44			
	Selenium (Se)-Dissolved (ug/L)	9.62	338	306	16.6	64.4			
	Silicon (Si)-Dissolved (mg/L)	3.34	2.16	2.15	2.30	1.79			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.31	6.51	6.56	1.48	1.39			
	Strontium (Sr)-Dissolved (mg/L)	0.263	0.304	0.303	0.161	0.175			
	Thallium (Tl)-Dissolved (mg/L)	0.000015	0.000028	0.000029	0.000015	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00462	0.0113	0.0113	0.00398	0.00267			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0026	0.0021	0.0032	0.0015	0.0022			
Hydrocarbons	EPH10-19 (mg/L)								
	EPH (C10-C32) (mg/L)								
	EPH19-32 (mg/L)								
	TEH (C10-C30) (mg/L)								
	Surrogate: 2-Bromobenzotrifluoride (%)								

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2531914-11	L2531914-12	L2531914-13	L2531914-14	L2531914-15
		Description	WG	WG	WG	WG	WG
		Sampled Date	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20	18-NOV-20
		Sampled Time	12:50	10:50	13:15	15:10	12:30
		Client ID	FR_SHANDLEY_WS_2020-11-18_NP	FR_LP1_WS_2020-11-18_N	FR_FRNTP_WS_2020-11-18_NP	FR_FR2_WS_2020-11-18_N	FR_DC3_MON_2020-11-02_N
Grouping	Analyte						
WATER							
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		163	164	120	120	133
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		19.3	11.1	1.85	1.23	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00035	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	0.021	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.113	0.108	0.0475	0.0472	0.0466
	Magnesium (Mg)-Dissolved (mg/L)		74.7	90.4	53.2	54.3	69.3
	Manganese (Mn)-Dissolved (mg/L)		0.135	0.100	0.0162	0.0220	0.00093
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.0299	0.0199	0.00456	0.00395	0.000472
	Nickel (Ni)-Dissolved (mg/L)		0.150	0.0990	0.0207	0.0160	0.00182
	Potassium (K)-Dissolved (mg/L)		13.3	10.6	2.98	2.88	3.27
	Selenium (Se)-Dissolved (ug/L)		9.72	15.2	49.8	47.3	15.0
	Silicon (Si)-Dissolved (mg/L)		2.75	2.81	1.87	1.82	2.20
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.49	3.06	1.74	2.04	1.58
	Strontium (Sr)-Dissolved (mg/L)		0.336	0.321	0.190	0.193	0.154
	Thallium (Tl)-Dissolved (mg/L)		0.000162	0.000146	0.000026	0.000021	0.000015
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00586	0.00620	0.00332	0.00348	0.00408
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0120	0.0048	0.0022	0.0017	0.0015
Hydrocarbons	EPH10-19 (mg/L)						
	EPH (C10-C32) (mg/L)						
	EPH19-32 (mg/L)						
	TEH (C10-C30) (mg/L)						
	Surrogate: 2-Bromobenzotrifluoride (%)						

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2531914-16 WG 18-NOV-20 14:20 FR_WWC1_MON_ 2020-11-02_N			
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L) Chromium (Cr)-Dissolved (mg/L) Cobalt (Co)-Dissolved (ug/L) Copper (Cu)-Dissolved (mg/L) Iron (Fe)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Lithium (Li)-Dissolved (mg/L) Magnesium (Mg)-Dissolved (mg/L) Manganese (Mn)-Dissolved (mg/L) Mercury (Hg)-Dissolved (mg/L) Molybdenum (Mo)-Dissolved (mg/L) Nickel (Ni)-Dissolved (mg/L) Potassium (K)-Dissolved (mg/L) Selenium (Se)-Dissolved (ug/L) Silicon (Si)-Dissolved (mg/L) Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (Tl)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L)				
Hydrocarbons	EPH10-19 (mg/L) EPH (C10-C32) (mg/L) EPH19-32 (mg/L) TEH (C10-C30) (mg/L) Surrogate: 2-Bromobenzotrifluoride (%)	0.75 1.32 0.57 1.28 80.1			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Nickel (Ni)-Total	B	L2531914-10, -11, -12, -13, -14, -7, -8
Duplicate	Manganese (Mn)-Total	DUP-H	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Method Blank	Nickel (Ni)-Dissolved	MB-LOR	L2531914-11, -12, -13, -14
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2531914-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2531914-11, -12, -13, -14, -15
Matrix Spike	Barium (Ba)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2531914-10, -11, -12, -13, -14, -15, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLIS	Detection Limit Adjusted: Insufficient Sample
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Reference Information

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
 RRV Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

11/18/2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531914

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5295116							
WG3449989-6	DUP	L2531914-14						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3449989-2	LCS		105.1		%		85-115	21-NOV-20
Acidity (as CaCO3)			104.3		%		85-115	21-NOV-20
WG3449989-5	LCS							
Acidity (as CaCO3)			1.8		mg/L		2	21-NOV-20
WG3449989-1	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-NOV-20
WG3449989-4	MB							
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-11	LCS		95.3		%		85-115	21-NOV-20
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
WG3449971-10	MB							
Alkalinity, Total (as CaCO3)								
BE-D-L-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-2	LCS		99.8		%		80-120	23-NOV-20
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-20
WG3449561-1	MB	NP						
Beryllium (Be)-Dissolved								
Batch	R5296257							
WG3449580-3	DUP	L2531914-1	<0.000020	RPD-NA	mg/L	N/A	20	23-NOV-20
Beryllium (Be)-Dissolved			93.2		%		80-120	23-NOV-20
WG3449580-2	LCS							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-20
WG3449580-1	MB	NP						
Beryllium (Be)-Dissolved			89.3		%		70-130	23-NOV-20
WG3449580-4	MS	L2531914-2						
Beryllium (Be)-Dissolved								
BE-T-L-CCMS-VA								
	Water							
Batch	R5296938							
WG3449565-2	LCS		102.1		%		80-120	24-NOV-20
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	24-NOV-20
WG3449565-1	MB							
Beryllium (Be)-Total								
BIC-CL								
	Water							



Quality Control Report

Workorder: L2531914

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
BIC-CL									
Water									
Batch R5295078									
WG3449971-10 MB									
Bicarbonate (HCO3)									
			<5.0		mg/L		5	21-NOV-20	
BR-L-IC-N-CL									
Water									
Batch R5293237									
WG3449430-6 LCS									
Bromide (Br)									
			107.1		%		85-115	20-NOV-20	
WG3449430-5 MB									
Bromide (Br)									
			<0.050		mg/L		0.05	20-NOV-20	
C-DIS-ORG-LOW-CL									
Water									
Batch R5293019									
WG3449351-10 LCS									
Dissolved Organic Carbon									
			109.0		%		80-120	21-NOV-20	
WG3449351-6 LCS									
Dissolved Organic Carbon									
			97.2		%		80-120	20-NOV-20	
WG3449351-5 MB									
Dissolved Organic Carbon									
			<0.50		mg/L		0.5	20-NOV-20	
WG3449351-9 MB									
Dissolved Organic Carbon									
			<0.50		mg/L		0.5	21-NOV-20	
Batch R5293818									
WG3449497-3 DUP									
Dissolved Organic Carbon									
		L2531914-14	<0.50	0.51	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3449497-2 LCS									
Dissolved Organic Carbon									
			99.5		%		80-120	21-NOV-20	
WG3449497-1 MB									
Dissolved Organic Carbon									
			<0.50		mg/L		0.5	21-NOV-20	
WG3449497-4 MS									
Dissolved Organic Carbon									
		L2531914-14	118.0		%		70-130	21-NOV-20	
Batch R5294256									
WG3449781-2 LCS									
Dissolved Organic Carbon									
			111.5		%		80-120	22-NOV-20	
WG3449781-1 MB									
Dissolved Organic Carbon									
			<0.50		mg/L		0.5	22-NOV-20	
C-TOT-ORG-LOW-CL									
Water									
Batch R5293019									
WG3449351-10 LCS									
Total Organic Carbon									
			113.0		%		80-120	21-NOV-20	
WG3449351-6 LCS									

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5293019							
WG3449351-6	LCS							
Total Organic Carbon			99.6		%		80-120	20-NOV-20
WG3449351-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-NOV-20
WG3449351-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-NOV-20
Batch	R5293818							
WG3449497-3	DUP	L2531914-14						
Total Organic Carbon		0.60	0.57		mg/L	4.2	20	21-NOV-20
WG3449497-2	LCS							
Total Organic Carbon			105.4		%		80-120	21-NOV-20
WG3449497-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-NOV-20
WG3449497-4	MS	L2531914-14						
Total Organic Carbon			106.8		%		70-130	21-NOV-20
Batch	R5294256							
WG3449781-2	LCS							
Total Organic Carbon			114.6		%		80-120	22-NOV-20
WG3449781-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-6	LCS							
Chloride (Cl)			102.6		%		85-115	20-NOV-20
WG3449430-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	20-NOV-20
CO3-CL								
Water								
Batch	R5295078							
WG3449971-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5295078							
WG3449971-11	LCS							
Conductivity (@ 25C)			94.8		%		90-110	21-NOV-20
WG3449971-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R5293237								
WG3449430-6	LCS							
Fluoride (F)			107.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-20
HG-D-CVAA-VA								
Batch R5296453								
WG3450136-15	DUP	L2531914-9						
Mercury (Hg)-Dissolved		0.0000211	0.0000205		mg/L	3.0	20	24-NOV-20
WG3450136-10	LCS							
Mercury (Hg)-Dissolved			98.4		%		80-120	24-NOV-20
WG3450136-14	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	24-NOV-20
WG3450136-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20
WG3450136-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20
HG-T-U-CVAF-VA								
Batch R5297669								
WG3451794-7	DUP	L2531914-11						
Mercury (Hg)-Total		0.00203	0.00196		ug/L	3.5	20	26-NOV-20
WG3451794-2	LCS							
Mercury (Hg)-Total			92.2		%		80-120	25-NOV-20
WG3451794-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	25-NOV-20
MET-D-CCMS-VA								
Batch R5293747								
WG3449561-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			106.8		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			99.5		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			101.9		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			99.0		%		80-120	23-NOV-20
Boron (B)-Dissolved			89.7		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			97.5		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			95.3		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			98.2		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			97.4		%		80-120	23-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-2	LCS							
Iron (Fe)-Dissolved			94.4		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			96.6		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			94.4		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			95.0		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			98.0		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			100.6		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			97.3		%		80-120	23-NOV-20
Potassium (K)-Dissolved			96.1		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			99.2		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			96.9		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			95.1		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			105.2		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			95.4		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			100.5		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			94.9		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			99.97		%		80-120	23-NOV-20
Uranium (U)-Dissolved			99.1		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			98.8		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			97.1		%		80-120	23-NOV-20
WG3449561-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20



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MET-D-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			0.00056	MB-LOR	mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Batch	R5296257							
WG3449580-3	DUP	L2531914-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-NOV-20
Antimony (Sb)-Dissolved		0.00031	0.00030		mg/L	1.4	20	23-NOV-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-20
Barium (Ba)-Dissolved		0.122	0.127		mg/L	4.3	20	23-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-20
Boron (B)-Dissolved		0.026	0.026		mg/L	0.7	20	23-NOV-20
Cadmium (Cd)-Dissolved		0.0000607	0.0000653		mg/L	7.4	20	23-NOV-20
Calcium (Ca)-Dissolved		219	213		mg/L	2.7	20	23-NOV-20
Chromium (Cr)-Dissolved		0.00017	0.00016		mg/L	6.3	20	23-NOV-20
Cobalt (Co)-Dissolved		0.00024	0.00024		mg/L	0.2	20	23-NOV-20
Copper (Cu)-Dissolved		0.00090	0.00089		mg/L	1.3	20	23-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-20
Lithium (Li)-Dissolved		0.0724	0.0707		mg/L	2.3	20	23-NOV-20
Magnesium (Mg)-Dissolved		97.9	98.4		mg/L	0.5	20	23-NOV-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-20
Molybdenum (Mo)-Dissolved		0.000610	0.000591		mg/L	3.2	20	23-NOV-20



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MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-3	DUP	L2531914-1						
Nickel (Ni)-Dissolved		0.00160	0.00160		mg/L	0.1	20	23-NOV-20
Potassium (K)-Dissolved		4.16	4.08		mg/L	1.8	20	23-NOV-20
Selenium (Se)-Dissolved		0.201	0.204		mg/L	1.3	20	23-NOV-20
Silicon (Si)-Dissolved		3.06	3.11		mg/L	1.4	20	23-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-20
Sodium (Na)-Dissolved		4.52	4.63		mg/L	2.3	20	23-NOV-20
Strontium (Sr)-Dissolved		0.297	0.289		mg/L	3.0	20	23-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-NOV-20
Uranium (U)-Dissolved		0.00577	0.00557		mg/L	3.5	20	23-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-NOV-20
Zinc (Zn)-Dissolved		0.0024	0.0023		mg/L	4.4	20	23-NOV-20
WG3449580-2	LCS							
Aluminum (Al)-Dissolved			98.1		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			95.8		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			95.0		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			102.5		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			94.1		%		80-120	23-NOV-20
Boron (B)-Dissolved			90.8		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			96.7		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			95.1		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			96.7		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			92.2		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			94.1		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			95.0		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			95.6		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			89.7		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			93.0		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			100.1		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			92.8		%		80-120	23-NOV-20
Potassium (K)-Dissolved			97.2		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			100.9		%		80-120	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-2	LCS							
Silicon (Si)-Dissolved			101.7		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			100.7		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			97.2		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			102.7		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			93.6		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			92.5		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			92.9		%		80-120	23-NOV-20
Uranium (U)-Dissolved			93.4		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			96.3		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			98.1		%		80-120	23-NOV-20
WG3449580-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-1	MB	NP						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
WG3449580-4	MS	L2531914-2						
Aluminum (Al)-Dissolved			97.6		%		70-130	23-NOV-20
Antimony (Sb)-Dissolved			98.8		%		70-130	23-NOV-20
Arsenic (As)-Dissolved			104.5		%		70-130	23-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Bismuth (Bi)-Dissolved			79.5		%		70-130	23-NOV-20
Boron (B)-Dissolved			85.9		%		70-130	23-NOV-20
Cadmium (Cd)-Dissolved			93.6		%		70-130	23-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Chromium (Cr)-Dissolved			96.4		%		70-130	23-NOV-20
Cobalt (Co)-Dissolved			92.9		%		70-130	23-NOV-20
Copper (Cu)-Dissolved			85.5		%		70-130	23-NOV-20
Iron (Fe)-Dissolved			96.1		%		70-130	23-NOV-20
Lead (Pb)-Dissolved			89.3		%		70-130	23-NOV-20
Lithium (Li)-Dissolved			85.3		%		70-130	23-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Manganese (Mn)-Dissolved			92.2		%		70-130	23-NOV-20
Molybdenum (Mo)-Dissolved			104.3		%		70-130	23-NOV-20
Nickel (Ni)-Dissolved			88.1		%		70-130	23-NOV-20
Potassium (K)-Dissolved			99.5		%		70-130	23-NOV-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Silicon (Si)-Dissolved			94.1		%		70-130	23-NOV-20
Silver (Ag)-Dissolved			93.7		%		70-130	23-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Thallium (Tl)-Dissolved			87.7		%		70-130	23-NOV-20
Tin (Sn)-Dissolved			92.3		%		70-130	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-4 MS		L2531914-2						
Titanium (Ti)-Dissolved			99.3		%		70-130	23-NOV-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Vanadium (V)-Dissolved			100.4		%		70-130	23-NOV-20
Zinc (Zn)-Dissolved			91.9		%		70-130	23-NOV-20
Batch	R5296276							
WG3450274-3 DUP		L2531914-11						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-NOV-20
Antimony (Sb)-Dissolved		0.00626	0.00682		mg/L	4.5	20	23-NOV-20
Arsenic (As)-Dissolved		0.00042	0.00046		mg/L	3.3	20	23-NOV-20
Barium (Ba)-Dissolved		0.215	0.181		mg/L	3.2	20	23-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-20
Boron (B)-Dissolved		0.041	0.041		mg/L	2.1	20	23-NOV-20
Cadmium (Cd)-Dissolved		0.000320	0.000301		mg/L	4.2	20	23-NOV-20
Calcium (Ca)-Dissolved		163	164		mg/L	0.6	20	23-NOV-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-20
Cobalt (Co)-Dissolved		0.0193	0.0187		mg/L	0.1	20	23-NOV-20
Copper (Cu)-Dissolved		0.00035	0.00032		mg/L	2.6	20	23-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-20
Lithium (Li)-Dissolved		0.113	0.109		mg/L	0.8	20	23-NOV-20
Magnesium (Mg)-Dissolved		74.7	69.2		mg/L	3.2	20	23-NOV-20
Manganese (Mn)-Dissolved		0.135	0.136		mg/L	0.7	20	23-NOV-20
Molybdenum (Mo)-Dissolved		0.0299	0.0313		mg/L	6.3	20	23-NOV-20
Nickel (Ni)-Dissolved		0.150	0.149		mg/L	1.0	20	23-NOV-20
Potassium (K)-Dissolved		13.3	12.8		mg/L	2.6	20	23-NOV-20
Selenium (Se)-Dissolved		0.00972	0.00946		mg/L	2.2	20	23-NOV-20
Silicon (Si)-Dissolved		2.75	2.86		mg/L	1.2	20	23-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-20
Sodium (Na)-Dissolved		2.49	2.29		mg/L	0.0	20	23-NOV-20
Strontium (Sr)-Dissolved		0.336	0.381		mg/L	4.4	20	23-NOV-20
Thallium (Tl)-Dissolved		0.000162	0.000162		mg/L	1.0	20	23-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-NOV-20
Uranium (U)-Dissolved		0.00586	0.00528		mg/L	2.2	20	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296276							
WG3450274-3	DUP	L2531914-11						
Vanadium (V)-Dissolved		<0.00050	0.00053	RPD-NA	mg/L	N/A	20	23-NOV-20
Zinc (Zn)-Dissolved		0.0120	0.0111		mg/L	6.7	20	23-NOV-20
WG3450274-2	LCS							
Aluminum (Al)-Dissolved			92.1		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			102.5		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			98.8		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			95.0		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	23-NOV-20
Boron (B)-Dissolved			88.9		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			93.0		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			98.5		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			96.6		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			96.7		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			94.7		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			91.1		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			93.3		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			93.1		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			93.8		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			94.7		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			95.6		%		80-120	23-NOV-20
Potassium (K)-Dissolved			96.8		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			95.8		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			94.8		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			93.7		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			95.7		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			97.8		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			98.4		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			94.6		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			94.9		%		80-120	23-NOV-20
Uranium (U)-Dissolved			89.4		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			96.8		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			91.2		%		80-120	23-NOV-20
WG3450274-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296276							
WG3450274-1	MB	NP						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
WG3450274-4	MS	L2531914-12						
Aluminum (Al)-Dissolved			94.5		%		70-130	23-NOV-20
Antimony (Sb)-Dissolved			70.6		%		70-130	23-NOV-20
Arsenic (As)-Dissolved			96.0		%		70-130	23-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296276							
WG3450274-4	MS	L2531914-12						
Bismuth (Bi)-Dissolved			89.6		%		70-130	23-NOV-20
Cadmium (Cd)-Dissolved			94.2		%		70-130	23-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Chromium (Cr)-Dissolved			97.0		%		70-130	23-NOV-20
Copper (Cu)-Dissolved			98.6		%		70-130	23-NOV-20
Iron (Fe)-Dissolved			95.5		%		70-130	23-NOV-20
Lead (Pb)-Dissolved			90.7		%		70-130	23-NOV-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Nickel (Ni)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Silver (Ag)-Dissolved			91.6		%		70-130	23-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Thallium (Tl)-Dissolved			88.2		%		70-130	23-NOV-20
Tin (Sn)-Dissolved			93.2		%		70-130	23-NOV-20
Titanium (Ti)-Dissolved			91.3		%		70-130	23-NOV-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Vanadium (V)-Dissolved			95.0		%		70-130	23-NOV-20
Zinc (Zn)-Dissolved			92.4		%		70-130	23-NOV-20
MET-T-CCMS-VA								
	Water							
Batch	R5296938							
WG3449565-2	LCS							
Aluminum (Al)-Total			102.3		%		80-120	24-NOV-20
Antimony (Sb)-Total			108.1		%		80-120	24-NOV-20
Arsenic (As)-Total			103.4		%		80-120	24-NOV-20
Barium (Ba)-Total			103.2		%		80-120	24-NOV-20
Bismuth (Bi)-Total			103.9		%		80-120	24-NOV-20
Boron (B)-Total			100.3		%		80-120	24-NOV-20
Cadmium (Cd)-Total			100.7		%		80-120	24-NOV-20
Calcium (Ca)-Total			101.3		%		80-120	24-NOV-20
Cobalt (Co)-Total			103.1		%		80-120	24-NOV-20
Copper (Cu)-Total			99.5		%		80-120	24-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5296938							
WG3449565-2	LCS							
Iron (Fe)-Total			100.5		%		80-120	24-NOV-20
Lead (Pb)-Total			102.2		%		80-120	24-NOV-20
Lithium (Li)-Total			100.4		%		80-120	24-NOV-20
Magnesium (Mg)-Total			101.4		%		80-120	24-NOV-20
Manganese (Mn)-Total			101.8		%		80-120	24-NOV-20
Molybdenum (Mo)-Total			104.7		%		80-120	24-NOV-20
Nickel (Ni)-Total			101.5		%		80-120	24-NOV-20
Potassium (K)-Total			101.4		%		80-120	24-NOV-20
Selenium (Se)-Total			101.6		%		80-120	24-NOV-20
Silicon (Si)-Total			101.6		%		80-120	24-NOV-20
Silver (Ag)-Total			99.1		%		80-120	24-NOV-20
Sodium (Na)-Total			101.8		%		80-120	24-NOV-20
Strontium (Sr)-Total			98.1		%		80-120	24-NOV-20
Thallium (Tl)-Total			104.5		%		80-120	24-NOV-20
Tin (Sn)-Total			97.4		%		80-120	24-NOV-20
Titanium (Ti)-Total			103.4		%		80-120	24-NOV-20
Uranium (U)-Total			101.3		%		80-120	24-NOV-20
Vanadium (V)-Total			101.8		%		80-120	24-NOV-20
Zinc (Zn)-Total			96.3		%		80-120	24-NOV-20
WG3449565-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	24-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	24-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	24-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-NOV-20



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MET-T-CCMS-VA								
	Water							
Batch	R5296938							
WG3449565-1	MB							
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-NOV-20
Nickel (Ni)-Total			0.00075	B	mg/L		0.0005	24-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	24-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	24-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	24-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-NOV-20
Batch	R5297728							
WG3451032-2	LCS							
Aluminum (Al)-Total			100.7		%		80-120	25-NOV-20
Antimony (Sb)-Total			98.1		%		80-120	25-NOV-20
Arsenic (As)-Total			96.3		%		80-120	25-NOV-20
Barium (Ba)-Total			97.0		%		80-120	25-NOV-20
Bismuth (Bi)-Total			99.6		%		80-120	25-NOV-20
Boron (B)-Total			90.4		%		80-120	25-NOV-20
Cadmium (Cd)-Total			98.1		%		80-120	25-NOV-20
Calcium (Ca)-Total			95.2		%		80-120	25-NOV-20
Chromium (Cr)-Total			95.7		%		80-120	25-NOV-20
Cobalt (Co)-Total			98.4		%		80-120	25-NOV-20
Copper (Cu)-Total			95.1		%		80-120	25-NOV-20
Iron (Fe)-Total			98.6		%		80-120	25-NOV-20
Lead (Pb)-Total			99.8		%		80-120	25-NOV-20
Lithium (Li)-Total			90.1		%		80-120	25-NOV-20
Magnesium (Mg)-Total			97.4		%		80-120	25-NOV-20
Manganese (Mn)-Total			95.8		%		80-120	25-NOV-20
Molybdenum (Mo)-Total			93.7		%		80-120	25-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5297728							
WG3451032-2	LCS							
Nickel (Ni)-Total			96.7		%		80-120	25-NOV-20
Potassium (K)-Total			94.7		%		80-120	25-NOV-20
Selenium (Se)-Total			97.6		%		80-120	25-NOV-20
Silicon (Si)-Total			103.8		%		80-120	25-NOV-20
Silver (Ag)-Total			90.7		%		80-120	25-NOV-20
Sodium (Na)-Total			102.5		%		80-120	25-NOV-20
Strontium (Sr)-Total			91.9		%		80-120	25-NOV-20
Thallium (Tl)-Total			99.3		%		80-120	25-NOV-20
Tin (Sn)-Total			93.2		%		80-120	25-NOV-20
Titanium (Ti)-Total			96.1		%		80-120	25-NOV-20
Uranium (U)-Total			95.0		%		80-120	25-NOV-20
Vanadium (V)-Total			97.2		%		80-120	25-NOV-20
Zinc (Zn)-Total			93.3		%		80-120	25-NOV-20
WG3451032-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	25-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	25-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	25-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	25-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-NOV-20

Quality Control Report

Workorder: L2531914

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5297728							
WG3451032-1	MB							
Silicon (Si)-Total			<0.10		mg/L		0.1	25-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	25-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5292801							
WG3449219-7	DUP	L2531914-15						
Ammonia as N		0.0493	0.0558		mg/L	12	20	20-NOV-20
WG3449219-2	LCS							
Ammonia as N			106.6		%		85-115	20-NOV-20
WG3449219-6	LCS							
Ammonia as N			105.6		%		85-115	20-NOV-20
WG3449219-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
WG3449219-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
WG3449219-8	MS	L2531914-15						
Ammonia as N			105.4		%		75-125	20-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5293237							
WG3449430-6	LCS							
Nitrite (as N)			100.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-20
NO3-L-IC-N-CL								
	Water							
Batch	R5293237							
WG3449430-6	LCS							
Nitrate (as N)			102.7		%		90-110	20-NOV-20
WG3449430-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-20



Quality Control Report

Workorder: L2531914

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5295078							
WG3449971-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL	Water							
Batch	R5292776							
WG3449231-1 CRM		CL-ORP						
ORP			221		mV		210-230	20-NOV-20
WG3449231-2 CRM		CL-ORP						
ORP			224		mV		210-230	20-NOV-20
WG3449231-5 DUP		L2531914-15						
ORP		297	294	J	mV	2.5	15	20-NOV-20
P-T-L-COL-CL	Water							
Batch	R5293365							
WG3449476-22 LCS								
Phosphorus (P)-Total			93.5		%		80-120	21-NOV-20
WG3449476-26 LCS								
Phosphorus (P)-Total			93.4		%		80-120	21-NOV-20
WG3449476-21 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
WG3449476-25 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
PH-CL	Water							
Batch	R5295078							
WG3449971-11 LCS								
pH			7.01		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5292676							
WG3449133-2 LCS								
Orthophosphate-Dissolved (as P)			101.1		%		80-120	20-NOV-20
WG3449133-6 LCS								
Orthophosphate-Dissolved (as P)			101.0		%		80-120	20-NOV-20
WG3449133-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-20
WG3449133-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-20
WG3449133-4 MS		L2531914-9						
Orthophosphate-Dissolved (as P)			113.3		%		70-130	20-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R5293237								
WG3449430-6	LCS							
Sulfate (SO4)			104.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-20
SOLIDS-TDS-CL								
Batch R5296912								
WG3449735-6	DUP	L2531914-2						
Total Dissolved Solids		1070	1080		mg/L	0.7	20	23-NOV-20
WG3449735-2	LCS							
Total Dissolved Solids			101.1		%		85-115	23-NOV-20
WG3449735-5	LCS							
Total Dissolved Solids			99.6		%		85-115	23-NOV-20
WG3449735-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
WG3449735-4	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
Batch R5297512								
WG3450511-2	LCS							
Total Dissolved Solids			100.2		%		85-115	24-NOV-20
WG3450511-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-NOV-20
TEH-BC-VA-CL								
Batch R5298501								
WG3452710-2	LCS							
EPH10-19			82.1		%		70-130	23-NOV-20
EPH19-32			75.5		%		70-130	23-NOV-20
WG3452710-1	MB							
EPH10-19			<0.25		mg/L		0.25	23-NOV-20
EPH19-32			<0.25		mg/L		0.25	23-NOV-20
Surrogate: 2-Bromobenzotrifluoride			74.9		%		60-140	23-NOV-20
TEH-WATER-VA-CL								
Batch R5298501								
WG3452710-2	LCS							
TEH (C10-C30)			80.9		%		70-130	23-NOV-20
WG3452710-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	23-NOV-20
Surrogate: 2-Bromobenzotrifluoride			74.9		%		60-140	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5293398							
WG3449360-10	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	21-NOV-20
WG3449360-2	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	21-NOV-20
WG3449360-4	LCS							
Total Kjeldahl Nitrogen			94.2		%		75-125	21-NOV-20
WG3449360-6	LCS							
Total Kjeldahl Nitrogen			92.4		%		75-125	21-NOV-20
WG3449360-8	LCS							
Total Kjeldahl Nitrogen			103.5		%		75-125	21-NOV-20
WG3449360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
TSS-L-CL		Water						
Batch	R5296877							
WG3449736-2	LCS							
Total Suspended Solids			93.8		%		85-115	23-NOV-20
WG3449736-4	LCS							
Total Suspended Solids			91.6		%		85-115	23-NOV-20
WG3449736-1	MB							
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
WG3449736-3	MB							
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
Batch	R5297482							
WG3450509-2	LCS							
Total Suspended Solids			92.6		%		85-115	24-NOV-20
WG3450509-1	MB							
Total Suspended Solids			<1.0		mg/L		1	24-NOV-20
TURBIDITY-CL		Water						



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5292817							
WG3449232-6	LCS							
Turbidity			96.9		%		85-115	20-NOV-20
WG3449232-5	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	18-NOV-20 11:39	20-NOV-20 14:30	0.25	51	hours	EHTR-FM
	2	18-NOV-20 11:34	20-NOV-20 14:30	0.25	51	hours	EHTR-FM
	3	18-NOV-20 14:40	20-NOV-20 14:30	0.25	48	hours	EHTR-FM
	4	18-NOV-20 14:30	20-NOV-20 14:30	0.25	48	hours	EHTR-FM
	5	18-NOV-20 13:29	20-NOV-20 14:30	0.25	49	hours	EHTR-FM
	6	18-NOV-20 12:54	20-NOV-20 14:30	0.25	50	hours	EHTR-FM
	7	18-NOV-20 10:48	20-NOV-20 14:30	0.25	52	hours	EHTR-FM
	8	18-NOV-20 10:48	20-NOV-20 14:30	0.25	52	hours	EHTR-FM
	9	18-NOV-20 12:30	20-NOV-20 14:30	0.25	50	hours	EHTR-FM
	10	18-NOV-20 11:00	20-NOV-20 14:30	0.25	52	hours	EHTR-FM
	11	18-NOV-20 12:50	20-NOV-20 14:30	0.25	50	hours	EHTR-FM
	12	18-NOV-20 10:50	20-NOV-20 14:30	0.25	52	hours	EHTR-FM
	13	18-NOV-20 13:15	20-NOV-20 14:30	0.25	49	hours	EHTR-FM
	14	18-NOV-20 15:10	20-NOV-20 14:30	0.25	47	hours	EHTR-FM
	15	18-NOV-20 12:30	20-NOV-20 14:30	0.25	50	hours	EHTR-FM
pH							
	1	18-NOV-20 11:39	21-NOV-20 13:00	0.25	73	hours	EHTR-FM
	2	18-NOV-20 11:34	21-NOV-20 13:00	0.25	73	hours	EHTR-FM
	3	18-NOV-20 14:40	21-NOV-20 13:00	0.25	70	hours	EHTR-FM
	4	18-NOV-20 14:30	21-NOV-20 13:00	0.25	71	hours	EHTR-FM
	5	18-NOV-20 13:29	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	6	18-NOV-20 12:54	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	7	18-NOV-20 10:48	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	8	18-NOV-20 10:48	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	9	18-NOV-20 12:30	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	10	18-NOV-20 11:00	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	11	18-NOV-20 12:50	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	12	18-NOV-20 10:50	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	13	18-NOV-20 13:15	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	14	18-NOV-20 15:10	21-NOV-20 13:00	0.25	70	hours	EHTR-FM
	15	18-NOV-20 12:30	21-NOV-20 13:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531914 were received on 20-NOV-20 08:40.

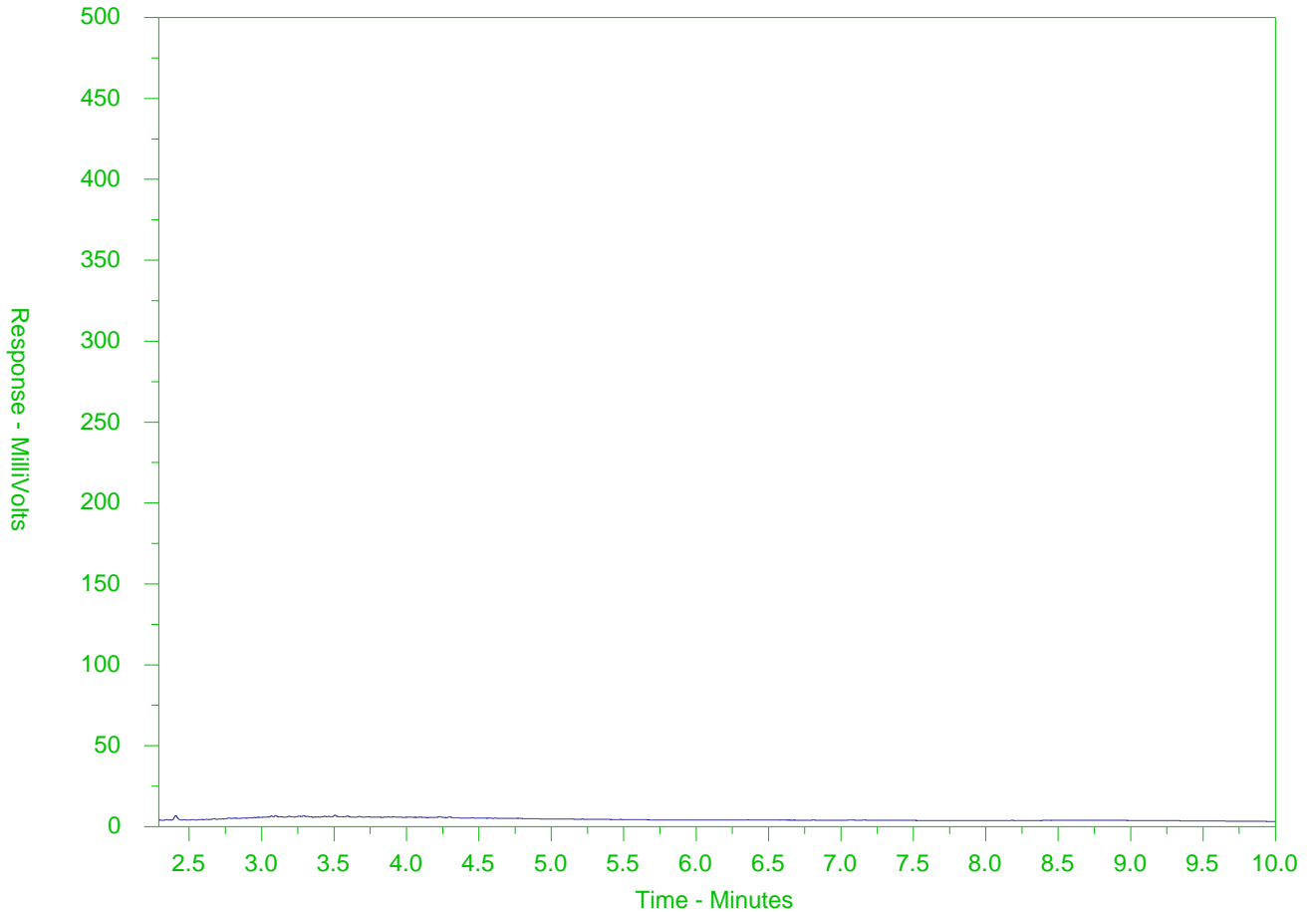
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2531914-16
 Client Sample ID: FR_WWC1_MON_2020-11-02_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



COC ID:	11/18/2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job#	Fording River Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Scott Roughead	Lab Contact	Lyudmyla Shvets		Excel PDF EDD
Email	scott.roughead@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 1: david.burroughs@teck.com X X X
Address		Address	2559 29 Street NE		Email 2: britt.anderson@teck.com X X X
City	Elkford	City	Calgary	Province	AB
Postal Code		Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-433-6976	Phone Number	403 407 1794	Email 6:	jared.cayenne@teck.com X X X
				PO number	VPO00680583

SAMPLE DETAILS ANALYSIS REQUESTED Filtered - P: Field, L: Lab, FL: Field & Lab, N: None



L2531914-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-METNHG-T-CL	TECKCOAL-ROUTINE-VA	EPH	ALS_Package-Methylmercury	BOD / Colour	TSS / TURBIDITY
FR 09-01-A_QTR_2020-10-05_N	FR 09-01-A	WG	NO	11/18/2020	11:39	G	5	1	1	1		1		1				
FR 09-01-B_QTR_2020-10-05_N	FR 09-01-B	WG	NO	11/18/2020	11:34	G	5	1	1	1		1		1				
FR 09-04-A_QTR_2020-10-05_N	FR 09-04-A	WG	NO	11/18/2020	14:40	G	5	1	1	1		1		1				
FR 09-04-B_QTR_2020-10-05_N	FR 09-04-B	WG	NO	11/18/2020	14:30	G	5	1	1	1		1		1				
FR MW-SK1A_QTR_2020-10-05_N	FR_MW-SK1A	WG	NO	11/18/2020	13:29	G	5	1	1	1		1		1				
FR MW-SK1B_QTR_2020-10-05_N	FR_MW-SK1B	WG	NO	11/18/2020	12:54	G	5	1	1	1		1		1				
FR SKP2H_MON_2020-11-02_N	FR SKP2H	WS	NO	11/18/2020	10:48	G	7	1	1	1	1	1	1	1				
FR DC2_MON_2020-11-02_N	FR_DC2	WS	NO	11/18/2020	10:48	G	7	1	1	1	1	1	1	1				
FR SP1_MON_2020-11-02_N	FR_SP1	WS	NO	11/18/2020	12:30	G	7	1	1	1	1	1	1	1				
FR MULTIPLATE_WS_2020-11-18_NP	FR_MULTIPLATE	WS	NO	11/18/2020	11:00	G	7	1	1	1	1	1	1	1				
FR SHANDLEY_WS_2020-11-18_NP	FR_SHANDLEY	WS	NO	11/18/2020	12:50	G	7	1	1	1	1	1	1	1				
FR LP1_WS_2020-11-18_N	FR_LP1	WS	NO	11/18/2020	10:50	G	7	1	1	1	1	1	1	1				
FR FRNTP_WS_2020-11-18_NP	FR_FRNTP	WS	NO	11/18/2020	13:15	G	7	1	1	1	1	1	1	1				
FR FR2_WS_2020-11-18_N	FR_FR2	WS	NO	11/18/2020	15:10	G	7	1	1	1	1	1	1	1				
FR DC3_MON_2020-11-02_N	FR_DC3	WS	NO	11/18/2020	12:30	G	7	1	1	1	1	1	1	1				
FR WWCI_MON_2020-11-02_N	FR_WWCI	WS	NO	11/18/2020	14:20	G	2								2			

1-14-16

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
> This routine bottle partially spilled in our fridge. Please run as much routine if possible with volume provided.	Britt Anderson	November 18, 2020	<i>[Signature]</i>	20/11 2:40

SERVICE REQUEST (rush - subject to availability)	Regular (default) x	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Britt Anderson	Mobile #	250-425-5335	
Sampler's Signature	<i>[Signature]</i>	Date/Time	November 18, 2020	

50



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 20-NOV-20
Report Date: 11-FEB-21 16:42 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2531958
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 11/19/2020
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2531958-1	L2531958-2	L2531958-3	L2531958-4
		Description	WG	WG	WG	WG
		Sampled Date	19-NOV-20	19-NOV-20	19-NOV-20	19-NOV-20
		Sampled Time	12:40	12:30	12:20	14:10
		Client ID	FR_TBSSMW-1_QTR_2020-10-05_N	FR_TBSSMW-2_QTR_2020-10-05_N	FR_POTWELLS_QTR_2020-10-05_N	FR_MW-1B_QTR_2020-10-05_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		325	552	588	765
	Hardness (as CaCO3) (mg/L)		123	270	291	387
	pH (pH)		8.42	8.35	8.33	8.28
	ORP (mV)		269	267	358	317
	Total Suspended Solids (mg/L)		3.7	1.8	<1.0	3.4
	Total Dissolved Solids (mg/L)		156 ^{DLHC}	383 ^{DLHC}	422 ^{DLHC}	571 ^{DLHC}
	Turbidity (NTU)		2.53	1.20	<0.10	5.03
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		155	134	130	166
	Alkalinity, Carbonate (as CaCO3) (mg/L)		10.4	7.6	7.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		165	142	137	166
	Ammonia as N (mg/L)		2.92 ^{DLHC}	0.0130	0.0078	0.0064
	Bicarbonate (HCO3) (mg/L)		189	164	158	203
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)		6.2	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)		0.39	0.28	0.30	0.62
	Fluoride (F) (mg/L)		0.451	0.239	0.214	0.166
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)		93.2	88.2	88.6	90.0
	Nitrate (as N) (mg/L)		<0.0050	3.32	4.46	13.2
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		3.93	0.425	0.378	0.171
	Orthophosphate-Dissolved (as P) (mg/L)		0.0016	0.0017	0.0026	0.0027
	Phosphorus (P)-Total (mg/L)		0.014 ^{DLM}	<0.0020	0.0024	0.015 ^{DLM}
	Sulfate (SO4) (mg/L)		14.9	148	170	212
	Anion Sum (meq/L)		3.65	6.18	6.61	8.71
	Cation Sum (meq/L)		3.40	5.45	5.86	7.84
	Cation - Anion Balance (%)		-3.5	-6.3	-6.0	-5.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	0.53	<0.50
	Total Organic Carbon (mg/L)		0.76	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0034	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00017
	Arsenic (As)-Dissolved (mg/L)		0.00120	<0.00010	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2531958-1 WG 19-NOV-20 12:40 FR_TBSSMW- 1_QTR_2020-10- 05_N	L2531958-2 WG 19-NOV-20 12:30 FR_TBSSMW- 2_QTR_2020-10- 05_N	L2531958-3 WG 19-NOV-20 12:20 FR_POTWELLS_Q TR_2020-10-05_N	L2531958-4 WG 19-NOV-20 14:10 FR_MW- 1B_QTR_2020-10- 05_N	
Grouping	Analyte				
WATER					
Dissolved Metals	Barium (Ba)-Dissolved (mg/L)	2.23	0.0671	0.0732	0.124
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.011	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0137	0.0105	0.0159
	Calcium (Ca)-Dissolved (mg/L)	10.4	68.0	74.7	97.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00014	0.00013	0.00017
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00024	0.00052	0.00037
	Iron (Fe)-Dissolved (mg/L)	0.241	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.182	0.0077	0.0068	0.0246
	Magnesium (Mg)-Dissolved (mg/L)	23.5	24.4	25.3	35.2
	Manganese (Mn)-Dissolved (mg/L)	0.0336	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0145	0.000813	0.000693	0.000970
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	5.97	0.706	0.627	1.31
	Selenium (Se)-Dissolved (ug/L)	<0.050	24.5	30.0	58.2
	Silicon (Si)-Dissolved (mg/L)	2.39	1.52	1.50	1.96
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	13.1	0.666	0.673	1.44
	Strontium (Sr)-Dissolved (mg/L)	0.216	0.136	0.145	0.178
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000139	0.00114	0.00111	0.00206
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0017	<0.0010	0.0028	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Nitrate (as N)	MS-B	L2531958-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L2531958-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

11/19/2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531958

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5295116							
WG3449989-5	LCS							
Acidity (as CaCO3)			104.3		%		85-115	21-NOV-20
WG3449989-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-14	LCS							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	21-NOV-20
WG3449971-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-2	LCS							
Beryllium (Be)-Dissolved			93.2		%		80-120	23-NOV-20
WG3449580-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-20
BIC-CL								
	Water							
Batch	R5295078							
WG3449971-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5293237							
WG3449430-10	LCS							
Bromide (Br)			105.1		%		85-115	20-NOV-20
WG3449430-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5294256							
WG3449781-3	DUP	L2531958-4						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-NOV-20
WG3449781-2	LCS							
Dissolved Organic Carbon			111.5		%		80-120	22-NOV-20
WG3449781-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449781-4	MS	L2531958-4						
Dissolved Organic Carbon			120.6		%		70-130	22-NOV-20



Quality Control Report

Workorder: L2531958

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5294256							
WG3449781-3	DUP	L2531958-4						
Total Organic Carbon		<0.50	0.52	RPD-NA	mg/L	N/A	20	22-NOV-20
WG3449781-2	LCS							
Total Organic Carbon			114.6		%		80-120	22-NOV-20
WG3449781-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449781-4	MS	L2531958-4						
Total Organic Carbon			123.6		%		70-130	22-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-10	LCS							
Chloride (Cl)			102.7		%		85-115	20-NOV-20
WG3449430-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	20-NOV-20
CO3-CL								
Water								
Batch	R5295078							
WG3449971-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5295078							
WG3449971-14	LCS							
Conductivity (@ 25C)			96.6		%		90-110	21-NOV-20
WG3449971-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-10	LCS							
Fluoride (F)			108.9		%		90-110	20-NOV-20
WG3449430-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-20
HG-D-CVAA-VA								
Water								
Batch	R5296453							
WG3450136-14	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	24-NOV-20
WG3450136-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20

Quality Control Report

Workorder: L2531958

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5296453							
WG3450136-16 MS		L2531958-2						
Mercury (Hg)-Dissolved			99.0		%		70-130	24-NOV-20
MET-D-CCMS-VA								
Water								
Batch	R5296257							
WG3449580-2 LCS								
Aluminum (Al)-Dissolved			98.1		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			95.8		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			95.0		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			102.5		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			94.1		%		80-120	23-NOV-20
Boron (B)-Dissolved			90.8		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			96.7		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			95.1		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			96.7		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			92.2		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			94.1		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			95.0		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			95.6		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			89.7		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			93.0		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			100.1		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			92.8		%		80-120	23-NOV-20
Potassium (K)-Dissolved			97.2		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			100.9		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			101.7		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			100.7		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			97.2		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			102.7		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			93.6		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			92.5		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			92.9		%		80-120	23-NOV-20
Uranium (U)-Dissolved			93.4		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			96.3		%		80-120	23-NOV-20



Quality Control Report

Workorder: L2531958

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449580-2	LCS							
Zinc (Zn)-Dissolved			98.1		%		80-120	23-NOV-20
WG3449580-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
NH3-L-F-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5292801								
WG3449219-10	LCS							
Ammonia as N			103.3		%		85-115	20-NOV-20
WG3449219-6	LCS							
Ammonia as N			105.6		%		85-115	20-NOV-20
WG3449219-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
WG3449219-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5293237								
WG3449430-10	LCS							
Nitrite (as N)			99.5		%		90-110	20-NOV-20
WG3449430-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5293237								
WG3449430-10	LCS							
Nitrate (as N)			103.1		%		90-110	20-NOV-20
WG3449430-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-20
OH-CL								
Water								
Batch R5295078								
WG3449971-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL								
Water								
Batch R5292776								
WG3449231-2	CRM	CL-ORP						
ORP			224		mV		210-230	20-NOV-20
P-T-L-COL-CL								
Water								
Batch R5293365								
WG3449476-26	LCS							
Phosphorus (P)-Total			93.4		%		80-120	21-NOV-20
WG3449476-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
PH-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5295078							
WG3449971-14	LCS							
pH			7.03		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5292676							
WG3449133-6	LCS							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	20-NOV-20
WG3449133-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-20
SO4-IC-N-CL	Water							
Batch	R5293237							
WG3449430-10	LCS							
Sulfate (SO4)			105.1		%		90-110	20-NOV-20
WG3449430-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5296912							
WG3449735-5	LCS							
Total Dissolved Solids			99.6		%		85-115	23-NOV-20
WG3449735-4	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
TKN-L-F-CL	Water							
Batch	R5293398							
WG3449360-10	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	21-NOV-20
WG3449360-2	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	21-NOV-20
WG3449360-4	LCS							
Total Kjeldahl Nitrogen			94.2		%		75-125	21-NOV-20
WG3449360-6	LCS							
Total Kjeldahl Nitrogen			92.4		%		75-125	21-NOV-20
WG3449360-8	LCS							
Total Kjeldahl Nitrogen			103.5		%		75-125	21-NOV-20
WG3449360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-5	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5293398							
WG3449360-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
TSS-L-CL		Water						
Batch	R5296877							
WG3449736-4	LCS							
Total Suspended Solids			91.6		%		85-115	23-NOV-20
WG3449736-3	MB							
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
TURBIDITY-CL		Water						
Batch	R5292817							
WG3449232-9	LCS							
Turbidity			96.4		%		85-115	20-NOV-20
WG3449232-8	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	19-NOV-20 12:40	20-NOV-20 14:30	0.25	26	hours	EHTR-FM
	2	19-NOV-20 12:30	20-NOV-20 14:30	0.25	26	hours	EHTR-FM
	3	19-NOV-20 12:20	20-NOV-20 14:30	0.25	26	hours	EHTR-FM
	4	19-NOV-20 14:10	20-NOV-20 14:30	0.25	24	hours	EHTR-FM
pH							
	1	19-NOV-20 12:40	21-NOV-20 13:00	0.25	48	hours	EHTR-FM
	2	19-NOV-20 12:30	21-NOV-20 13:00	0.25	48	hours	EHTR-FM
	3	19-NOV-20 12:20	21-NOV-20 13:00	0.25	49	hours	EHTR-FM
	4	19-NOV-20 14:10	21-NOV-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531958 were received on 20-NOV-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 24-NOV-20
Report Date: 11-FEB-21 16:45 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2532772
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 11/23/2020
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported on sample -3.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2532772-1	L2532772-2	L2532772-3	L2532772-4
		Description	WS	WS	WG	WN
		Sampled Date	23-NOV-20	23-NOV-20	23-NOV-20	23-NOV-20
		Sampled Time	14:28	14:09	11:45	14:35
		Client ID	FR_FR2_WS_2020-12-21_N	FR_FRNTP_WS_2020-12-21_NP	FR_GCMW-2_QTR_2020-10-05_N	FR_CIL_MON_2020-11-02_N
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)		891	881	1180	662
	Hardness (as CaCO3) (mg/L)		547	531	720	
	pH (pH)		8.17	8.22	8.01	8.03
	ORP (mV)		349	420	475	503
	Total Suspended Solids (mg/L)		<1.0	<1.0	2.0	27.6
	Total Dissolved Solids (mg/L)		726 ^{DLHC}	710 ^{DLHC}	993 ^{DLHC}	449 ^{DLHC}
	Turbidity (NTU)		0.65	1.13	0.92	15.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<1.0	<1.0	3.3	2.4
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		216	210	231	143
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		216	210	231	143
	Ammonia as N (mg/L)		1.08 ^{DLHC}	1.02 ^{DLHC}	0.0156	19.6 ^{DLHC}
	Bicarbonate (HCO3) (mg/L)				282 ^{DLHC}	
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)				<5.0 ^{DLHC}	
	Chloride (Cl) (mg/L)		1.94 ^{DLHC}	0.98 ^{DLHC}	1.26 ^{DLHC}	2.20
	Fluoride (F) (mg/L)		0.20 ^{DLHC}	0.20 ^{DLHC}	0.21 ^{DLHC}	0.192
	Hydroxide (OH) (mg/L)				<5.0	
	Ion Balance (%)		98.5 ^{DLHC}	95.9 ^{DLHC}	93.1 ^{DLHC}	105
	Nitrate (as N) (mg/L)		15.1 ^{DLHC}	16.2 ^{DLHC}	32.2 ^{DLHC}	16.5
	Nitrite (as N) (mg/L)		0.0470 ^{DLHC}	0.0471 ^{DLHC}	<0.0050 ^{DLHC}	0.0707 ^{RRV}
	Total Kjeldahl Nitrogen (mg/L)		0.115 ^{TKNI}	0.226 ^{TKNI}	<0.050 ^{TKNI}	14.9
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	0.0012	0.0095	0.0068
	Phosphorus (P)-Total (mg/L)		0.0021	0.0052 ^{DLM}	0.0129 ^{DLM}	0.056 ^{DLM}
	Sulfate (SO4) (mg/L)		283 ^{DLHC}	283 ^{DLHC}	419 ^{DLHC}	176
	Anion Sum (meq/L)		11.3	11.3	15.7	7.78
	Cation Sum (meq/L)		11.2	10.8	14.6	8.20
	Cation - Anion Balance (%)		-0.8	-2.1	-3.6	2.6
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	<0.50
Total Organic Carbon (mg/L)			<0.50	<0.50	<0.50	6.60
Total Metals	Aluminum (Al)-Total (mg/L)		0.0074	0.0105		
	Antimony (Sb)-Total (mg/L)		0.00066	0.00078		
	Arsenic (As)-Total (mg/L)		0.00017	0.00019		
	Barium (Ba)-Total (mg/L)		0.0895	0.0970		
	Beryllium (Be)-Total (ug/L)		<0.020	<0.020		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2532772-1	L2532772-2	L2532772-3	L2532772-4
		Description	WS	WS	WG	WN
		Sampled Date	23-NOV-20	23-NOV-20	23-NOV-20	23-NOV-20
		Sampled Time	14:28	14:09	11:45	14:35
		Client ID	FR_FR2_WS_2020-12-21_N	FR_FRNTP_WS_2020-12-21_NP	FR_GCMW-2_QTR_2020-10-05_N	FR_CIL_MON_2020-11-02_N
Grouping	Analyte					
WATER						
Total Metals	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050		
	Boron (B)-Total (mg/L)		0.015	0.015		
	Cadmium (Cd)-Total (ug/L)		0.0624	0.0515		
	Calcium (Ca)-Total (mg/L)		126	127		
	Chromium (Cr)-Total (mg/L)		<0.00010	0.00011		
	Cobalt (Co)-Total (ug/L)		0.81	1.25		
	Copper (Cu)-Total (mg/L)		<0.00050	<0.00050		
	Iron (Fe)-Total (mg/L)		0.046	0.011		
	Lead (Pb)-Total (mg/L)		<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)		0.0455	0.0469		
	Magnesium (Mg)-Total (mg/L)		57.0	58.7		
	Manganese (Mn)-Total (mg/L)		0.0227	0.0140		
	Mercury (Hg)-Total (ug/L)		<0.00050	<0.00050		
	Molybdenum (Mo)-Total (mg/L)		0.00327	0.00354		
	Nickel (Ni)-Total (mg/L)		0.0112	0.0149		
	Potassium (K)-Total (mg/L)		2.75	2.91		
	Selenium (Se)-Total (ug/L)		46.5	55.2		
	Silicon (Si)-Total (mg/L)		1.92	2.11		
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)		1.98	1.74		
	Strontium (Sr)-Total (mg/L)		0.187	0.191		
	Thallium (Tl)-Total (mg/L)		0.000020	0.000024		
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010		
	Uranium (U)-Total (mg/L)		0.00363	0.00359		
	Vanadium (V)-Total (mg/L)		<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)		<0.0030	<0.0030		
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		0.00058	0.00066	0.00042	
	Arsenic (As)-Dissolved (mg/L)		0.00011	0.00012	0.00011	
	Barium (Ba)-Dissolved (mg/L)		0.0935	0.0954	0.0682	
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)		0.014	0.014	0.019	
	Cadmium (Cd)-Dissolved (ug/L)		0.0467	0.0411	0.0466	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2532772-1	L2532772-2	L2532772-3	L2532772-4
		Description	WS	WS	WG	WN
		Sampled Date	23-NOV-20	23-NOV-20	23-NOV-20	23-NOV-20
		Sampled Time	14:28	14:09	11:45	14:35
		Client ID	FR_FR2_WS_2020-12-21_N	FR_FRNTP_WS_2020-12-21_NP	FR_GCMW-2_QTR_2020-10-05_N	FR_CIL_MON_2020-11-02_N
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		129	125	161	82.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00011	
	Cobalt (Co)-Dissolved (ug/L)		0.75	1.12	<0.10	
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	0.00417	
	Iron (Fe)-Dissolved (mg/L)		0.024	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	0.000082	
	Lithium (Li)-Dissolved (mg/L)		0.0477	0.0482	0.138	
	Magnesium (Mg)-Dissolved (mg/L)		54.7	53.4	77.5	31.5
	Manganese (Mn)-Dissolved (mg/L)		0.0193	0.0117	0.00052	
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.00301	0.00333	0.00195	
	Nickel (Ni)-Dissolved (mg/L)		0.0107	0.0136	0.00245	
	Potassium (K)-Dissolved (mg/L)		2.82	2.86	3.34	0.823
	Selenium (Se)-Dissolved (ug/L)		47.2	51.9	117	
	Silicon (Si)-Dissolved (mg/L)		1.83	1.90	2.14	
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)		1.99	1.68	3.13	1.53
	Strontium (Sr)-Dissolved (mg/L)		0.194	0.182	0.245	
	Thallium (Tl)-Dissolved (mg/L)		0.000018	0.000021	<0.000010	
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00015	
Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010		
Uranium (U)-Dissolved (mg/L)		0.00324	0.00316	0.00636		
Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Dissolved (mg/L)		0.0015	0.0017	0.0037		
Hydrocarbons	EPH10-19 (mg/L)					<0.25
	EPH (C10-C32) (mg/L)					1.80
	EPH19-32 (mg/L)					1.80
	TEH (C10-C30) (mg/L)					1.74
	Surrogate: 2-Bromobenzotrifluoride (%)					76.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2532772-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2532772-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2532772-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L2532772-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2532772-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-CL	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)

Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-CL Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Reference Information

VA

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

11/23/2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2532772

Report Date: 11-FEB-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5297400							
WG3451531-11	LCS							
Acidity (as CaCO3)			109.7		%		85-115	25-NOV-20
WG3451531-10	MB							
Acidity (as CaCO3)			1.6		mg/L		2	25-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5297397							
WG3451523-11	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	25-NOV-20
WG3451523-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-2	LCS							
Beryllium (Be)-Dissolved			97.8		%		80-120	25-NOV-20
WG3451952-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-NOV-20
BE-T-L-CCMS-CL								
	Water							
Batch	R5297575							
WG3451003-2	LCS	TMRM						
Beryllium (Be)-Total			104.0		%		80-120	25-NOV-20
WG3451003-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	25-NOV-20
Batch	R5298326							
WG3451003-6	LCS	TMRM						
Beryllium (Be)-Total			102.2		%		80-120	26-NOV-20
WG3451003-5	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	26-NOV-20
BIC-CL								
	Water							
Batch	R5297397							
WG3451523-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	25-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5297209							
WG3451310-2	LCS							
Bromide (Br)			101.8		%		85-115	24-NOV-20
WG3451310-1	MB							



Quality Control Report

Workorder: L2532772

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch R5297209								
WG3451310-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	24-NOV-20
HG-D-CVAA-VA								
Water								
Batch R5298565								
WG3452772-2 LCS								
Mercury (Hg)-Dissolved			94.6		%		80-120	27-NOV-20
WG3452772-1 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	27-NOV-20
WG3452772-4 MS								
Mercury (Hg)-Dissolved		L2532772-2	96.4		%		70-130	27-NOV-20
HG-T-U-CVAF-VA								
Water								
Batch R5299395								
WG3453674-2 LCS								
Mercury (Hg)-Total			88.2		%		80-120	28-NOV-20
WG3453674-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-NOV-20
MET-D-CCMS-CL								
Water								
Batch R5303181								
WG3455684-2 LCS								
Calcium (Ca)-Dissolved		TMRM	101.2		%		80-120	02-DEC-20
Magnesium (Mg)-Dissolved			106.9		%		80-120	02-DEC-20
Potassium (K)-Dissolved			105.3		%		80-120	02-DEC-20
Sodium (Na)-Dissolved			104.2		%		80-120	02-DEC-20
WG3455684-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-DEC-20
MET-D-CCMS-VA								
Water								
Batch R5298422								
WG3451952-2 LCS								
Aluminum (Al)-Dissolved			102.2		%		80-120	25-NOV-20
Antimony (Sb)-Dissolved			94.8		%		80-120	25-NOV-20
Arsenic (As)-Dissolved			100.9		%		80-120	25-NOV-20
Barium (Ba)-Dissolved			102.2		%		80-120	25-NOV-20



Quality Control Report

Workorder: L2532772

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-2	LCS							
Bismuth (Bi)-Dissolved			100.1		%		80-120	25-NOV-20
Boron (B)-Dissolved			99.7		%		80-120	25-NOV-20
Cadmium (Cd)-Dissolved			100.6		%		80-120	25-NOV-20
Calcium (Ca)-Dissolved			101.6		%		80-120	25-NOV-20
Chromium (Cr)-Dissolved			95.3		%		80-120	25-NOV-20
Cobalt (Co)-Dissolved			98.6		%		80-120	25-NOV-20
Copper (Cu)-Dissolved			96.2		%		80-120	25-NOV-20
Iron (Fe)-Dissolved			88.7		%		80-120	25-NOV-20
Lead (Pb)-Dissolved			93.8		%		80-120	25-NOV-20
Lithium (Li)-Dissolved			94.9		%		80-120	25-NOV-20
Magnesium (Mg)-Dissolved			99.1		%		80-120	25-NOV-20
Manganese (Mn)-Dissolved			99.1		%		80-120	25-NOV-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	25-NOV-20
Nickel (Ni)-Dissolved			98.6		%		80-120	25-NOV-20
Potassium (K)-Dissolved			102.2		%		80-120	25-NOV-20
Selenium (Se)-Dissolved			91.9		%		80-120	25-NOV-20
Silicon (Si)-Dissolved			99.1		%		60-140	25-NOV-20
Silver (Ag)-Dissolved			95.3		%		80-120	25-NOV-20
Sodium (Na)-Dissolved			106.6		%		80-120	25-NOV-20
Strontium (Sr)-Dissolved			100.3		%		80-120	25-NOV-20
Thallium (Tl)-Dissolved			100.7		%		80-120	25-NOV-20
Tin (Sn)-Dissolved			95.4		%		80-120	25-NOV-20
Titanium (Ti)-Dissolved			94.7		%		80-120	25-NOV-20
Uranium (U)-Dissolved			99.4		%		80-120	25-NOV-20
Vanadium (V)-Dissolved			100.2		%		80-120	25-NOV-20
Zinc (Zn)-Dissolved			92.8		%		80-120	25-NOV-20
WG3451952-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-NOV-20



Quality Control Report

Workorder: L2532772

Report Date: 11-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-1	MB	NP						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
MET-T-CCMS-CL								
	Water							
Batch	R5297575							
WG3451003-2	LCS	TMRM						
Aluminum (Al)-Total			101.9		%		80-120	25-NOV-20
Antimony (Sb)-Total			112.7		%		80-120	25-NOV-20
Arsenic (As)-Total			101.0		%		80-120	25-NOV-20
Barium (Ba)-Total			101.0		%		80-120	25-NOV-20
Bismuth (Bi)-Total			106.8		%		80-120	25-NOV-20
Boron (B)-Total			99.9		%		80-120	25-NOV-20
Cadmium (Cd)-Total			100.0		%		80-120	25-NOV-20
Calcium (Ca)-Total			106.6		%		80-120	25-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL								
	Water							
Batch	R5297575							
WG3451003-2	LCS	TMRM						
Chromium (Cr)-Total			103.5		%		80-120	25-NOV-20
Cobalt (Co)-Total			99.96		%		80-120	25-NOV-20
Copper (Cu)-Total			98.7		%		80-120	25-NOV-20
Iron (Fe)-Total			104.2		%		80-120	25-NOV-20
Lead (Pb)-Total			106.2		%		80-120	25-NOV-20
Lithium (Li)-Total			108.7		%		80-120	25-NOV-20
Magnesium (Mg)-Total			104.5		%		80-120	25-NOV-20
Manganese (Mn)-Total			99.8		%		80-120	25-NOV-20
Molybdenum (Mo)-Total			108.3		%		80-120	25-NOV-20
Nickel (Ni)-Total			98.7		%		80-120	25-NOV-20
Potassium (K)-Total			102.2		%		80-120	25-NOV-20
Selenium (Se)-Total			104.0		%		80-120	25-NOV-20
Silicon (Si)-Total			111.9		%		60-140	25-NOV-20
Silver (Ag)-Total			108.3		%		80-120	25-NOV-20
Sodium (Na)-Total			102.9		%		80-120	25-NOV-20
Strontium (Sr)-Total			105.8		%		80-120	25-NOV-20
Thallium (Tl)-Total			103.7		%		80-120	25-NOV-20
Tin (Sn)-Total			101.9		%		80-120	25-NOV-20
Titanium (Ti)-Total			106.6		%		80-120	25-NOV-20
Uranium (U)-Total			111.5		%		80-120	25-NOV-20
Vanadium (V)-Total			102.5		%		80-120	25-NOV-20
Zinc (Zn)-Total			96.6		%		80-120	25-NOV-20
WG3451003-1								
	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	25-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	25-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL								
	Water							
Batch	R5297575							
WG3451003-1	MB							
Iron (Fe)-Total			<0.010		mg/L		0.01	25-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	25-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-NOV-20
Silicon (Si)-Total			<0.050		mg/L		0.05	25-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	25-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-NOV-20
Batch	R5298326							
WG3451003-6	LCS	TMRM						
Aluminum (Al)-Total			97.5		%		80-120	26-NOV-20
Antimony (Sb)-Total			111.9		%		80-120	26-NOV-20
Arsenic (As)-Total			106.2		%		80-120	26-NOV-20
Barium (Ba)-Total			106.0		%		80-120	26-NOV-20
Bismuth (Bi)-Total			101.6		%		80-120	26-NOV-20
Boron (B)-Total			105.8		%		80-120	26-NOV-20
Cadmium (Cd)-Total			104.1		%		80-120	26-NOV-20
Calcium (Ca)-Total			91.1		%		80-120	26-NOV-20
Chromium (Cr)-Total			104.6		%		80-120	26-NOV-20
Cobalt (Co)-Total			99.5		%		80-120	26-NOV-20
Copper (Cu)-Total			100.6		%		80-120	26-NOV-20
Iron (Fe)-Total			100.4		%		80-120	26-NOV-20
Lead (Pb)-Total			97.3		%		80-120	26-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL								
	Water							
Batch	R5298326							
WG3451003-6	LCS	TMRM						
Lithium (Li)-Total			112.8		%		80-120	26-NOV-20
Magnesium (Mg)-Total			110.3		%		80-120	26-NOV-20
Manganese (Mn)-Total			104.5		%		80-120	26-NOV-20
Molybdenum (Mo)-Total			100.4		%		80-120	26-NOV-20
Nickel (Ni)-Total			99.7		%		80-120	26-NOV-20
Potassium (K)-Total			106.9		%		80-120	26-NOV-20
Selenium (Se)-Total			99.96		%		80-120	26-NOV-20
Silicon (Si)-Total			96.0		%		60-140	26-NOV-20
Silver (Ag)-Total			98.3		%		80-120	26-NOV-20
Sodium (Na)-Total			108.1		%		80-120	26-NOV-20
Strontium (Sr)-Total			101.8		%		80-120	26-NOV-20
Thallium (Tl)-Total			98.8		%		80-120	26-NOV-20
Tin (Sn)-Total			98.6		%		80-120	26-NOV-20
Titanium (Ti)-Total			95.8		%		80-120	26-NOV-20
Uranium (U)-Total			109.5		%		80-120	26-NOV-20
Vanadium (V)-Total			101.1		%		80-120	26-NOV-20
Zinc (Zn)-Total			100.8		%		80-120	26-NOV-20
WG3451003-5	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	26-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	26-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	26-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL		Water						
Batch	R5298326							
WG3451003-5	MB							
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	26-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-NOV-20
Silicon (Si)-Total			<0.050		mg/L		0.05	26-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	26-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-NOV-20
NH3-L-F-CL		Water						
Batch	R5297184							
WG3451106-2	LCS							
Ammonia as N			101.8		%		85-115	24-NOV-20
WG3451106-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	24-NOV-20
NO2-L-IC-N-CL		Water						
Batch	R5297209							
WG3451310-2	LCS							
Nitrite (as N)			105.4		%		90-110	24-NOV-20
WG3451310-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-NOV-20
NO3-L-IC-N-CL		Water						
Batch	R5297209							
WG3451310-2	LCS							
Nitrate (as N)			106.2		%		90-110	24-NOV-20
WG3451310-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-NOV-20
OH-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5297397							
WG3451523-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	25-NOV-20
ORP-CL	Water							
Batch	R5297038							
WG3450929-1 CRM		CL-ORP						
ORP			221		mV		210-230	24-NOV-20
P-T-L-COL-CL	Water							
Batch	R5297465							
WG3451557-6 LCS								
Phosphorus (P)-Total			100.8		%		80-120	25-NOV-20
WG3451557-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-NOV-20
PH-CL	Water							
Batch	R5297397							
WG3451523-11 LCS								
pH			7.00		pH		6.9-7.1	25-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5297016							
WG3451004-2 LCS								
Orthophosphate-Dissolved (as P)			101.3		%		80-120	24-NOV-20
WG3451004-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-NOV-20
SO4-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2 LCS								
Sulfate (SO4)			105.6		%		90-110	24-NOV-20
WG3451310-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5299261							
WG3453153-5 LCS								
Total Dissolved Solids			100.6		%		85-115	27-NOV-20
WG3453153-4 MB								
Total Dissolved Solids			<10		mg/L		10	27-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-BC-VA-CL		Water						
Batch	R5300063							
WG3453853-2	LCS							
EPH10-19			91.4		%		70-130	30-NOV-20
EPH19-32			92.3		%		70-130	30-NOV-20
WG3453853-1	MB							
EPH10-19			<0.25		mg/L		0.25	30-NOV-20
EPH19-32			<0.25		mg/L		0.25	30-NOV-20
Surrogate: 2-Bromobenzotrifluoride			79.9		%		60-140	30-NOV-20
TEH-WATER-VA-CL		Water						
Batch	R5300063							
WG3453853-2	LCS							
TEH (C10-C30)			91.6		%		70-130	30-NOV-20
WG3453853-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	30-NOV-20
Surrogate: 2-Bromobenzotrifluoride			79.9		%		60-140	30-NOV-20
TKN-L-F-CL		Water						
Batch	R5297550							
WG3451102-10	LCS							
Total Kjeldahl Nitrogen			84.7		%		75-125	25-NOV-20
WG3451102-13	LCS							
Total Kjeldahl Nitrogen			86.6		%		75-125	25-NOV-20
WG3451102-15	LCS							
Total Kjeldahl Nitrogen			85.1		%		75-125	25-NOV-20
WG3451102-17	LCS							
Total Kjeldahl Nitrogen			83.3		%		75-125	25-NOV-20
WG3451102-2	LCS							
Total Kjeldahl Nitrogen			87.5		%		75-125	25-NOV-20
WG3451102-6	LCS							
Total Kjeldahl Nitrogen			84.1		%		75-125	25-NOV-20
WG3451102-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5297550							
WG3451102-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
TSS-L-CL	Water							
Batch	R5299258							
WG3452674-4 LCS								
Total Suspended Solids			110.1		%		85-115	27-NOV-20
WG3452674-3 MB								
Total Suspended Solids			<1.0		mg/L		1	27-NOV-20
TURBIDITY-CL	Water							
Batch	R5297046							
WG3450927-2 LCS								
Turbidity			97.4		%		85-115	24-NOV-20
WG3450927-1 MB								
Turbidity			<0.10		NTU		0.1	24-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	23-NOV-20 14:28	24-NOV-20 12:45	0.25	22	hours	EHTR-FM
	2	23-NOV-20 14:09	24-NOV-20 12:45	0.25	23	hours	EHTR-FM
	3	23-NOV-20 11:45	24-NOV-20 12:45	0.25	25	hours	EHTR-FM
	4	23-NOV-20 14:35	24-NOV-20 12:45	0.25	22	hours	EHTR-FM
pH							
	1	23-NOV-20 14:28	25-NOV-20 14:00	0.25	48	hours	EHTR-FM
	2	23-NOV-20 14:09	25-NOV-20 14:00	0.25	48	hours	EHTR-FM
	3	23-NOV-20 11:45	25-NOV-20 14:00	0.25	50	hours	EHTR-FM
	4	23-NOV-20 14:35	25-NOV-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2532772 were received on 24-NOV-20 09:00.

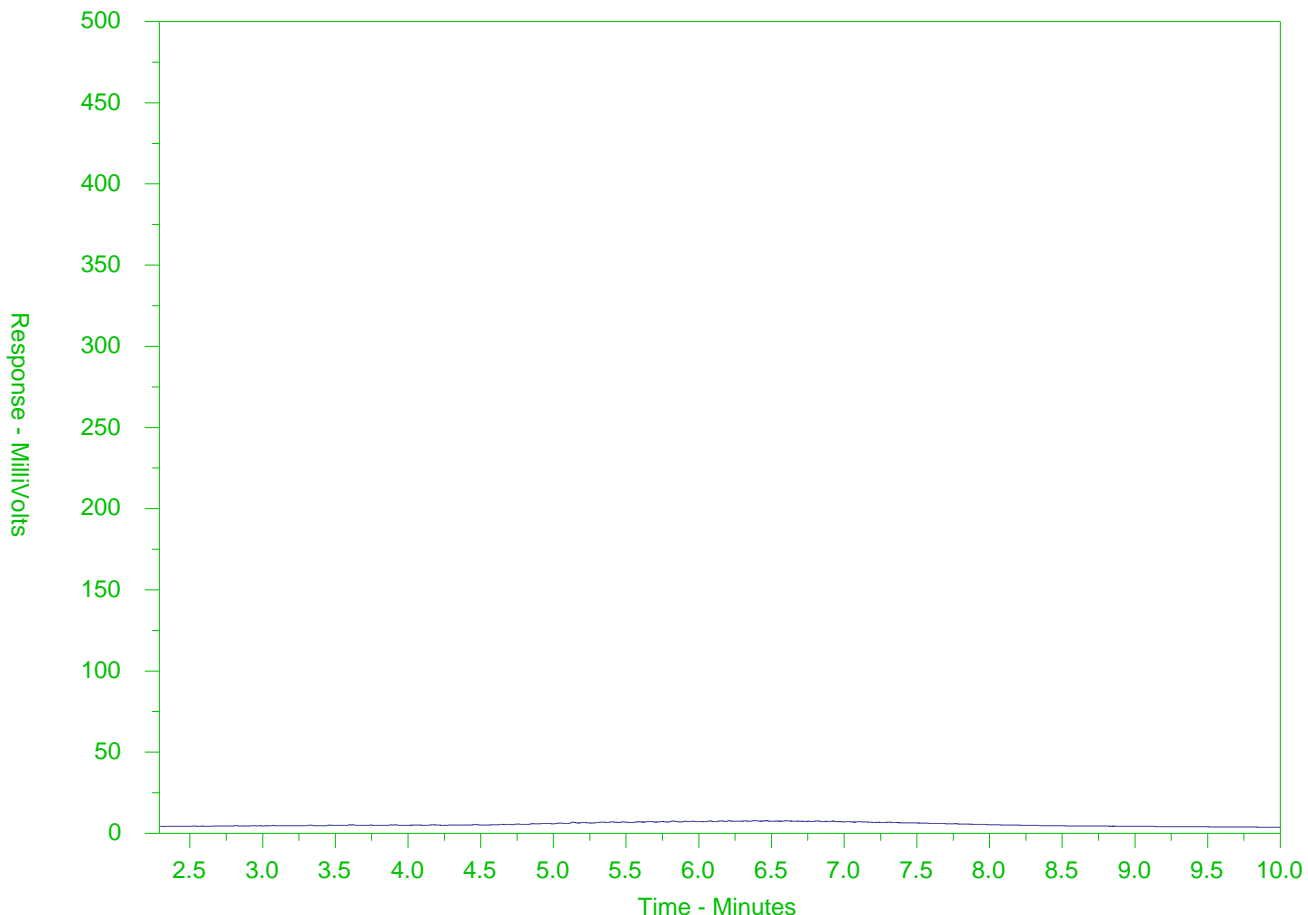
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2532772-4
 Client Sample ID: FR_CIL_MON_2020-11-02_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: 11/23/2020 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Scott Roughead				Lab Contact Lyudmyla Shvets				Email 1: david.burroughs@teck.com			
Email scott.roughead@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: britt.anderson@teck.com			
Address				Address 2559 29 Street NE				Email 3: scott.roughead@teck.com			
City Elkford				City Calgary				Email 4: teckcoal@equisonline.com			
Province BC				Province AB				Email 5:			
Postal Code				Postal Code T1Y 7B5				Email 6: jared.cayenne@teck.com			
Country Canada				Country Canada				PO number VPO00680583			
Phone Number 1-250-433-6976				Phone Number 403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	F	N	F	N	F	N	N	N	N	N	N	N	N	N	
								ANALYSIS															
								ALS_Package-DOC	1	1	1	1	1	1	1								
								ALS_Package-TKN/TOC	1	1	1	1	1	1	1								
								HG-D-CVAF-VA	1		1												
								HG-T-U-CVAF-VA	1		1												
								TECKCOAL-MET-D-VA	1		1												
								TECKCOAL-METNHG-T-CL	1		1												
								TECKCOAL-ROUTINE-VA						1									
								EPH								2							
								ALS Package-Methylmercury															
								BOD / Colour															
								TSS / TURBIDITY															



L2532772-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	November 23, 2020	<i>[Signature]</i>	24/11 9:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) x Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Britt Anderson	250-425-5335
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	November 23, 2020

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TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 03-DEC-20
Report Date: 11-FEB-21 16:48 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2536502
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: 11-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2536502-1 WG 02-DEC-20 10:40 FR_KB-1-2020-12-02	L2536502-2 WG 02-DEC-20 11:50 FR_KB-5PW-2020-12-02		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1970	1990		
	Hardness (as CaCO3) (mg/L)	1080	1090		
	pH (pH)	8.01	7.96		
	ORP (mV)	324	330		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	1820 ^{DLHC}	1740 ^{DLHC}		
	Turbidity (NTU)	<0.10	0.14		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	7.6	11.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	424	408		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	424	408		
	Ammonia as N (mg/L)	0.0110	0.0203		
	Bicarbonate (HCO3) (mg/L)	517 ^{DLHC}	497 ^{DLHC}		
	Bromide (Br) (mg/L)	<0.25	<0.25		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.22 ^{DLHC}	1.29 ^{DLHC}		
	Fluoride (F) (mg/L)	0.13 ^{DLHC}	0.14 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	80.3 ^{BL:INT}	82.3 ^{BL:INT}		
	Nitrate (as N) (mg/L)	81.1 ^{DLHC}	81.0 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0051 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0016		
	Phosphorus (P)-Total (mg/L)	0.0020	0.0037		
	Sulfate (SO4) (mg/L)	632 ^{DLHC}	630 ^{DLHC}		
	Anion Sum (meq/L)	27.5	27.1		
	Cation Sum (meq/L)	22.0	22.3		
	Cation - Anion Balance (%)	-10.9	-9.7		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	0.85		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0050 ^{DLDS}	<0.0050 ^{DLDS}		
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLDS}	<0.00050 ^{DLDS}		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2536502-1 WG 02-DEC-20 10:40 FR_KB-1-2020-12-02	L2536502-2 WG 02-DEC-20 11:50 FR_KB-5PW-2020-12-02		
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Barium (Ba)-Dissolved (mg/L)	DLDS 0.0429	DLDS 0.0487		
	Beryllium (Be)-Dissolved (ug/L)	DLDS <0.10	DLDS <0.10		
	Bismuth (Bi)-Dissolved (mg/L)	DLDS <0.00025	DLDS <0.00025		
	Boron (B)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050		
	Cadmium (Cd)-Dissolved (ug/L)	DLDS 0.646	DLDS 0.707		
	Calcium (Ca)-Dissolved (mg/L)	DLDS 236	DLDS 238		
	Chromium (Cr)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Cobalt (Co)-Dissolved (ug/L)	DLDS <0.50	DLDS <0.50		
	Copper (Cu)-Dissolved (mg/L)	DLDS <0.0010	DLDS <0.0010		
	Iron (Fe)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050		
	Lead (Pb)-Dissolved (mg/L)	DLDS <0.00025	DLDS <0.00025		
	Lithium (Li)-Dissolved (mg/L)	DLDS 0.166	DLDS 0.167		
	Magnesium (Mg)-Dissolved (mg/L)	DLDS 120	DLDS 121		
	Manganese (Mn)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Mercury (Hg)-Dissolved (mg/L)	DLDS <0.0000050	DLDS <0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	DLDS 0.00135	DLDS 0.00136		
	Nickel (Ni)-Dissolved (mg/L)	DLDS 0.0366	DLDS 0.0352		
	Potassium (K)-Dissolved (mg/L)	DLDS 4.86	DLDS 4.82		
	Selenium (Se)-Dissolved (ug/L)	DLDS 252	DLDS 257		
	Silicon (Si)-Dissolved (mg/L)	DLDS 2.00	DLDS 1.99		
	Silver (Ag)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050		
	Sodium (Na)-Dissolved (mg/L)	DLDS 7.00	DLDS 6.83		
	Strontium (Sr)-Dissolved (mg/L)	DLDS 0.258	DLDS 0.259		
	Thallium (Tl)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050		
	Tin (Sn)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Titanium (Ti)-Dissolved (mg/L)	DLDS <0.010	DLDS <0.010		
	Uranium (U)-Dissolved (mg/L)	DLDS 0.0104	DLDS 0.0106		
	Vanadium (V)-Dissolved (mg/L)	DLDS <0.0025	DLDS <0.0025		
	Zinc (Zn)-Dissolved (mg/L)	DLDS 0.0146	DLDS 0.0147		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
BL:INT	Balance Reviewed: Interference Or Non-Measured Component		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
HG-T-CVAA-CL	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2536502

Report Date: 11-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5307819							
WG3456838-5	LCS							
Acidity (as CaCO3)			106.3		%		85-115	04-DEC-20
WG3456838-4	MB							
Acidity (as CaCO3)			1.4		mg/L		2	04-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5307878							
WG3456782-5	LCS							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	04-DEC-20
WG3456782-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-DEC-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5310092							
WG3459235-2	LCS	TMRM						
Beryllium (Be)-Dissolved			96.3		%		80-120	09-DEC-20
WG3459235-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-DEC-20
BIC-CL								
	Water							
Batch	R5307878							
WG3456782-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5308534							
WG3457386-2	LCS							
Bromide (Br)			103.1		%		85-115	04-DEC-20
WG3457386-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5309497							
WG3458265-2	LCS							
Dissolved Organic Carbon			99.5		%		80-120	07-DEC-20
WG3458265-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-DEC-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2536502

Report Date: 11-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5309497							
WG3458265-2	LCS							
Total Organic Carbon			99.5		%		80-120	07-DEC-20
WG3458265-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5308534							
WG3457386-2	LCS							
Chloride (Cl)			101.9		%		85-115	04-DEC-20
WG3457386-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-DEC-20
CO3-CL	Water							
Batch	R5307878							
WG3456782-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	04-DEC-20
EC-L-PCT-CL	Water							
Batch	R5307878							
WG3456782-5	LCS							
Conductivity (@ 25C)			92.6		%		90-110	04-DEC-20
WG3456782-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-DEC-20
F-IC-N-CL	Water							
Batch	R5308534							
WG3457386-2	LCS							
Fluoride (F)			100.5		%		90-110	04-DEC-20
WG3457386-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-DEC-20
HG-D-CVAA-CL	Water							
Batch	R5310131							
WG3459346-2	LCS							
Mercury (Hg)-Dissolved			102.0		%		80-120	09-DEC-20
WG3459346-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-DEC-20
HG-T-CVAA-CL	Water							



Quality Control Report

Workorder: L2536502

Report Date: 11-FEB-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5310131							
WG3459350-2	LCS							
Mercury (Hg)-Total			106.0		%		80-120	09-DEC-20
WG3459350-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	09-DEC-20
MET-D-CCMS-CL								
	Water							
Batch	R5310092							
WG3459235-2	LCS	TMRM						
Aluminum (Al)-Dissolved			104.1		%		80-120	09-DEC-20
Antimony (Sb)-Dissolved			93.2		%		80-120	09-DEC-20
Arsenic (As)-Dissolved			101.7		%		80-120	09-DEC-20
Barium (Ba)-Dissolved			105.3		%		80-120	09-DEC-20
Bismuth (Bi)-Dissolved			94.6		%		80-120	09-DEC-20
Boron (B)-Dissolved			96.6		%		80-120	09-DEC-20
Cadmium (Cd)-Dissolved			104.4		%		80-120	09-DEC-20
Calcium (Ca)-Dissolved			90.5		%		80-120	09-DEC-20
Chromium (Cr)-Dissolved			101.2		%		80-120	09-DEC-20
Cobalt (Co)-Dissolved			100.2		%		80-120	09-DEC-20
Copper (Cu)-Dissolved			99.8		%		80-120	09-DEC-20
Iron (Fe)-Dissolved			106.5		%		80-120	09-DEC-20
Lead (Pb)-Dissolved			97.5		%		80-120	09-DEC-20
Lithium (Li)-Dissolved			95.5		%		80-120	09-DEC-20
Magnesium (Mg)-Dissolved			96.3		%		80-120	09-DEC-20
Manganese (Mn)-Dissolved			103.2		%		80-120	09-DEC-20
Molybdenum (Mo)-Dissolved			98.7		%		80-120	09-DEC-20
Nickel (Ni)-Dissolved			100.5		%		80-120	09-DEC-20
Potassium (K)-Dissolved			106.4		%		80-120	09-DEC-20
Selenium (Se)-Dissolved			101.5		%		80-120	09-DEC-20
Silicon (Si)-Dissolved			105.6		%		60-140	09-DEC-20
Silver (Ag)-Dissolved			100.7		%		80-120	09-DEC-20
Sodium (Na)-Dissolved			102.9		%		80-120	09-DEC-20
Strontium (Sr)-Dissolved			103.3		%		80-120	09-DEC-20
Thallium (Tl)-Dissolved			93.2		%		80-120	09-DEC-20
Tin (Sn)-Dissolved			97.7		%		80-120	09-DEC-20
Titanium (Ti)-Dissolved			98.7		%		80-120	09-DEC-20
Uranium (U)-Dissolved			99.3		%		80-120	09-DEC-20



Quality Control Report

Workorder: L2536502

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5310092							
WG3459235-2	LCS	TMRM						
Vanadium (V)-Dissolved			104.6		%		80-120	09-DEC-20
Zinc (Zn)-Dissolved			98.8		%		80-120	09-DEC-20
WG3459235-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-DEC-20

NH3-L-F-CL

Water



Quality Control Report

Workorder: L2536502

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5308341							
WG3457173-6	LCS							
Ammonia as N			105.5		%		85-115	04-DEC-20
WG3457173-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-DEC-20
NO2-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-2	LCS							
Nitrite (as N)			101.7		%		90-110	04-DEC-20
WG3457386-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-DEC-20
NO3-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-2	LCS							
Nitrate (as N)			103.5		%		90-110	04-DEC-20
WG3457386-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-DEC-20
OH-CL								
Water								
Batch	R5307878							
WG3456782-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	04-DEC-20
ORP-CL								
Water								
Batch	R5306322							
WG3456505-9	CRM	CL-ORP						
ORP			223		mV		210-230	03-DEC-20
P-T-L-COL-CL								
Water								
Batch	R5309431							
WG3458407-6	LCS							
Phosphorus (P)-Total			103.0		%		80-120	08-DEC-20
WG3458407-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-DEC-20
PH-CL								
Water								
Batch	R5307878							
WG3456782-5	LCS							
pH			7.04		pH		6.9-7.1	04-DEC-20

Quality Control Report

Workorder: L2536502

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5306317							
WG3456408-6	LCS							
Orthophosphate-Dissolved (as P)			94.4		%		80-120	03-DEC-20
WG3456408-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-DEC-20
SO4-IC-N-CL	Water							
Batch	R5308534							
WG3457386-2	LCS							
Sulfate (SO4)			101.0		%		90-110	04-DEC-20
WG3457386-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5310138							
WG3458892-8	LCS							
Total Dissolved Solids			103.5		%		85-115	09-DEC-20
WG3458892-7	MB							
Total Dissolved Solids			<10		mg/L		10	09-DEC-20
TKN-L-F-CL	Water							
Batch	R5308435							
WG3457290-12	LCS							
Total Kjeldahl Nitrogen			110.3		%		75-125	05-DEC-20
WG3457290-14	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	05-DEC-20
WG3457290-16	LCS							
Total Kjeldahl Nitrogen			87.0		%		75-125	05-DEC-20
WG3457290-2	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	05-DEC-20
WG3457290-4	LCS							
Total Kjeldahl Nitrogen			85.9		%		75-125	05-DEC-20
WG3457290-6	LCS							
Total Kjeldahl Nitrogen			86.4		%		75-125	05-DEC-20
WG3457290-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5308435							
WG3457290-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
TSS-L-CL	Water							
Batch	R5310076							
WG3458891-6 LCS								
Total Suspended Solids			105.3		%		85-115	09-DEC-20
WG3458891-5 MB								
Total Suspended Solids			<1.0		mg/L		1	09-DEC-20
TURBIDITY-CL	Water							
Batch	R5306330							
WG3455996-24 LCS								
Turbidity			96.9		%		85-115	03-DEC-20
WG3455996-23 MB								
Turbidity			<0.10		NTU		0.1	03-DEC-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	02-DEC-20 10:40	03-DEC-20 14:30	0.25	28	hours	EHTR-FM
	2	02-DEC-20 11:50	03-DEC-20 14:30	0.25	27	hours	EHTR-FM
pH	1	02-DEC-20 10:40	04-DEC-20 09:00	0.25	46	hours	EHTR-FM
	2	02-DEC-20 11:50	04-DEC-20 09:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2536502 were received on 03-DEC-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 12/2/2020

TURNAROUND TIME: Regular

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	██████████@golder.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
								Email 4:	Scott.Roughead@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	lyderry@srk.com	X	X	
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada		awla.hampson@golder.com	X	X	
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None	
FR_KB-1-2020-12-02	FR_KB-1A	WG	N	12/2/2020	10:40	G	6	1	1	1	1	1	1		
FR_KB-2-2020	FR_KB-2	WG				G	6	1	1	1	1	1	1		
FR_KB-3A-2020	FR_KB-3A	WG				G	6	1	1	1	1	1	1		
FR_KB-3B-2020	FR_KB-3B	WG				G	6	1	1	1	1	1	1		
FR_KB-5PW-2020-12-02	FR_KB-5PW	WG	N	12/2/2020	11:50	G	6	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS: All samples field filtered and preserved as required. NOTE: SAMPLE ID IS KB-1 (NOT 1A)

DATE/TIME: ACCEPTED BY/AFFILIATION: DATE/TIME: 12/3/2020

SERVICE REQUEST (rush - subject to availability):

Regular (default) X
Priority (2-3 business days) - 50% surcharge
Emergency (1 Business Day) - 100% surcharge
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Tyler Fortin
Sampler's Signature: [Signature]
Mobile #: 250 464 5914
Date/Time: 12/2/2020



TECK COAL LIMITED (FORDING RIVER)
ATTN: Scott Roughead
PO BOX 100
ELKFORD BC V0B 1H0

Date Received: 04-DEC-20
Report Date: 18-MAR-21 10:36 (MT)
Version: FINAL REV. 3

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2537103
Project P.O. #: VPO00680583
Job Reference: FORDING RIVER OPERATION
C of C Numbers: 12/3/2020
Legal Site Desc:

Comments: 18-MARCH-21: Bicarbonate, Carbonate and Hydroxide results reported on Sample-2.
5-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2537103-3.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2537103-1 WS 03-DEC-20 12:30 FR_HC3_MON_20 20-12-07_N	L2537103-2 WG 03-DEC-20 13:30 FR_HMW5_QTR_2 020-10-05_N	L2537103-3 WS 03-DEC-20 14:40 FR_IP3_WS_2020- 12-03_NP	L2537103-4 WS 03-DEC-20 14:00 FR_LMDEEPWELL _WS_2020-12-0
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	340	366	1120	889
	Hardness (as CaCO3) (mg/L)	195	192	808	588
	pH (pH)	8.11	8.28	7.97	7.67
	ORP (mV)	251	-103	232	229
	Total Suspended Solids (mg/L)	<1.0	5.3	228	3.1
	Total Dissolved Solids (mg/L)	228 ^{DLHC}	226 ^{DLHC}	916 ^{DLHC}	720 ^{DLHC}
	Turbidity (NTU)	<0.10	13.9	134	2.42
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	7.0	10.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	110	149	294	443
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	110	149	294	443
	Ammonia as N (mg/L)	<0.0050	0.0569	0.676 ^{DLHC}	19.4 ^{DLHC}
	Bicarbonate (HCO3) (mg/L)		182	359 ^{DLHC}	^{DLHC}
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.25 ^{DLHC}	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)		<5.0	<5.0 ^{DLHC}	^{DLHC}
	Chloride (Cl) (mg/L)	0.22	0.75	0.80 ^{DLHC}	1.14 ^{DLHC}
	Fluoride (F) (mg/L)	0.313	0.449	0.24 ^{DLHC}	0.52 ^{DLHC}
	Hydroxide (OH) (mg/L)		<5.0	<5.0	
	Ion Balance (%)	103	109	109 ^{DLHC}	107 ^{DLHC}
	Nitrate (as N) (mg/L)	0.250	<0.0050	20.1 ^{DLM}	58.4 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.029 ^{DLM}	1.20 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.075	2.86	34.4 ^{DLHC}
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0213	0.0014 ^{DLM}	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	0.021 ^{DLM}	0.101 ^{DLHC}	0.0083 ^{DLHC}
	Sulfate (SO4) (mg/L)	75.3	44.1	372	7.4
	Anion Sum (meq/L)	3.81	3.95	15.1	13.3
	Cation Sum (meq/L)	3.91	4.32	16.5	14.2
	Cation - Anion Balance (%)	1.3	4.5	4.4	3.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	1.04 ^{DTC}	1.14	0.73
	Total Organic Carbon (mg/L)	<0.50	<0.50 ^{DTC}	20.8	1.07
Total Metals	Aluminum (Al)-Total (mg/L)	0.0040		0.417	0.0142
	Antimony (Sb)-Total (mg/L)	<0.00010		0.00156	0.00287
	Arsenic (As)-Total (mg/L)	<0.00010		0.00064	0.00141
	Barium (Ba)-Total (mg/L)	0.0136		0.105	4.22 ^{RRV}
	Beryllium (Be)-Total (ug/L)	<0.020		0.059	<0.020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2537103-1	L2537103-2	L2537103-3	L2537103-4
		Description	WS	WG	WS	WS
		Sampled Date	03-DEC-20	03-DEC-20	03-DEC-20	03-DEC-20
		Sampled Time	12:30	13:30	14:40	14:00
		Client ID	FR_HC3_MON_20 20-12-07_N	FR_HMW5_QTR_2 020-10-05_N	FR_IP3_WS_2020- 12-03_NP	FR_LMDEEPWELL _WS_2020-12-0
Grouping	Analyte					
WATER						
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050		<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010		0.030	0.066	
	Cadmium (Cd)-Total (ug/L)	0.0072		0.516	0.0365	
	Calcium (Ca)-Total (mg/L)	43.1		137	119	
	Chromium (Cr)-Total (mg/L)	0.00019		0.00093	<0.00010	
	Cobalt (Co)-Total (ug/L)	<0.10		4.17	0.77	
	Copper (Cu)-Total (mg/L)	<0.00050		0.00276	0.00248	
	Iron (Fe)-Total (mg/L)	<0.010		0.892	0.348	
	Lead (Pb)-Total (mg/L)	<0.000050		0.00122	0.000170	
	Lithium (Li)-Total (mg/L)	<0.0010		0.0451	0.212	
	Magnesium (Mg)-Total (mg/L)	11.8		79.7	41.9	
	Manganese (Mn)-Total (mg/L)	<0.00010		0.246	0.0350	
	Mercury (Hg)-Total (ug/L)	<0.00050		0.0130	<0.00050	
	Molybdenum (Mo)-Total (mg/L)	0.000609		0.00664	0.0159	
	Nickel (Ni)-Total (mg/L)	<0.00050		0.0271	0.0107	
	Potassium (K)-Total (mg/L)	0.209		6.29	30.5	
	Selenium (Se)-Total (ug/L)	1.24		20.1	6.55	
	Silicon (Si)-Total (mg/L)	1.27		2.79	3.58	
	Silver (Ag)-Total (mg/L)	<0.000010		0.000046	<0.000010	
	Sodium (Na)-Total (mg/L)	0.423		1.71	3.21	
	Strontium (Sr)-Total (mg/L)	0.159		0.180	0.591	
	Thallium (Tl)-Total (mg/L)	<0.000010		0.000176	0.000211	
	Tin (Sn)-Total (mg/L)	<0.00010		<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010		<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000909		0.00593	0.00221	
	Vanadium (V)-Total (mg/L)	<0.00050		0.00345	0.00065	
	Zinc (Zn)-Total (mg/L)	<0.0030		0.0247	0.0271	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0054	0.0033	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00152	0.00310	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00017	0.00146	
	Barium (Ba)-Dissolved (mg/L)	0.0150	0.236	0.0578	5.09	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.043	0.031	0.072	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.320	0.0343	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2537103-1	L2537103-2	L2537103-3	L2537103-4
		Description	WS	WG	WS	WS
		Sampled Date	03-DEC-20	03-DEC-20	03-DEC-20	03-DEC-20
		Sampled Time	12:30	13:30	14:40	14:00
		Client ID	FR_HC3_MON_20 20-12-07_N	FR_HMW5_QTR_2 020-10-05_N	FR_IP3_WS_2020- 12-03_NP	FR_LMDEEPWELL _WS_2020-12-0
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		56.1	44.1	178	158
	Chromium (Cr)-Dissolved (mg/L)		0.00021	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	3.56	0.75
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	0.00031	0.00246
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.014	<0.010	0.283
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	0.000111
	Lithium (Li)-Dissolved (mg/L)		0.0010	0.203	0.0532	0.242
	Magnesium (Mg)-Dissolved (mg/L)		13.2	19.9	88.5	46.8
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	0.0639	0.240	0.0362
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000594	<0.000050	0.00631	0.0160
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	0.0247	0.0112
	Potassium (K)-Dissolved (mg/L)		0.234	0.806	7.32	35.6
	Selenium (Se)-Dissolved (ug/L)		1.27	3.53	20.7	7.16
	Silicon (Si)-Dissolved (mg/L)		1.15	2.47	2.18	3.41
	Silver (Ag)-Dissolved (mg/L)		<0.000020 ^{DLM}	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.375	10.3	1.73	3.32
	Strontium (Sr)-Dissolved (mg/L)		0.162	0.396	0.176	0.631
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000138	0.000210
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000853	0.000017	0.00543	0.00203
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0011	<0.0010	0.0088	0.0283

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Calcium (Ca)-Dissolved	B	L2537103-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2537103-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2537103-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2537103-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L2537103-1, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2537103-1, -3, -4
Matrix Spike	Manganese (Mn)-Total	MS-B	L2537103-1, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L2537103-1, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L2537103-1, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-CL	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon			

Reference Information

dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-CL Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

Reference Information

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

12/3/2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2537103

Report Date: 18-MAR-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5309084							
WG3458050-11	LCS							
Acidity (as CaCO3)			112.4		%		85-115	07-DEC-20
WG3458050-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	07-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5309082							
WG3458046-14	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	07-DEC-20
WG3458046-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5310212							
WG3458524-2	LCS							
Beryllium (Be)-Dissolved			103.7		%		80-120	08-DEC-20
WG3458524-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-DEC-20
WG3458524-4	MS	L2537103-1						
Beryllium (Be)-Dissolved			103.4		%		70-130	08-DEC-20
BE-T-L-CCMS-CL								
	Water							
Batch	R5309526							
WG3458449-2	LCS	TMRM						
Beryllium (Be)-Total			97.1		%		80-120	08-DEC-20
WG3458449-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	08-DEC-20
Batch	R5310092							
WG3458449-6	LCS	TMRM						
Beryllium (Be)-Total			95.5		%		80-120	09-DEC-20
WG3458449-5	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	09-DEC-20
BIC-CL								
	Water							
Batch	R5309082							
WG3458046-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-DEC-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2537103

Report Date: 18-MAR-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-11	DUP	L2537103-2						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-DEC-20
WG3457386-10	LCS							
Bromide (Br)			100.9		%		85-115	04-DEC-20
WG3457386-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-DEC-20
WG3457386-12	MS	L2537103-2						
Bromide (Br)			98.0		%		75-125	04-DEC-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5312062							
WG3460649-2	LCS							
Dissolved Organic Carbon			94.0		%		80-120	11-DEC-20
WG3460649-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
Batch	R5314439							
WG3461364-3	DUP	L2537103-1						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	11-DEC-20
WG3461364-2	LCS							
Dissolved Organic Carbon			98.1		%		80-120	11-DEC-20
WG3461364-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
WG3461364-4	MS	L2537103-1						
Dissolved Organic Carbon			98.9		%		70-130	11-DEC-20
Batch	R5314536							
WG3461427-2	LCS							
Dissolved Organic Carbon			111.0		%		80-120	13-DEC-20
WG3461427-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-DEC-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5312062							
WG3460649-2	LCS							
Total Organic Carbon			94.9		%		80-120	11-DEC-20
WG3460649-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
Batch	R5314439							
WG3461364-3	DUP	L2537103-1						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	11-DEC-20
WG3461364-2	LCS							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Batch R5314439								
WG3461364-2	LCS							
Total Organic Carbon			95.0		%		80-120	11-DEC-20
WG3461364-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
WG3461364-4	MS	L2537103-1						
Total Organic Carbon			104.2		%		70-130	11-DEC-20
CL-L-IC-N-CL								
Batch R5308534								
WG3457386-11	DUP	L2537103-2						
Chloride (Cl)		0.75	0.76		mg/L	0.2	20	04-DEC-20
WG3457386-10	LCS							
Chloride (Cl)			102.7		%		85-115	04-DEC-20
WG3457386-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-DEC-20
WG3457386-12	MS	L2537103-2						
Chloride (Cl)			99.0		%		75-125	04-DEC-20
CO3-CL								
Batch R5309082								
WG3458046-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	07-DEC-20
EC-L-PCT-CL								
Batch R5309082								
WG3458046-14	LCS							
Conductivity (@ 25C)			98.8		%		90-110	07-DEC-20
WG3458046-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-DEC-20
F-IC-N-CL								
Batch R5308534								
WG3457386-11	DUP	L2537103-2						
Fluoride (F)		0.449	0.457		mg/L	1.8	20	04-DEC-20
WG3457386-10	LCS							
Fluoride (F)			96.4		%		90-110	04-DEC-20
WG3457386-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-DEC-20
WG3457386-12	MS	L2537103-2						
Fluoride (F)			98.0		%		75-125	04-DEC-20
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5309746							
WG3459277-2	LCS							
Mercury (Hg)-Dissolved			99.3		%		80-120	09-DEC-20
WG3459277-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-DEC-20
WG3459277-4	MS	L2537103-4						
Mercury (Hg)-Dissolved			103.1		%		70-130	09-DEC-20
HG-T-U-CVAF-VA								
Water								
Batch	R5310211							
WG3459392-3	DUP	L2537103-1						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	09-DEC-20
WG3459392-2	LCS							
Mercury (Hg)-Total			93.8		%		80-120	09-DEC-20
WG3459392-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	09-DEC-20
WG3459392-4	MS	L2537103-4						
Mercury (Hg)-Total			83.4		%		70-130	09-DEC-20
MET-D-CCMS-VA								
Water								
Batch	R5310212							
WG3458524-2	LCS							
Aluminum (Al)-Dissolved			110.5		%		80-120	08-DEC-20
Antimony (Sb)-Dissolved			109.4		%		80-120	08-DEC-20
Arsenic (As)-Dissolved			103.9		%		80-120	08-DEC-20
Barium (Ba)-Dissolved			110.2		%		80-120	08-DEC-20
Bismuth (Bi)-Dissolved			100.9		%		80-120	08-DEC-20
Boron (B)-Dissolved			101.2		%		80-120	08-DEC-20
Cadmium (Cd)-Dissolved			106.0		%		80-120	08-DEC-20
Calcium (Ca)-Dissolved			104.5		%		80-120	08-DEC-20
Chromium (Cr)-Dissolved			108.9		%		80-120	08-DEC-20
Cobalt (Co)-Dissolved			108.1		%		80-120	08-DEC-20
Copper (Cu)-Dissolved			105.8		%		80-120	08-DEC-20
Iron (Fe)-Dissolved			101.9		%		80-120	08-DEC-20
Lead (Pb)-Dissolved			99.5		%		80-120	08-DEC-20
Lithium (Li)-Dissolved			102.4		%		80-120	08-DEC-20
Magnesium (Mg)-Dissolved			104.7		%		80-120	08-DEC-20
Manganese (Mn)-Dissolved			104.4		%		80-120	08-DEC-20
Molybdenum (Mo)-Dissolved			103.6		%		80-120	08-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5310212							
WG3458524-2	LCS							
Nickel (Ni)-Dissolved			108.1		%		80-120	08-DEC-20
Potassium (K)-Dissolved			111.3		%		80-120	08-DEC-20
Selenium (Se)-Dissolved			107.2		%		80-120	08-DEC-20
Silicon (Si)-Dissolved			106.7		%		60-140	08-DEC-20
Silver (Ag)-Dissolved			100.5		%		80-120	08-DEC-20
Sodium (Na)-Dissolved			111.8		%		80-120	08-DEC-20
Strontium (Sr)-Dissolved			104.7		%		80-120	08-DEC-20
Thallium (Tl)-Dissolved			101.1		%		80-120	08-DEC-20
Tin (Sn)-Dissolved			106.3		%		80-120	08-DEC-20
Titanium (Ti)-Dissolved			106.2		%		80-120	08-DEC-20
Uranium (U)-Dissolved			97.8		%		80-120	08-DEC-20
Vanadium (V)-Dissolved			110.3		%		80-120	08-DEC-20
Zinc (Zn)-Dissolved			99.3		%		80-120	08-DEC-20
WG3458524-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-DEC-20
Calcium (Ca)-Dissolved			0.082	B	mg/L		0.05	08-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5310212							
WG3458524-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-DEC-20
WG3458524-4	MS	L2537103-1						
Aluminum (Al)-Dissolved			103.6		%		70-130	08-DEC-20
Antimony (Sb)-Dissolved			104.7		%		70-130	08-DEC-20
Arsenic (As)-Dissolved			99.3		%		70-130	08-DEC-20
Barium (Ba)-Dissolved			102.1		%		70-130	08-DEC-20
Bismuth (Bi)-Dissolved			85.9		%		70-130	08-DEC-20
Boron (B)-Dissolved			97.5		%		70-130	08-DEC-20
Cadmium (Cd)-Dissolved			102.4		%		70-130	08-DEC-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-DEC-20
Chromium (Cr)-Dissolved			104.4		%		70-130	08-DEC-20
Cobalt (Co)-Dissolved			100.5		%		70-130	08-DEC-20
Copper (Cu)-Dissolved			100.9		%		70-130	08-DEC-20
Iron (Fe)-Dissolved			94.4		%		70-130	08-DEC-20
Lead (Pb)-Dissolved			94.2		%		70-130	08-DEC-20
Lithium (Li)-Dissolved			106.0		%		70-130	08-DEC-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-DEC-20
Manganese (Mn)-Dissolved			100.4		%		70-130	08-DEC-20
Molybdenum (Mo)-Dissolved			99.3		%		70-130	08-DEC-20
Nickel (Ni)-Dissolved			99.6		%		70-130	08-DEC-20
Potassium (K)-Dissolved			103.2		%		70-130	08-DEC-20
Selenium (Se)-Dissolved			95.6		%		70-130	08-DEC-20
Silicon (Si)-Dissolved			88.4		%		70-130	08-DEC-20
Sodium (Na)-Dissolved			104.9		%		70-130	08-DEC-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	08-DEC-20



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MET-D-CCMS-VA								
	Water							
Batch	R5310212							
WG3458524-4 MS		L2537103-1						
Thallium (Tl)-Dissolved			92.7		%		70-130	08-DEC-20
Tin (Sn)-Dissolved			101.9		%		70-130	08-DEC-20
Titanium (Ti)-Dissolved			102.9		%		70-130	08-DEC-20
Uranium (U)-Dissolved			93.4		%		70-130	08-DEC-20
Vanadium (V)-Dissolved			106.8		%		70-130	08-DEC-20
Zinc (Zn)-Dissolved			97.0		%		70-130	08-DEC-20
MET-T-CCMS-CL								
	Water							
Batch	R5309526							
WG3458449-2 LCS		TMRM						
Aluminum (Al)-Total			94.3		%		80-120	08-DEC-20
Antimony (Sb)-Total			99.3		%		80-120	08-DEC-20
Arsenic (As)-Total			94.0		%		80-120	08-DEC-20
Barium (Ba)-Total			96.5		%		80-120	08-DEC-20
Bismuth (Bi)-Total			99.3		%		80-120	08-DEC-20
Boron (B)-Total			101.8		%		80-120	08-DEC-20
Cadmium (Cd)-Total			94.3		%		80-120	08-DEC-20
Calcium (Ca)-Total			93.4		%		80-120	08-DEC-20
Chromium (Cr)-Total			93.6		%		80-120	08-DEC-20
Cobalt (Co)-Total			92.0		%		80-120	08-DEC-20
Copper (Cu)-Total			90.0		%		80-120	08-DEC-20
Iron (Fe)-Total			106.4		%		80-120	08-DEC-20
Lead (Pb)-Total			99.7		%		80-120	08-DEC-20
Lithium (Li)-Total			101.9		%		80-120	08-DEC-20
Magnesium (Mg)-Total			88.8		%		80-120	08-DEC-20
Manganese (Mn)-Total			94.0		%		80-120	08-DEC-20
Molybdenum (Mo)-Total			96.9		%		80-120	08-DEC-20
Nickel (Ni)-Total			90.9		%		80-120	08-DEC-20
Potassium (K)-Total			96.2		%		80-120	08-DEC-20
Selenium (Se)-Total			91.0		%		80-120	08-DEC-20
Silicon (Si)-Total			94.8		%		60-140	08-DEC-20
Silver (Ag)-Total			96.6		%		80-120	08-DEC-20
Sodium (Na)-Total			102.0		%		80-120	08-DEC-20
Strontium (Sr)-Total			98.7		%		80-120	08-DEC-20
Thallium (Tl)-Total			94.0		%		80-120	08-DEC-20



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MET-T-CCMS-CL								
	Water							
Batch	R5309526							
WG3458449-2	LCS	TMRM						
Tin (Sn)-Total			93.0		%		80-120	08-DEC-20
Titanium (Ti)-Total			85.3		%		80-120	08-DEC-20
Uranium (U)-Total			104.2		%		80-120	08-DEC-20
Vanadium (V)-Total			94.6		%		80-120	08-DEC-20
Zinc (Zn)-Total			92.7		%		80-120	08-DEC-20
WG3458449-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	08-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	08-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	08-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	08-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-DEC-20
Silicon (Si)-Total			<0.050		mg/L		0.05	08-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	08-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL		Water						
Batch	R5310092							
WG3458449-5	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	09-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-DEC-20
Silicon (Si)-Total			<0.050		mg/L		0.05	09-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-DEC-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-DEC-20

NH3-L-F-CL

Water

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5308556							
WG3457328-14	LCS							
Ammonia as N			94.5		%		85-115	05-DEC-20
WG3457328-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-DEC-20
NO2-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-11	DUP	L2537103-2						
Nitrite (as N)		<0.0010	0.0011	RPD-NA	mg/L	N/A	20	04-DEC-20
WG3457386-10	LCS							
Nitrite (as N)			101.3		%		90-110	04-DEC-20
WG3457386-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-DEC-20
WG3457386-12	MS	L2537103-2						
Nitrite (as N)			112.0		%		75-125	04-DEC-20
NO3-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-11	DUP	L2537103-2						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-DEC-20
WG3457386-10	LCS							
Nitrate (as N)			102.5		%		90-110	04-DEC-20
WG3457386-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-DEC-20
WG3457386-12	MS	L2537103-2						
Nitrate (as N)			99.6		%		75-125	04-DEC-20
OH-CL								
Water								
Batch	R5309082							
WG3458046-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-DEC-20
ORP-CL								
Water								
Batch	R5308295							
WG3457158-7	CRM	CL-ORP						
ORP			230		mV		210-230	04-DEC-20
P-T-L-COL-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5309431							
WG3458407-26	LCS							
Phosphorus (P)-Total			107.6		%		80-120	08-DEC-20
WG3458407-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-DEC-20
PH-CL								
Water								
Batch	R5309082							
WG3458046-14	LCS							
pH			7.03		pH		6.9-7.1	07-DEC-20
PO4-DO-L-COL-CL								
Water								
Batch	R5308291							
WG3456965-18	LCS							
Orthophosphate-Dissolved (as P)			101.8		%		80-120	04-DEC-20
WG3456965-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-DEC-20
SO4-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-11	DUP	L2537103-2						
Sulfate (SO4)		44.1	44.4		mg/L	0.7	20	04-DEC-20
WG3457386-10	LCS							
Sulfate (SO4)			101.9		%		90-110	04-DEC-20
WG3457386-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-DEC-20
WG3457386-12	MS	L2537103-2						
Sulfate (SO4)			94.9		%		75-125	04-DEC-20
SOLIDS-TDS-CL								
Water								
Batch	R5311721							
WG3459662-9	DUP	L2537103-3						
Total Dissolved Solids		916	901		mg/L	1.7	20	10-DEC-20
WG3459662-8	LCS							
Total Dissolved Solids			88.5		%		85-115	10-DEC-20
WG3459662-7	MB							
Total Dissolved Solids			<10		mg/L		10	10-DEC-20
TKN-L-F-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5308539							
WG3457360-10	LCS							
Total Kjeldahl Nitrogen			99.1		%		75-125	06-DEC-20
WG3457360-12	LCS							
Total Kjeldahl Nitrogen			97.2		%		75-125	06-DEC-20
WG3457360-14	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	06-DEC-20
WG3457360-2	LCS							
Total Kjeldahl Nitrogen			89.6		%		75-125	06-DEC-20
WG3457360-4	LCS							
Total Kjeldahl Nitrogen			97.5		%		75-125	06-DEC-20
WG3457360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
TSS-L-CL		Water						
Batch	R5311296							
WG3459677-6	LCS							
Total Suspended Solids			92.4		%		85-115	10-DEC-20
WG3459677-5	MB							
Total Suspended Solids			<1.0		mg/L		1	10-DEC-20
TURBIDITY-CL		Water						
Batch	R5308301							
WG3457154-14	LCS							
Turbidity			97.9		%		85-115	04-DEC-20
WG3457154-13	MB							
Turbidity			<0.10		NTU		0.1	04-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	03-DEC-20 12:30	04-DEC-20 17:00	0.25	29	hours	EHTR-FM
	2	03-DEC-20 13:30	04-DEC-20 17:00	0.25	28	hours	EHTR-FM
	3	03-DEC-20 14:40	04-DEC-20 17:00	0.25	26	hours	EHTR-FM
	4	03-DEC-20 14:00	04-DEC-20 17:00	0.25	27	hours	EHTR-FM
pH	1	03-DEC-20 12:30	07-DEC-20 13:00	0.25	96	hours	EHTR-FM
	2	03-DEC-20 13:30	07-DEC-20 13:00	0.25	96	hours	EHTR-FM
	3	03-DEC-20 14:40	07-DEC-20 13:00	0.25	94	hours	EHTR-FM
	4	03-DEC-20 14:00	14-DEC-20 10:00	0.25	260	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2537103 were received on 04-DEC-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	12/3/2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Fording River Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Scott Roughead	Lab Contact	Lyudmyla Shvets	Email 1:	david.burroughs@teck.com X X X
Email	scott.roughead@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	britt.anderson@teck.com X X X
Address		Address	2559 29 Street NE	Email 3:	scott.roughead@teck.com X X X
				Email 4:	teckcoal@equisonline.com X X X
City	Elkford	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-433-6976	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	Email 5:	
				Email 6:	jared.cayenne@teck.com X X X
				PO number	VPO00680583

SAMPLE DETAILS ANALYSIS REQUESTED Filtered ? F: Field, L: Lab, F1: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	PHENOL	F	N	F	N	F	N	N	N	N	N	N	N
								ALS_Package-DOC		H2SO4	H2SO4	HCL	NONE	HNO3	HNO3	NONE	Sodium Bisulfate	HCL	NONE	NONE	Sodium Bisulfate
								ALS_Package-TKN/TOC													
								HG-D-CVAF-VA													
								HG-T-U-CVAF-VA													
								TECKCOAL-MET-D-VA													
								TECKCOAL-MET/HG-T-CL													
								TECKCOAL-ROUTINE-VA													
								EPH/PAH													
								ALS_Package-Methylmercury													
								BOD / Colour													
								TSS / TURBIDITY													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	December 3, 2020	<i>[Signature]</i>	04/12 8:40

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) x	Britt Anderson	250-425-5335
Priority (2-3 business days) - 50% surcharge	<i>[Signature]</i>	
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

[Handwritten mark]



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0

Date Received: 09-DEC-20
Report Date: 05-FEB-21 13:47 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2538677
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 12/8/2020
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 12:36

5-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2538677-1 and L2538677-2.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2538677-1 WG 08-DEC-20 11:40 FR_KB-3A_2020-12-08	L2538677-2 WG 08-DEC-20 13:40 FR_KB-3B_2020-12-08		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1760	1820		
	Hardness (as CaCO3) (mg/L)	1190	1200		
	pH (pH)	7.75	7.67		
	ORP (mV)	442	452		
	Total Suspended Solids (mg/L)	1.5	3.7		
	Total Dissolved Solids (mg/L)	1270 ^{DLHC}	1510 ^{DLHC}		
	Turbidity (NTU)	0.47	1.75		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	16.9	24.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	347	349		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	347	349		
	Ammonia as N (mg/L)	<0.0050	0.0602		
	Bicarbonate (HCO3) (mg/L)	424	426		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.34 ^{DLHC}	1.37 ^{DLHC}		
	Fluoride (F) (mg/L)	<0.10 ^{DLHC}	<0.10 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	108	107		
	Nitrate (as N) (mg/L)	60.7 ^{DLHC}	67.1 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	0.0018		
	Phosphorus (P)-Total (mg/L)	0.0032	0.0027		
	Sulfate (SO4) (mg/L)	527 ^{DLHC}	520 ^{DLHC}		
	Anion Sum (meq/L)	22.3	22.6		
	Cation Sum (meq/L)	24.1	24.1		
	Cation - Anion Balance (%)	3.8	3.2		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.58		
	Total Organic Carbon (mg/L)	<0.50	0.53		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010		
	Antimony (Sb)-Dissolved (mg/L)	0.00019	0.00016		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2538677-1 WG 08-DEC-20 11:40 FR_KB-3A_2020-12-08	L2538677-2 WG 08-DEC-20 13:40 FR_KB-3B_2020-12-08			
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0596	0.0701		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.016	0.019		
	Cadmium (Cd)-Dissolved (ug/L)	0.0317	0.0259		
	Calcium (Ca)-Dissolved (mg/L)	275	268		
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00011		
	Cobalt (Co)-Dissolved (ug/L)	1.24	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00076	0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0369	0.0633		
	Magnesium (Mg)-Dissolved (mg/L)	123	127		
	Manganese (Mn)-Dissolved (mg/L)	0.00081	0.00048		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000285	0.000435		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	2.06	3.04		
	Selenium (Se)-Dissolved (ug/L)	191	295		
	Silicon (Si)-Dissolved (mg/L)	2.76	2.60		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.16	4.15		
	Strontium (Sr)-Dissolved (mg/L)	0.292	0.254		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00516	0.00790		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0057	0.0011		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2538677-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2538677-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are

Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

12/8/2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2538677

Report Date: 05-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5317885							
WG3462644-8	LCS							
Acidity (as CaCO3)			105.4		%		85-115	15-DEC-20
WG3462644-7	MB							
Acidity (as CaCO3)			1.0		mg/L		2	15-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5318142							
WG3462931-2	LCS							
Alkalinity, Total (as CaCO3)			98.4		%		85-115	15-DEC-20
WG3462931-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-DEC-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5315162							
WG3461115-6	LCS	TMRM						
Beryllium (Be)-Dissolved			101.8		%		80-120	13-DEC-20
WG3461115-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-DEC-20
BIC-CL								
	Water							
Batch	R5318142							
WG3462931-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5310472							
WG3459696-14	LCS							
Bromide (Br)			105.2		%		85-115	09-DEC-20
WG3459696-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5318195							
WG3462981-2	LCS							
Dissolved Organic Carbon			100.5		%		80-120	15-DEC-20
WG3462981-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-DEC-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2538677

Report Date: 05-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5318195							
WG3462981-2 LCS								
Total Organic Carbon			109.8		%		80-120	15-DEC-20
WG3462981-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-14 LCS								
Chloride (Cl)			104.5		%		85-115	09-DEC-20
WG3459696-13 MB								
Chloride (Cl)			<0.10		mg/L		0.1	09-DEC-20
CO3-CL	Water							
Batch	R5318142							
WG3462931-1 MB								
Carbonate (CO3)			<5.0		mg/L		5	15-DEC-20
EC-L-PCT-CL	Water							
Batch	R5318142							
WG3462931-2 LCS								
Conductivity (@ 25C)			105.7		%		90-110	15-DEC-20
WG3462931-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	15-DEC-20
F-IC-N-CL	Water							
Batch	R5310472							
WG3459696-14 LCS								
Fluoride (F)			101.8		%		90-110	09-DEC-20
WG3459696-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	09-DEC-20
HG-D-CVAA-CL	Water							
Batch	R5317517							
WG3462063-6 LCS								
Mercury (Hg)-Dissolved			101.0		%		80-120	15-DEC-20
WG3462063-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-DEC-20
HG-T-CVAA-CL	Water							



Quality Control Report

Workorder: L2538677

Report Date: 05-FEB-21

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-CL								
	Water							
Batch	R5317517							
WG3462064-2	LCS							
Mercury (Hg)-Total			99.7		%		80-120	15-DEC-20
WG3462064-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-DEC-20
MET-D-CCMS-CL								
	Water							
Batch	R5315162							
WG3461115-6	LCS	TMRM						
Aluminum (Al)-Dissolved			101.9		%		80-120	13-DEC-20
Antimony (Sb)-Dissolved			98.6		%		80-120	13-DEC-20
Arsenic (As)-Dissolved			99.6		%		80-120	13-DEC-20
Barium (Ba)-Dissolved			100.9		%		80-120	13-DEC-20
Bismuth (Bi)-Dissolved			99.6		%		80-120	13-DEC-20
Boron (B)-Dissolved			102.2		%		80-120	13-DEC-20
Cadmium (Cd)-Dissolved			99.7		%		80-120	13-DEC-20
Calcium (Ca)-Dissolved			101.7		%		80-120	13-DEC-20
Chromium (Cr)-Dissolved			101.6		%		80-120	13-DEC-20
Cobalt (Co)-Dissolved			101.4		%		80-120	13-DEC-20
Copper (Cu)-Dissolved			99.3		%		80-120	13-DEC-20
Iron (Fe)-Dissolved			103.0		%		80-120	13-DEC-20
Lead (Pb)-Dissolved			101.4		%		80-120	13-DEC-20
Lithium (Li)-Dissolved			100.1		%		80-120	13-DEC-20
Magnesium (Mg)-Dissolved			109.3		%		80-120	13-DEC-20
Manganese (Mn)-Dissolved			103.3		%		80-120	13-DEC-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	13-DEC-20
Nickel (Ni)-Dissolved			100.3		%		80-120	13-DEC-20
Potassium (K)-Dissolved			103.8		%		80-120	13-DEC-20
Selenium (Se)-Dissolved			101.0		%		80-120	13-DEC-20
Silicon (Si)-Dissolved			106.3		%		60-140	13-DEC-20
Silver (Ag)-Dissolved			99.8		%		80-120	13-DEC-20
Sodium (Na)-Dissolved			104.7		%		80-120	13-DEC-20
Strontium (Sr)-Dissolved			101.3		%		80-120	13-DEC-20
Thallium (Tl)-Dissolved			103.5		%		80-120	13-DEC-20
Tin (Sn)-Dissolved			98.3		%		80-120	13-DEC-20
Titanium (Ti)-Dissolved			98.0		%		80-120	13-DEC-20
Uranium (U)-Dissolved			96.0		%		80-120	13-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5315162							
WG3461115-6	LCS	TMRM						
Vanadium (V)-Dissolved			101.8		%		80-120	13-DEC-20
Zinc (Zn)-Dissolved			100.6		%		80-120	13-DEC-20
WG3461115-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20

NH3-L-F-CL

Water



Quality Control Report

Workorder: L2538677

Report Date: 05-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5311085							
WG3460077-14	LCS							
Ammonia as N			102.6		%		85-115	10-DEC-20
WG3460077-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-DEC-20
NO2-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-14	LCS							
Nitrite (as N)			103.8		%		90-110	09-DEC-20
WG3459696-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-14	LCS							
Nitrate (as N)			104.8		%		90-110	09-DEC-20
WG3459696-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-DEC-20
OH-CL	Water							
Batch	R5318142							
WG3462931-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	15-DEC-20
ORP-CL	Water							
Batch	R5318244							
WG3463004-3	CRM	CL-ORP						
ORP			221		mV		210-230	16-DEC-20
P-T-L-COL-CL	Water							
Batch	R5317617							
WG3462296-6	LCS							
Phosphorus (P)-Total			100.8		%		80-120	15-DEC-20
WG3462296-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-20
PH-CL	Water							
Batch	R5318142							
WG3462931-2	LCS							
pH			6.99		pH		6.9-7.1	15-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5310271							
WG3459208-18 LCS								
Orthophosphate-Dissolved (as P)			104.9		%		80-120	09-DEC-20
WG3459208-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-DEC-20
SO4-IC-N-CL	Water							
Batch	R5310472							
WG3459696-14 LCS								
Sulfate (SO4)			102.6		%		90-110	09-DEC-20
WG3459696-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5317951							
WG3462112-8 LCS								
Total Dissolved Solids			102.7		%		85-115	15-DEC-20
WG3462112-7 MB								
Total Dissolved Solids			<10		mg/L		10	15-DEC-20
TKN-L-F-CL	Water							
Batch	R5311504							
WG3460420-14 LCS								
Total Kjeldahl Nitrogen			106.4		%		75-125	11-DEC-20
WG3460420-18 LCS								
Total Kjeldahl Nitrogen			106.0		%		75-125	11-DEC-20
WG3460420-2 LCS								
Total Kjeldahl Nitrogen			104.9		%		75-125	11-DEC-20
WG3460420-4 LCS								
Total Kjeldahl Nitrogen			104.3		%		75-125	11-DEC-20
WG3460420-6 LCS								
Total Kjeldahl Nitrogen			106.2		%		75-125	11-DEC-20
WG3460420-8 LCS								
Total Kjeldahl Nitrogen			103.3		%		75-125	11-DEC-20
WG3460420-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5311504							
WG3460420-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
TSS-L-CL								
Water								
Batch	R5317910							
WG3461596-6	LCS							
Total Suspended Solids			93.2		%		85-115	15-DEC-20
WG3461596-5	MB							
Total Suspended Solids			<1.0		mg/L		1	15-DEC-20
TURBIDITY-CL								
Water								
Batch	R5310377							
WG3459601-18	DUP	L2538677-2						
Turbidity		1.75	1.68		NTU	4.1	15	09-DEC-20
WG3459601-17	LCS							
Turbidity			99.4		%		85-115	09-DEC-20
WG3459601-20	LCS							
Turbidity			98.9		%		85-115	09-DEC-20
WG3459601-16	MB							
Turbidity			<0.10		NTU		0.1	09-DEC-20
WG3459601-19	MB							
Turbidity			<0.10		NTU		0.1	09-DEC-20

Quality Control Report

Workorder: L2538677

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2538677

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	08-DEC-20 11:40	16-DEC-20 07:00	0.25	187	hours	EHTR-FM
	2	08-DEC-20 13:40	16-DEC-20 07:00	0.25	185	hours	EHTR-FM
pH							
	1	08-DEC-20 11:40	15-DEC-20 13:00	0.25	169	hours	EHTR-FM
	2	08-DEC-20 13:40	15-DEC-20 13:00	0.25	167	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2538677 were received on 09-DEC-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-12-08

TURNAROUND TIME:

Regular

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	██████████@golder.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
								Email 4:	Scott.Roughead@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	bderry@srk.com	X	X	
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada		laura-hampson@golder.com	X	X	
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	VPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2538677-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filter	N	F	N	F	F	N	
FR_KB-1_2020-	FR_KB-1	WG				G	6	1	1	1	1	1	1								
FR_KB-2_2020-	FR_KB-2	WG				G	6	1	1	1	1	1	1								
FR_KB-3A_2020-12-08	FR_KB-3A	WG		2020/12/08	1140	G	6	1	1	1	1	1	1								
FR_KB-3B_2020-12-08	FR_KB-3B	WG		2020/12/08	1340	G	6	1	1	1	1	1	1								
								1	1	1	1	1	1								
								1	1	1	1	1	1								
								1	1	1	1	1	1								
								1	1	1	1	1	1								
								1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

All samples field filtered and preserved.

[Signature]

12/18/20 855

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Tyler Fortin

Mobile #

250 464 5914

Sampler's Signature

Date/Time

2020/12/08



TECK COAL LIMITED (FORDING RIVER)
ATTN: Tom Jeffery
PO BOX 100
ELKFORD BC VOB 1H0


Date Received: 10-DEC-20
Report Date: 18-MAR-21 10:38 (MT)
Version: FINAL REV. 2

Client Phone: 250-433-8467

Certificate of Analysis

Lab Work Order #: L2538986
Project P.O. #: VPO00683840
Job Reference: FORDING RIVER OPERATIONS
C of C Numbers: 2020-12-09
Legal Site Desc:

Comments: 18-MARCH-21: Bicarbonate, Carbonate, and Hydroxide results reported.



Justine Buma-a
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2538986-1 WG 09-DEC-20 11:15 KB-2-2020-12-09	L2538986-2 WG 09-DEC-20 14:50 KB-8PW-2020-12-09		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2010	1350		
	Hardness (as CaCO3) (mg/L)	1280	788		
	pH (pH)	7.74	8.06		
	ORP (mV)	432	391		
	Total Suspended Solids (mg/L)	4.5	<1.0		
	Total Dissolved Solids (mg/L)	1890 ^{DLHC}	1080 ^{DLHC}		
	Turbidity (NTU)	5.29	0.16		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	20.4	6.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	348	310		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	348	310		
	Ammonia as N (mg/L)	<0.0050	0.0400		
	Bicarbonate (HCO3) (mg/L)	424	305		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.76 ^{DLHC}	1.14 ^{DLHC}		
	Fluoride (F) (mg/L)	0.17 ^{DLHC}	0.19 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	100	98.0		
	Nitrate (as N) (mg/L)	79.7 ^{DLHC}	42.5 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0062 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	0.116 ^{TKNI}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019	0.0019		
	Phosphorus (P)-Total (mg/L)	0.0055	0.0034		
	Sulfate (SO4) (mg/L)	634 ^{DLHC}	339 ^{DLHC}		
	Anion Sum (meq/L)	25.9	16.3		
Cation Sum (meq/L)	25.9	16.0			
Cation - Anion Balance (%)	0.0	-1.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.65	1.55		
	Total Organic Carbon (mg/L)	0.78	1.88		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0050 ^{DLDS}	<0.0050 ^{DLDS}		
	Antimony (Sb)-Dissolved (mg/L)	0.00051 ^{DLDS}	0.00056 ^{DLDS}		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2538986-1 WG 09-DEC-20 11:15 KB-2-2020-12-09	L2538986-2 WG 09-DEC-20 14:50 KB-8PW-2020-12-09		
Grouping	Analyte				
WATER					
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Barium (Ba)-Dissolved (mg/L)	DLDS 0.0643	DLDS 0.0374		
	Beryllium (Be)-Dissolved (ug/L)	DLDS <0.10	DLDS <0.10		
	Bismuth (Bi)-Dissolved (mg/L)	DLDS <0.00025	DLDS <0.00025		
	Boron (B)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050		
	Cadmium (Cd)-Dissolved (ug/L)	DLDS 0.161	DLDS 0.240		
	Calcium (Ca)-Dissolved (mg/L)	DLDS 292	DLDS 178		
	Chromium (Cr)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Cobalt (Co)-Dissolved (ug/L)	DLDS <0.50	DLDS <0.50		
	Copper (Cu)-Dissolved (mg/L)	DLDS <0.0010	DLDS 0.0016		
	Iron (Fe)-Dissolved (mg/L)	DLDS <0.050	DLDS <0.050		
	Lead (Pb)-Dissolved (mg/L)	DLDS <0.00025	DLDS 0.00249		
	Lithium (Li)-Dissolved (mg/L)	DLDS 0.167	DLDS 0.0924		
	Magnesium (Mg)-Dissolved (mg/L)	DLDS 133	DLDS 83.5		
	Manganese (Mn)-Dissolved (mg/L)	DLDS <0.00050	DLDS <0.00050		
	Mercury (Hg)-Dissolved (mg/L)	DLDS <0.0000050	DLDS <0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	DLDS 0.00163	DLDS 0.00180		
	Nickel (Ni)-Dissolved (mg/L)	DLDS 0.0070	DLDS 0.0099		
	Potassium (K)-Dissolved (mg/L)	DLDS 4.37	DLDS 3.51		
	Selenium (Se)-Dissolved (ug/L)	DLDS 244	DLDS 127		
	Silicon (Si)-Dissolved (mg/L)	DLDS 1.95	DLDS 1.89		
	Silver (Ag)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050		
	Sodium (Na)-Dissolved (mg/L)	DLDS 6.92	DLDS 3.66		
	Strontium (Sr)-Dissolved (mg/L)	DLDS 0.293	DLDS 0.183		
	Thallium (Tl)-Dissolved (mg/L)	DLDS <0.000050	DLDS <0.000050		
	Tin (Sn)-Dissolved (mg/L)	DLDS <0.00050	DLDS 0.00202		
	Titanium (Ti)-Dissolved (mg/L)	DLDS <0.010	DLDS <0.010		
	Uranium (U)-Dissolved (mg/L)	DLDS 0.0114	DLDS 0.00721		
	Vanadium (V)-Dissolved (mg/L)	DLDS <0.0025	DLDS <0.0025		
	Zinc (Zn)-Dissolved (mg/L)	DLDS <0.0050	DLDS 0.0112		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2538986-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-CVAA-CL Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are

Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-12-09

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2538986

Report Date: 18-MAR-21

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Client: TECK COAL LIMITED (FORDING RIVER)
 PO BOX 100
 ELKFORD BC V0B 1H0
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5318453							
WG3463291-6	DUP	L2538986-1						
Acidity (as CaCO3)		20.4	21.4		mg/L	4.7	20	16-DEC-20
WG3463291-5	LCS							
Acidity (as CaCO3)			101.2		%		85-115	16-DEC-20
WG3463291-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	16-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5318462							
WG3463293-5	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	16-DEC-20
WG3463293-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-DEC-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5317634							
WG3462306-2	LCS	TMRM						
Beryllium (Be)-Dissolved			102.0		%		80-120	15-DEC-20
WG3462306-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-DEC-20
BIC-CL								
	Water							
Batch	R5318462							
WG3463293-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	16-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5311126							
WG3460411-10	LCS							
Bromide (Br)			98.3		%		85-115	10-DEC-20
WG3460411-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	10-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5318801							
WG3463683-6	LCS							
Dissolved Organic Carbon			96.6		%		80-120	16-DEC-20
WG3463683-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5319342							
WG3464293-2	LCS							
Dissolved Organic Carbon			98.3		%		80-120	17-DEC-20
WG3464293-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-DEC-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5318801							
WG3463683-6	LCS							
Total Organic Carbon			99.5		%		80-120	16-DEC-20
WG3463683-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5311126							
WG3460411-10	LCS							
Chloride (Cl)			104.1		%		85-115	10-DEC-20
WG3460411-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	10-DEC-20
CO3-CL	Water							
Batch	R5318462							
WG3463293-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	16-DEC-20
EC-L-PCT-CL	Water							
Batch	R5318462							
WG3463293-5	LCS							
Conductivity (@ 25C)			101.6		%		90-110	16-DEC-20
WG3463293-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-DEC-20
F-IC-N-CL	Water							
Batch	R5311126							
WG3460411-10	LCS							
Fluoride (F)			101.3		%		90-110	10-DEC-20
WG3460411-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	10-DEC-20
HG-D-CVAA-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL								
	Water							
Batch	R5318846							
WG3463460-2	LCS							
Mercury (Hg)-Dissolved			112.0		%		80-120	17-DEC-20
WG3463460-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-DEC-20
HG-T-CVAA-CL								
	Water							
Batch	R5318846							
WG3463463-2	LCS							
Mercury (Hg)-Total			102.0		%		80-120	17-DEC-20
WG3463463-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	17-DEC-20
MET-D-CCMS-CL								
	Water							
Batch	R5317634							
WG3462306-2	LCS	TMRM						
Aluminum (Al)-Dissolved			108.8		%		80-120	15-DEC-20
Antimony (Sb)-Dissolved			105.0		%		80-120	15-DEC-20
Arsenic (As)-Dissolved			105.9		%		80-120	15-DEC-20
Barium (Ba)-Dissolved			108.9		%		80-120	15-DEC-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	15-DEC-20
Boron (B)-Dissolved			103.2		%		80-120	15-DEC-20
Cadmium (Cd)-Dissolved			107.0		%		80-120	15-DEC-20
Calcium (Ca)-Dissolved			104.0		%		80-120	15-DEC-20
Chromium (Cr)-Dissolved			106.6		%		80-120	15-DEC-20
Cobalt (Co)-Dissolved			104.5		%		80-120	15-DEC-20
Copper (Cu)-Dissolved			102.8		%		80-120	15-DEC-20
Iron (Fe)-Dissolved			106.6		%		80-120	15-DEC-20
Lead (Pb)-Dissolved			100.4		%		80-120	15-DEC-20
Lithium (Li)-Dissolved			104.6		%		80-120	15-DEC-20
Magnesium (Mg)-Dissolved			108.4		%		80-120	15-DEC-20
Manganese (Mn)-Dissolved			107.5		%		80-120	15-DEC-20
Molybdenum (Mo)-Dissolved			107.4		%		80-120	15-DEC-20
Nickel (Ni)-Dissolved			104.8		%		80-120	15-DEC-20
Potassium (K)-Dissolved			106.1		%		80-120	15-DEC-20
Selenium (Se)-Dissolved			100.7		%		80-120	15-DEC-20
Silicon (Si)-Dissolved			108.0		%		60-140	15-DEC-20
Silver (Ag)-Dissolved			111.6		%		80-120	15-DEC-20
Sodium (Na)-Dissolved			108.0		%		80-120	15-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5317634							
WG3462306-2	LCS	TMRM						
Strontium (Sr)-Dissolved			113.7		%		80-120	15-DEC-20
Thallium (Tl)-Dissolved			103.0		%		80-120	15-DEC-20
Tin (Sn)-Dissolved			106.4		%		80-120	15-DEC-20
Titanium (Ti)-Dissolved			102.9		%		80-120	15-DEC-20
Uranium (U)-Dissolved			107.6		%		80-120	15-DEC-20
Vanadium (V)-Dissolved			107.1		%		80-120	15-DEC-20
Zinc (Zn)-Dissolved			104.3		%		80-120	15-DEC-20
WG3462306-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
Water								
Batch R5317634								
WG3462306-1 MB								
			Titanium (Ti)-Dissolved		<0.00030	mg/L	0.0003	15-DEC-20
			Uranium (U)-Dissolved		<0.000010	mg/L	0.00001	15-DEC-20
			Vanadium (V)-Dissolved		<0.00050	mg/L	0.0005	15-DEC-20
			Zinc (Zn)-Dissolved		<0.0010	mg/L	0.001	15-DEC-20
NH3-L-F-CL								
Water								
Batch R5314122								
WG3460796-22 LCS								
			Ammonia as N		99.5	%	85-115	11-DEC-20
WG3460796-21 MB								
			Ammonia as N		<0.0050	mg/L	0.005	11-DEC-20
NO2-L-IC-N-CL								
Water								
Batch R5311126								
WG3460411-10 LCS								
			Nitrite (as N)		104.7	%	90-110	10-DEC-20
WG3460411-9 MB								
			Nitrite (as N)		<0.0010	mg/L	0.001	10-DEC-20
NO3-L-IC-N-CL								
Water								
Batch R5311126								
WG3460411-10 LCS								
			Nitrate (as N)		104.5	%	90-110	10-DEC-20
WG3460411-9 MB								
			Nitrate (as N)		<0.0050	mg/L	0.005	10-DEC-20
OH-CL								
Water								
Batch R5318462								
WG3463293-4 MB								
			Hydroxide (OH)		<5.0	mg/L	5	16-DEC-20
ORP-CL								
Water								
Batch R5318440								
			WG3463202-1 CRM	CL-ORP				
			ORP		222	mV	210-230	16-DEC-20
P-T-L-COL-CL								
Water								

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5319783							
WG3464682-2	LCS							
Phosphorus (P)-Total			95.4		%		80-120	19-DEC-20
WG3464682-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-DEC-20
PH-CL	Water							
Batch	R5318462							
WG3463293-5	LCS							
pH			7.02		pH		6.9-7.1	16-DEC-20
PO4-DO-L-COL-CL	Water							
Batch	R5310922							
WG3460084-2	LCS							
Orthophosphate-Dissolved (as P)			98.7		%		80-120	10-DEC-20
WG3460084-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-DEC-20
SO4-IC-N-CL	Water							
Batch	R5311126							
WG3460411-10	LCS							
Sulfate (SO4)			102.5		%		90-110	10-DEC-20
WG3460411-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5318634							
WG3462777-2	LCS							
Total Dissolved Solids			99.6		%		85-115	16-DEC-20
WG3462777-1	MB							
Total Dissolved Solids			<10		mg/L		10	16-DEC-20
TKN-L-F-CL	Water							
Batch	R5313688							
WG3461104-10	LCS							
Total Kjeldahl Nitrogen			101.3		%		75-125	13-DEC-20
WG3461104-14	LCS							
Total Kjeldahl Nitrogen			102.1		%		75-125	13-DEC-20
WG3461104-2	LCS							
Total Kjeldahl Nitrogen			111.0		%		75-125	13-DEC-20
WG3461104-6	LCS							
Total Kjeldahl Nitrogen			109.3		%		75-125	13-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5313688							
WG3461104-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
TSS-L-CL		Water						
Batch	R5318568							
WG3462776-14 LCS								
Total Suspended Solids			99.9		%		85-115	16-DEC-20
WG3462776-13 MB								
Total Suspended Solids			<1.0		mg/L		1	16-DEC-20
TURBIDITY-CL		Water						
Batch	R5310940							
WG3460058-2 LCS								
Turbidity			96.4		%		85-115	10-DEC-20
WG3460058-1 MB								
Turbidity			<0.10		NTU		0.1	10-DEC-20

Quality Control Report

Workorder: L2538986

Report Date: 18-MAR-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2538986

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	09-DEC-20 11:15	16-DEC-20 20:55	0.25	178	hours	EHTR-FM
	2	09-DEC-20 14:50	16-DEC-20 20:55	0.25	174	hours	EHTR-FM
pH	1	09-DEC-20 11:15	16-DEC-20 13:00	0.25	170	hours	EHTR-FM
	2	09-DEC-20 14:50	16-DEC-20 13:00	0.25	166	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2538986 were received on 10-DEC-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-12-09

TURNAROUND TIME: Regular

RUSH:

PROJECT/CLIENT INFO LABORATORY OTHER INFO

Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@equisonline.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	@golfer.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	tom.jeffery@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	laura.hampson@golfer.com	X	X	X
Phone Number	1-250-433-6716			Phone Number	403 407 1794			PO number	PPO00683840			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2538986-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED						
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	
KB-2-2020-12-09	KB-2	WG	N	2020-12-09	11:15	G	6	1	1	1	1	1	1	1
KB-8PW-2020-12-09	KB-8PW	WG	N	↓	14:50	G	6	1	1	1	1	1	1	1
		WG				G	6	1	1	1	1	1	1	1
		WG				G	6	1	1	1	1	1	1	1
								1	1	1	1	1	1	1
								1	1	1	1	1	1	1
								1	1	1	1	1	1	1
								1	1	1	1	1	1	1
								1	1	1	1	1	1	1
								1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	JM	12/10 8:45

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Tyler Forbin	Mobile #	250-464-5914
				Sampler's Signature	[Signature]	Date/Time	2020-12-09

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Greenhills Operations





TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 22-JAN-20
Report Date: 03-FEB-21 16:21 (MT)
Version: FINAL REV. 3

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2407934
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATIONS
C of C Numbers: GHO_QTR_GW_2020-01
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2407934-1 to -6.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-1 GH_POTW10_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:30							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	259		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	0.314		0.050	mg/L		23-JAN-20	R4976428
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-20	R4981767
Total Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					25-JAN-20	R4979639
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	0.00097		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.0191		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.035		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	0.0215		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	93.5		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	0.15		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	0.00022		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.513		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	0.000092		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	0.0150		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	40.3		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.0481		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.00275		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	0.00232		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.73		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	4.44		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	4.65		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-JAN-20	27-JAN-20	R4980075
Sodium (Na)-Dissolved	5.10		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.538		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	0.00021		0.00010	mg/L	25-JAN-20	27-JAN-20	R4980075
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.000676		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	400		0.50	mg/L		27-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-1 GH_POTW10_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:30							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	0.00117		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	0.0206		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	0.037		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	0.0123		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	101		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	0.17		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	0.732		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	0.0176		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	42.5		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	0.0506		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	0.00294		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	0.00154		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	1.68		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	4.59		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	5.10		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	5.08		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	0.529		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	0.000634		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.0		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	213		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	213		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.0549		0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	6.77		0.50	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	717		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.862		0.020	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Ion Balance	96.5		-100	%		27-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.8			%		27-JAN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-1 GH_POTW10_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 10:30 Matrix: WG							
Ion Balance Calculation							
Anion Sum	8.58			meq/L		27-JAN-20	
Cation Sum	8.28			meq/L		27-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.611		0.0050	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0147		0.0010	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	308		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	195		0.30	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	489	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	6.60		0.10	NTU		23-JAN-20	R4976908
pH							
pH	7.88		0.10	pH		22-JAN-20	R4977087
L2407934-2 GH_POTW15_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 10:20 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	281		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	0.51		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-JAN-20	R4976428
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-20	R4981767
Total Organic Carbon	0.53		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	0.00153		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.0235		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.021		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	0.0143		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	136		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-2 GH_POTW15_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:20							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.654		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	0.0142		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	45.5		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.197		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.00237		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	0.00064		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.68		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	4.37		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Sodium (Na)-Dissolved	12.1		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.413		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.00130		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	0.0016		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	528		0.50	mg/L		27-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0033		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	0.00154		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	0.0228		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	0.021		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	0.0160		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	140		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	0.21		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	0.740		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	0.0164		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	44.8		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	0.193		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	0.00251		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	0.00103		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	1.52		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	0.063		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	4.52		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	11.0		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	0.377		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	0.000017		0.000010	mg/L		27-JAN-20	R4980826

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-2 GH_POTW15_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	0.00125		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	8.7		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	230		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	230		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.0474		0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	30.3	DLHC	2.5	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	907		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.20	DLHC	0.10	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Ion Balance	100		-100	%		27-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		27-JAN-20	
Anion Sum	11.2			meq/L		27-JAN-20	
Cation Sum	11.2			meq/L		27-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	280		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	273	DLHC	1.5	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	684	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	1.6		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	6.44		0.10	NTU		23-JAN-20	R4976908
pH							
pH	7.83		0.10	pH		22-JAN-20	R4977087
L2407934-3 GH_POTW17_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 09:25							
Matrix: WG							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-3 GH_POTW17_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 09:25							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	360		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	0.057		0.050	mg/L		23-JAN-20	R4976428
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-20	R4981767
Total Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.0323		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.024		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	0.0515		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	194		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	0.16		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.219		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	0.000222		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	0.0135		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	78.1		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.0805		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.00109		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	0.00771		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.86		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	6.55		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	4.89		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Sodium (Na)-Dissolved	9.14		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.517		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.00231		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	0.0072		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	806		0.50	mg/L		27-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-3 GH_POTW17_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 09:25							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0041		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	0.00020		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	0.0326		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	0.022		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	0.0467		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	187		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	0.15		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	0.192		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	0.000163		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	0.0143		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	76.3		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	0.0761		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	0.00110		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	0.00757		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	1.66		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	5.78		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	4.84		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	8.59		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	0.465		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	0.000012		0.000010	mg/L		27-JAN-20	R4980826
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	0.00206		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	0.0053		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	14.1		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	295		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	295		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.0190		0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	17.9	DLHC	2.5	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1230		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.18	DLHC	0.10	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Cation - Anion Balance	0.4			%		27-JAN-20	
Anion Sum	16.4			meq/L		27-JAN-20	
Cation Sum	16.6			meq/L		27-JAN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-3 GH_POTW17_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 09:25 Matrix: WG							
Ion Balance Calculation							
Ion Balance	101		-100	%		27-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.208	DLHC	0.025	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	480		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	481	DLHC	1.5	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	1010	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	2.70		0.10	NTU		23-JAN-20	R4976908
pH							
pH	7.70		0.10	pH		22-JAN-20	R4977087
L2407934-4 GH_POTW06_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 09:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	372		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	0.182		0.050	mg/L		23-JAN-20	R4976428
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-20	R4981767
Total Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-JAN-20	R4980936
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.0606		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.014		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	0.0537		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	178		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-4 GH_POTW06_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 09:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00172		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.011		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	0.000404	DTC	0.000050	mg/L	28-JAN-20	27-JAN-20	R4981926
Lithium (Li)-Dissolved	0.0107		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	91.6		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.00194		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.000942		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	0.00088		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.68		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	31.9		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	4.30		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Sodium (Na)-Dissolved	7.18		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.342		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.00345		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	0.0082		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	822		0.50	mg/L		28-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	0.0561		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	0.014		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	0.0508		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	183		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	0.00124		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	0.011		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	0.000291		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	0.0119		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	85.4		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	0.00165		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	0.000888		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	0.00097		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	1.48		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	28.0		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	4.16		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	6.46		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	0.316		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-4 GH_POTW06_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 09:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	0.00314		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	0.0050		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	11.6		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	305		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	305		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	19.2	DLHC	2.5	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1290		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.18	DLHC	0.10	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Ion Balance	95.0		-100	%		28-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.5			%		28-JAN-20	
Anion Sum	17.6			meq/L		28-JAN-20	
Cation Sum	16.8			meq/L		28-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.24	DLHC	0.025	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	365		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	524	DLHC	1.5	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	1070	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	0.38		0.10	NTU		23-JAN-20	R4976908
pH							
pH	7.76		0.10	pH		22-JAN-20	R4977087
L2407934-5 GH_POTW09_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:00							
Matrix: WG							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-5 GH_POTW09_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:00							
Matrix: WG							
Bicarbonate (HCO3)	315		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-JAN-20	R4976428
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		27-JAN-20	R4981767
Total Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	0.00050		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.0358		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.020		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	0.0114		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	106		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	0.20		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	0.00137		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.164		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	0.0115		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	41.1		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.198		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.00263		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	0.00108		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.65		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	1.55		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	5.00		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Sodium (Na)-Dissolved	7.45		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.370		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.00209		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	0.0082		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	434		0.50	mg/L		27-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-5 GH_POTW09_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 10:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	0.00047		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	0.0345		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	0.020		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	0.0262		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	104		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	0.00025		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	0.18		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	0.0289		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	0.196		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	0.00290		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	0.0126		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	39.9		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	0.193		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	0.00255		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	0.00129		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	1.52		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	1.43		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	4.78		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	6.83		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	0.345		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	0.000016		0.000010	mg/L		27-JAN-20	R4980826
Tin (Sn)-Total	0.00257		0.00010	mg/L		27-JAN-20	R4980826
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	0.00188		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	0.0366		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.9		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	258		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	258		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.0330		0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	6.18		0.50	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	738		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.837		0.020	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Cation - Anion Balance	-0.2			%		27-JAN-20	
Anion Sum	9.09			meq/L		27-JAN-20	
Cation Sum	9.06			meq/L		27-JAN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-5 GH_POTW09_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 10:00 Matrix: WG							
Ion Balance Calculation							
Ion Balance	99.7		-100	%		27-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0086		0.0050	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	342		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	178		0.30	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	516	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	0.85		0.10	NTU		23-JAN-20	R4976908
pH							
pH	7.80		0.10	pH		22-JAN-20	R4977087
L2407934-6 GH_TRIPGW_WG_2020-01-06_NP Sampled By: CLIENT on 21-JAN-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-JAN-20	R4976428
Total Organic Carbon	<0.50		0.50	mg/L		23-JAN-20	R4978106
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					25-JAN-20	R4979639
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	25-JAN-20	27-JAN-20	R4980075
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-6 GH_TRIPGW_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	<0.050		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-JAN-20	27-JAN-20	R4980075
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	25-JAN-20	27-JAN-20	R4980075
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		27-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-JAN-20	R4980826
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		25-JAN-20	R4979466
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Arsenic (As)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Barium (Ba)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Boron (B)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		27-JAN-20	R4980826
Calcium (Ca)-Total	<0.050		0.050	mg/L		27-JAN-20	R4980826
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-JAN-20	R4980826
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Iron (Fe)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Lithium (Li)-Total	<0.0010		0.0010	mg/L		27-JAN-20	R4980826
Magnesium (Mg)-Total	<0.10		0.10	mg/L		27-JAN-20	R4980826
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		27-JAN-20	R4980826
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Potassium (K)-Total	<0.050		0.050	mg/L		27-JAN-20	R4980826
Selenium (Se)-Total	<0.050		0.050	ug/L		27-JAN-20	R4980826
Silicon (Si)-Total	<0.10		0.10	mg/L		27-JAN-20	R4980826
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Sodium (Na)-Total	<0.050		0.050	mg/L		27-JAN-20	R4980826
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		27-JAN-20	R4980826
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407934-6 GH_TRIPGW_WG_2020-01-06_NP							
Sampled By: CLIENT on 21-JAN-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-JAN-20	R4980826
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-JAN-20	R4980826
Uranium (U)-Total	<0.000010		0.000010	mg/L		27-JAN-20	R4980826
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-JAN-20	R4980826
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-JAN-20	R4980826
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.0		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.0358	RRV	0.0050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Ion Balance	0.0		-100	%		27-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		27-JAN-20	
Anion Sum	<0.10			meq/L		27-JAN-20	
Cation Sum	<0.10			meq/L		27-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	492		-1000	mV		24-JAN-20	R4979592
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	<0.10		0.10	NTU		23-JAN-20	R4976908
pH							
pH	5.46		0.10	pH		22-JAN-20	R4977087

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GHO_QTR_GW_2020-01

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.*

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2407934

Report Date: 03-FEB-21

Page 1 of 20

Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4976661							
WG3262448-5	LCS							
Acidity (as CaCO3)			104.5		%		85-115	22-JAN-20
WG3262448-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	22-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4977087							
WG3262536-5	LCS							
Alkalinity, Total (as CaCO3)			103.8		%		85-115	22-JAN-20
WG3262536-8	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	22-JAN-20
WG3262536-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-20
WG3262536-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-3	DUP	L2407934-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263561-2	LCS							
Beryllium (Be)-Dissolved			99.2		%		80-120	24-JAN-20
WG3263561-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-JAN-20
WG3263561-4	MS	L2407934-2						
Beryllium (Be)-Dissolved			96.4		%		70-130	24-JAN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4980826							
WG3264243-2	LCS							
Beryllium (Be)-Total			101.3		%		80-120	27-JAN-20
WG3264243-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-JAN-20
BIC-CL								
	Water							
Batch	R4977087							
WG3262536-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-JAN-20
BR-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Water								
Batch	R4976758							
WG3262500-7	DUP	L2407934-6						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10	LCS							
Bromide (Br)			99.7		%		85-115	22-JAN-20
WG3262500-6	LCS							
Bromide (Br)			95.6		%		85-115	22-JAN-20
WG3262500-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-20
WG3262500-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-20
WG3262500-8	MS	L2407934-6						
Bromide (Br)			105.0		%		75-125	22-JAN-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R4978106							
WG3262971-2	LCS							
Dissolved Organic Carbon			97.2		%		80-120	23-JAN-20
WG3262971-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JAN-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R4978106							
WG3262971-2	LCS							
Total Organic Carbon			99.3		%		80-120	23-JAN-20
WG3262971-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-JAN-20
CL-IC-N-CL								
Water								
Batch	R4976758							
WG3262500-7	DUP	L2407934-6						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10	LCS							
Chloride (Cl)			102.4		%		90-110	22-JAN-20
WG3262500-6	LCS							
Chloride (Cl)			102.4		%		90-110	22-JAN-20
WG3262500-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-JAN-20
WG3262500-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-JAN-20
WG3262500-8	MS	L2407934-6						
Chloride (Cl)			104.0		%		75-125	22-JAN-20



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CO3-CL	Water							
Batch	R4977087							
WG3262536-4 MB	Carbonate (CO3)		<5.0		mg/L		5	22-JAN-20
EC-L-PCT-CL	Water							
Batch	R4977087							
WG3262536-5 LCS	Conductivity (@ 25C)		96.4		%		90-110	22-JAN-20
WG3262536-8 LCS	Conductivity (@ 25C)		95.4		%		90-110	22-JAN-20
WG3262536-4 MB	Conductivity (@ 25C)		<2.0		uS/cm		2	22-JAN-20
WG3262536-7 MB	Conductivity (@ 25C)		<2.0		uS/cm		2	22-JAN-20
F-IC-N-CL	Water							
Batch	R4976758							
WG3262500-7 DUP	Fluoride (F)	L2407934-6	<0.020	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10 LCS	Fluoride (F)		104.2		%		90-110	22-JAN-20
WG3262500-6 LCS	Fluoride (F)		103.6		%		90-110	22-JAN-20
WG3262500-5 MB	Fluoride (F)		<0.020		mg/L		0.02	22-JAN-20
WG3262500-9 MB	Fluoride (F)		<0.020		mg/L		0.02	22-JAN-20
WG3262500-8 MS	Fluoride (F)	L2407934-6	106.0		%		75-125	22-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4979466							
WG3263698-3 DUP	Mercury (Hg)-Dissolved	L2407934-3	<0.0000050	RPD-NA	mg/L	N/A	20	25-JAN-20
WG3263698-2 LCS	Mercury (Hg)-Dissolved		96.4		%		80-120	25-JAN-20
WG3263698-1 MB	Mercury (Hg)-Dissolved	NP	<0.0000050		mg/L		0.000005	25-JAN-20
WG3263698-4 MS	Mercury (Hg)-Dissolved	L2407934-4	94.8		%		70-130	25-JAN-20
HG-T-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA		Water						
Batch	R4979466							
WG3263603-2	LCS							
Mercury (Hg)-Total			97.0		%		80-120	25-JAN-20
WG3263603-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	25-JAN-20
HG-T-U-CVAF-VA		Water						
Batch	R4981767							
WG3264970-3	DUP	L2407934-2						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	27-JAN-20
WG3264970-2	LCS							
Mercury (Hg)-Total			100.6		%		80-120	27-JAN-20
WG3264970-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	27-JAN-20
WG3264970-4	MS	L2407934-4						
Mercury (Hg)-Total			95.8		%		70-130	27-JAN-20
MET-D-CCMS-VA		Water						
Batch	R4979401							
WG3263561-3	DUP	L2407934-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	24-JAN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-20
Arsenic (As)-Dissolved		0.00097	0.00105		mg/L	8.3	20	24-JAN-20
Barium (Ba)-Dissolved		0.0191	0.0199		mg/L	4.1	20	24-JAN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-JAN-20
Boron (B)-Dissolved		0.035	0.037		mg/L	4.3	20	24-JAN-20
Cadmium (Cd)-Dissolved		0.0000215	0.0000256		mg/L	17	20	24-JAN-20
Calcium (Ca)-Dissolved		93.5	94.8		mg/L	1.4	20	24-JAN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-20
Cobalt (Co)-Dissolved		0.00015	0.00016		mg/L	6.6	20	24-JAN-20
Copper (Cu)-Dissolved		0.00022	0.00041	J	mg/L	0.00019	0.0004	24-JAN-20
Iron (Fe)-Dissolved		0.513	0.531		mg/L	3.3	20	24-JAN-20
Lead (Pb)-Dissolved		0.000092	0.000103		mg/L	11	20	24-JAN-20
Lithium (Li)-Dissolved		0.0150	0.0155		mg/L	3.1	20	24-JAN-20
Magnesium (Mg)-Dissolved		40.3	41.4		mg/L	2.7	20	24-JAN-20
Manganese (Mn)-Dissolved		0.0481	0.0497		mg/L	3.3	20	24-JAN-20
Molybdenum (Mo)-Dissolved		0.00275	0.00287		mg/L	4.3	20	24-JAN-20
Nickel (Ni)-Dissolved		0.00232	0.00252		mg/L	8.3	20	24-JAN-20
Potassium (K)-Dissolved		1.73	1.80		mg/L	4.0	20	24-JAN-20



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MET-D-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-3	DUP	L2407934-1						
Selenium (Se)-Dissolved		0.00444	0.00472		mg/L	6.1	20	24-JAN-20
Silicon (Si)-Dissolved		4.65	4.92		mg/L	5.8	20	24-JAN-20
Sodium (Na)-Dissolved		5.10	5.36		mg/L	5.0	20	24-JAN-20
Strontium (Sr)-Dissolved		0.538	0.563		mg/L	4.4	20	24-JAN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JAN-20
Uranium (U)-Dissolved		0.000676	0.000699		mg/L	3.3	20	24-JAN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JAN-20
Zinc (Zn)-Dissolved		<0.0010	0.0016	RPD-NA	mg/L	N/A	20	24-JAN-20
WG3263561-2	LCS							
Aluminum (Al)-Dissolved			93.7		%		80-120	24-JAN-20
Antimony (Sb)-Dissolved			96.4		%		80-120	24-JAN-20
Arsenic (As)-Dissolved			101.7		%		80-120	24-JAN-20
Barium (Ba)-Dissolved			103.5		%		80-120	24-JAN-20
Bismuth (Bi)-Dissolved			95.4		%		80-120	24-JAN-20
Boron (B)-Dissolved			102.8		%		80-120	24-JAN-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	24-JAN-20
Calcium (Ca)-Dissolved			99.7		%		80-120	24-JAN-20
Chromium (Cr)-Dissolved			95.7		%		80-120	24-JAN-20
Cobalt (Co)-Dissolved			96.8		%		80-120	24-JAN-20
Copper (Cu)-Dissolved			96.3		%		80-120	24-JAN-20
Iron (Fe)-Dissolved			96.5		%		80-120	24-JAN-20
Lead (Pb)-Dissolved			94.2		%		80-120	24-JAN-20
Lithium (Li)-Dissolved			93.2		%		80-120	24-JAN-20
Magnesium (Mg)-Dissolved			96.4		%		80-120	24-JAN-20
Manganese (Mn)-Dissolved			96.1		%		80-120	24-JAN-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	24-JAN-20
Nickel (Ni)-Dissolved			95.7		%		80-120	24-JAN-20
Potassium (K)-Dissolved			105.2		%		80-120	24-JAN-20
Selenium (Se)-Dissolved			97.3		%		80-120	24-JAN-20
Silicon (Si)-Dissolved			94.7		%		60-140	24-JAN-20
Silver (Ag)-Dissolved			97.9		%		80-120	24-JAN-20
Sodium (Na)-Dissolved			101.1		%		80-120	24-JAN-20
Strontium (Sr)-Dissolved			99.97		%		80-120	24-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-2	LCS							
Thallium (Tl)-Dissolved			96.0		%		80-120	24-JAN-20
Tin (Sn)-Dissolved			96.0		%		80-120	24-JAN-20
Titanium (Ti)-Dissolved			97.7		%		80-120	24-JAN-20
Uranium (U)-Dissolved			95.5		%		80-120	24-JAN-20
Vanadium (V)-Dissolved			98.2		%		80-120	24-JAN-20
Zinc (Zn)-Dissolved			97.4		%		80-120	24-JAN-20
WG3263561-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
WG3263561-4	MS	L2407934-2						
Aluminum (Al)-Dissolved			94.8		%		70-130	24-JAN-20
Antimony (Sb)-Dissolved			103.0		%		70-130	24-JAN-20
Arsenic (As)-Dissolved			105.6		%		70-130	24-JAN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Bismuth (Bi)-Dissolved			86.3		%		70-130	24-JAN-20
Boron (B)-Dissolved			100.9		%		70-130	24-JAN-20
Cadmium (Cd)-Dissolved			101.2		%		70-130	24-JAN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Chromium (Cr)-Dissolved			97.2		%		70-130	24-JAN-20
Cobalt (Co)-Dissolved			95.2		%		70-130	24-JAN-20
Copper (Cu)-Dissolved			94.3		%		70-130	24-JAN-20
Iron (Fe)-Dissolved			94.5		%		70-130	24-JAN-20
Lead (Pb)-Dissolved			89.7		%		70-130	24-JAN-20
Lithium (Li)-Dissolved			94.4		%		70-130	24-JAN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Molybdenum (Mo)-Dissolved			103.8		%		70-130	24-JAN-20
Nickel (Ni)-Dissolved			94.7		%		70-130	24-JAN-20
Potassium (K)-Dissolved			106.2		%		70-130	24-JAN-20
Selenium (Se)-Dissolved			109.8		%		70-130	24-JAN-20
Silicon (Si)-Dissolved			92.0		%		70-130	24-JAN-20
Silver (Ag)-Dissolved			101.8		%		70-130	24-JAN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	24-JAN-20
Thallium (Tl)-Dissolved			89.4		%		70-130	24-JAN-20
Tin (Sn)-Dissolved			101.7		%		70-130	24-JAN-20
Titanium (Ti)-Dissolved			101.6		%		70-130	24-JAN-20
Uranium (U)-Dissolved			91.0		%		70-130	24-JAN-20
Vanadium (V)-Dissolved			101.1		%		70-130	24-JAN-20
Zinc (Zn)-Dissolved			96.6		%		70-130	24-JAN-20

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MET-D-CCMS-VA								
Water								
Batch	R4979607							
WG3263561-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-20
Batch								
R4980075								
WG3263768-3	DUP	L2407934-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-JAN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Arsenic (As)-Dissolved		0.00097	0.00104		mg/L	3.2	20	27-JAN-20
Barium (Ba)-Dissolved		0.0191	0.0199		mg/L	2.8	20	27-JAN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JAN-20
Boron (B)-Dissolved		0.035	0.036		mg/L	1.2	20	27-JAN-20
Cadmium (Cd)-Dissolved		0.0000215	0.0000157		mg/L	7.9	20	27-JAN-20
Calcium (Ca)-Dissolved		93.5	92.1		mg/L	1.3	20	27-JAN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Cobalt (Co)-Dissolved		0.00015	0.00017		mg/L	0.6	20	27-JAN-20
Copper (Cu)-Dissolved		0.00022	0.00028		mg/L	3.0	20	27-JAN-20
Iron (Fe)-Dissolved		0.513	0.548		mg/L	1.8	20	27-JAN-20
Lead (Pb)-Dissolved		0.000092	0.000102		mg/L	2.1	20	27-JAN-20
Lithium (Li)-Dissolved		0.0150	0.0174		mg/L	2.5	20	27-JAN-20
Magnesium (Mg)-Dissolved		40.3	40.5		mg/L	2.3	20	27-JAN-20
Manganese (Mn)-Dissolved		0.0481	0.0494		mg/L	0.9	20	27-JAN-20
Molybdenum (Mo)-Dissolved		0.00275	0.00266		mg/L	1.8	20	27-JAN-20
Nickel (Ni)-Dissolved		0.00232	0.00273		mg/L	0.1	20	27-JAN-20
Potassium (K)-Dissolved		1.73	1.78		mg/L	2.7	20	27-JAN-20
Selenium (Se)-Dissolved		0.00444	0.00440		mg/L	2.2	20	27-JAN-20
Silicon (Si)-Dissolved		4.65	4.94		mg/L	1.1	20	27-JAN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-20
Sodium (Na)-Dissolved		5.10	5.50		mg/L	1.3	20	27-JAN-20
Strontium (Sr)-Dissolved		0.538	0.503		mg/L	1.3	20	27-JAN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-20
Tin (Sn)-Dissolved		0.00021	0.00018		mg/L	19	20	27-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JAN-20
Uranium (U)-Dissolved		0.000676	0.000691		mg/L	2.1	20	27-JAN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-JAN-20
Zinc (Zn)-Dissolved		<0.0010	0.0013		mg/L	1.3	20	27-JAN-20
WG3263768-2	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980075							
WG3263768-2	LCS							
Aluminum (Al)-Dissolved			106.8		%		80-120	27-JAN-20
Antimony (Sb)-Dissolved			99.5		%		80-120	27-JAN-20
Arsenic (As)-Dissolved			97.6		%		80-120	27-JAN-20
Barium (Ba)-Dissolved			100.0		%		80-120	27-JAN-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	27-JAN-20
Boron (B)-Dissolved			96.3		%		80-120	27-JAN-20
Cadmium (Cd)-Dissolved			96.6		%		80-120	27-JAN-20
Calcium (Ca)-Dissolved			98.0		%		80-120	27-JAN-20
Chromium (Cr)-Dissolved			97.7		%		80-120	27-JAN-20
Cobalt (Co)-Dissolved			96.8		%		80-120	27-JAN-20
Copper (Cu)-Dissolved			96.5		%		80-120	27-JAN-20
Iron (Fe)-Dissolved			108.4		%		80-120	27-JAN-20
Lead (Pb)-Dissolved			97.2		%		80-120	27-JAN-20
Lithium (Li)-Dissolved			98.5		%		80-120	27-JAN-20
Magnesium (Mg)-Dissolved			96.5		%		80-120	27-JAN-20
Manganese (Mn)-Dissolved			99.8		%		80-120	27-JAN-20
Molybdenum (Mo)-Dissolved			94.4		%		80-120	27-JAN-20
Nickel (Ni)-Dissolved			97.0		%		80-120	27-JAN-20
Potassium (K)-Dissolved			99.8		%		80-120	27-JAN-20
Selenium (Se)-Dissolved			94.8		%		80-120	27-JAN-20
Silicon (Si)-Dissolved			99.7		%		60-140	27-JAN-20
Silver (Ag)-Dissolved			94.7		%		80-120	27-JAN-20
Sodium (Na)-Dissolved			104.2		%		80-120	27-JAN-20
Strontium (Sr)-Dissolved			95.9		%		80-120	27-JAN-20
Thallium (Tl)-Dissolved			99.9		%		80-120	27-JAN-20
Tin (Sn)-Dissolved			94.5		%		80-120	27-JAN-20
Titanium (Ti)-Dissolved			97.7		%		80-120	27-JAN-20
Uranium (U)-Dissolved			88.4		%		80-120	27-JAN-20
Vanadium (V)-Dissolved			97.6		%		80-120	27-JAN-20
Zinc (Zn)-Dissolved			93.7		%		80-120	27-JAN-20
WG3263768-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980075							
WG3263768-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Batch	R4981926							
WG3264695-3	DUP	L2407934-4						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-JAN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Barium (Ba)-Dissolved		0.0606	0.0549		mg/L	0.6	20	27-JAN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-3	DUP	L2407934-4						
Boron (B)-Dissolved		0.014	0.013		mg/L	2.8	20	27-JAN-20
Cadmium (Cd)-Dissolved		0.0000537	0.0000472		mg/L	6.2	20	27-JAN-20
Calcium (Ca)-Dissolved		178	173		mg/L	0.4	20	27-JAN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Copper (Cu)-Dissolved		0.00172	0.00154		mg/L	3.1	20	27-JAN-20
Iron (Fe)-Dissolved		0.011	0.010		mg/L	1.8	20	27-JAN-20
Lead (Pb)-Dissolved		0.000404	0.000412		mg/L	2.0	20	27-JAN-20
Lithium (Li)-Dissolved		0.0107	0.0110		mg/L	0.9	20	27-JAN-20
Magnesium (Mg)-Dissolved		91.6	92.1		mg/L	1.2	20	27-JAN-20
Manganese (Mn)-Dissolved		0.00194	0.00182		mg/L	10	20	27-JAN-20
Molybdenum (Mo)-Dissolved		0.000942	0.000948		mg/L	1.5	20	27-JAN-20
Nickel (Ni)-Dissolved		0.00088	0.00104		mg/L	1.1	20	27-JAN-20
Potassium (K)-Dissolved		1.68	1.59		mg/L	0.9	20	27-JAN-20
Selenium (Se)-Dissolved		0.0319	0.0319		mg/L	1.2	20	27-JAN-20
Silicon (Si)-Dissolved		4.30	4.50		mg/L	1.7	20	27-JAN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-20
Sodium (Na)-Dissolved		7.18	6.65		mg/L	2.0	20	27-JAN-20
Strontium (Sr)-Dissolved		0.342	0.333		mg/L	2.1	20	27-JAN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JAN-20
Uranium (U)-Dissolved		0.00345	0.00321		mg/L	0.6	20	27-JAN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-JAN-20
Zinc (Zn)-Dissolved		0.0082	0.0077		mg/L	0.1	20	27-JAN-20
WG3264695-2 LCS								
Aluminum (Al)-Dissolved			100.7		%		80-120	27-JAN-20
Antimony (Sb)-Dissolved			100.3		%		80-120	27-JAN-20
Arsenic (As)-Dissolved			98.1		%		80-120	27-JAN-20
Barium (Ba)-Dissolved			105.3		%		80-120	27-JAN-20
Bismuth (Bi)-Dissolved			97.8		%		80-120	27-JAN-20
Boron (B)-Dissolved			90.9		%		80-120	27-JAN-20
Cadmium (Cd)-Dissolved			99.0		%		80-120	27-JAN-20
Calcium (Ca)-Dissolved			93.0		%		80-120	27-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-2	LCS							
Chromium (Cr)-Dissolved			99.6		%		80-120	27-JAN-20
Cobalt (Co)-Dissolved			99.0		%		80-120	27-JAN-20
Copper (Cu)-Dissolved			97.9		%		80-120	27-JAN-20
Iron (Fe)-Dissolved			94.2		%		80-120	27-JAN-20
Lead (Pb)-Dissolved			94.9		%		80-120	27-JAN-20
Lithium (Li)-Dissolved			90.7		%		80-120	27-JAN-20
Magnesium (Mg)-Dissolved			97.8		%		80-120	27-JAN-20
Manganese (Mn)-Dissolved			98.2		%		80-120	27-JAN-20
Molybdenum (Mo)-Dissolved			103.7		%		80-120	27-JAN-20
Nickel (Ni)-Dissolved			100.1		%		80-120	27-JAN-20
Potassium (K)-Dissolved			102.9		%		80-120	27-JAN-20
Selenium (Se)-Dissolved			100.8		%		80-120	27-JAN-20
Silicon (Si)-Dissolved			104.8		%		60-140	27-JAN-20
Silver (Ag)-Dissolved			99.8		%		80-120	27-JAN-20
Sodium (Na)-Dissolved			100.3		%		80-120	27-JAN-20
Strontium (Sr)-Dissolved			103.1		%		80-120	27-JAN-20
Thallium (Tl)-Dissolved			93.2		%		80-120	27-JAN-20
Tin (Sn)-Dissolved			96.3		%		80-120	27-JAN-20
Titanium (Ti)-Dissolved			99.7		%		80-120	27-JAN-20
Uranium (U)-Dissolved			92.1		%		80-120	27-JAN-20
Vanadium (V)-Dissolved			101.3		%		80-120	27-JAN-20
Zinc (Zn)-Dissolved			101.7		%		80-120	27-JAN-20
WG3264695-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-1	MB	NP						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
MET-T-CCMS-VA								
	Water							
Batch	R4980826							
WG3264243-2	LCS							
Aluminum (Al)-Total			107.4		%		80-120	27-JAN-20
Antimony (Sb)-Total			101.2		%		80-120	27-JAN-20
Arsenic (As)-Total			104.8		%		80-120	27-JAN-20
Barium (Ba)-Total			113.8		%		80-120	27-JAN-20
Bismuth (Bi)-Total			100.6		%		80-120	27-JAN-20
Boron (B)-Total			98.2		%		80-120	27-JAN-20
Cadmium (Cd)-Total			105.4		%		80-120	27-JAN-20
Calcium (Ca)-Total			106.7		%		80-120	27-JAN-20
Chromium (Cr)-Total			104.2		%		80-120	27-JAN-20
Cobalt (Co)-Total			103.5		%		80-120	27-JAN-20
Copper (Cu)-Total			104.0		%		80-120	27-JAN-20
Iron (Fe)-Total			105.9		%		80-120	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4980826							
WG3264243-2	LCS							
Lead (Pb)-Total			99.8		%		80-120	27-JAN-20
Lithium (Li)-Total			100.3		%		80-120	27-JAN-20
Magnesium (Mg)-Total			99.7		%		80-120	27-JAN-20
Manganese (Mn)-Total			106.7		%		80-120	27-JAN-20
Molybdenum (Mo)-Total			101.6		%		80-120	27-JAN-20
Nickel (Ni)-Total			105.4		%		80-120	27-JAN-20
Potassium (K)-Total			104.3		%		80-120	27-JAN-20
Selenium (Se)-Total			107.7		%		80-120	27-JAN-20
Silicon (Si)-Total			110.2		%		80-120	27-JAN-20
Silver (Ag)-Total			101.3		%		80-120	27-JAN-20
Sodium (Na)-Total			102.2		%		80-120	27-JAN-20
Strontium (Sr)-Total			104.4		%		80-120	27-JAN-20
Thallium (Tl)-Total			97.4		%		80-120	27-JAN-20
Tin (Sn)-Total			99.7		%		80-120	27-JAN-20
Titanium (Ti)-Total			105.1		%		80-120	27-JAN-20
Uranium (U)-Total			95.8		%		80-120	27-JAN-20
Vanadium (V)-Total			105.6		%		80-120	27-JAN-20
Zinc (Zn)-Total			108.0		%		80-120	27-JAN-20
WG3264243-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	27-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4980826							
WG3264243-1	MB							
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979931							
WG3263860-3	DUP	L2407934-5						
Ammonia as N		0.0330	0.0344		mg/L	4.2	20	25-JAN-20
WG3263860-2	LCS							
Ammonia as N			108.9		%		85-115	25-JAN-20
WG3263860-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-20
WG3263860-4	MS	L2407934-5						
Ammonia as N			99.8		%		75-125	25-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4976758							
WG3262500-7	DUP	L2407934-6						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10	LCS							
Nitrite (as N)			97.9		%		90-110	22-JAN-20
WG3262500-6	LCS							
Nitrite (as N)			98.4		%		90-110	22-JAN-20
WG3262500-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-20
WG3262500-9	MB							



Quality Control Report

Workorder: L2407934

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL Water								
Batch	R4976758							
WG3262500-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-20
WG3262500-8	MS	L2407934-6						
Nitrite (as N)			99.8		%		75-125	22-JAN-20
NO3-L-IC-N-CL Water								
Batch	R4976758							
WG3262500-7	DUP	L2407934-6						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10	LCS							
Nitrate (as N)			103.6		%		90-110	22-JAN-20
WG3262500-6	LCS							
Nitrate (as N)			102.6		%		90-110	22-JAN-20
WG3262500-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-20
WG3262500-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-20
WG3262500-8	MS	L2407934-6						
Nitrate (as N)			105.2		%		75-125	22-JAN-20
OH-CL Water								
Batch	R4977087							
WG3262536-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	22-JAN-20
ORP-CL Water								
Batch	R4979592							
WG3263467-1	CRM	CL-ORP						
ORP			227		mV		210-230	24-JAN-20
P-T-L-COL-CL Water								
Batch	R4976751							
WG3262381-10	LCS							
Phosphorus (P)-Total			102.6		%		80-120	23-JAN-20
WG3262381-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-JAN-20
PH-CL Water								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch R4977087								
WG3262536-5	LCS							
pH			7.02		pH		6.9-7.1	22-JAN-20
WG3262536-8	LCS							
pH			7.02		pH		6.9-7.1	22-JAN-20
PO4-DO-L-COL-CL								
Water								
Batch R4976234								
WG3261840-6	LCS							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	22-JAN-20
WG3261840-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-20
SO4-IC-N-CL								
Water								
Batch R4976758								
WG3262500-7	DUP	L2407934-6						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	22-JAN-20
WG3262500-10	LCS							
Sulfate (SO4)			101.4		%		90-110	22-JAN-20
WG3262500-6	LCS							
Sulfate (SO4)			101.5		%		90-110	22-JAN-20
WG3262500-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-20
WG3262500-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-20
WG3262500-8	MS	L2407934-6						
Sulfate (SO4)			103.1		%		75-125	22-JAN-20
SOLIDS-TDS-CL								
Water								
Batch R4980015								
WG3263078-2	LCS							
Total Dissolved Solids			101.0		%		85-115	24-JAN-20
WG3263078-5	LCS							
Total Dissolved Solids			102.4		%		85-115	24-JAN-20
WG3263078-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-JAN-20
WG3263078-4	MB							
Total Dissolved Solids			<10		mg/L		10	24-JAN-20
TKN-L-F-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R4976428							
WG3262296-2	LCS							
Total Kjeldahl Nitrogen			97.9		%		75-125	23-JAN-20
WG3262296-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-JAN-20
TSS-L-CL	Water							
Batch	R4977068							
WG3262389-11	LCS							
Total Suspended Solids			92.1		%		85-115	23-JAN-20
WG3262389-10	MB							
Total Suspended Solids			<1.0		mg/L		1	23-JAN-20
TURBIDITY-CL	Water							
Batch	R4976908							
WG3262525-5	LCS							
Turbidity			102.5		%		85-115	23-JAN-20
WG3262525-4	MB							
Turbidity			<0.10		NTU		0.1	23-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Workorder: L2407934

Report Date: 03-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	21-JAN-20 10:30	24-JAN-20 08:00	0.25	70	hours	EHTR-FM
	2	21-JAN-20 10:20	24-JAN-20 08:00	0.25	70	hours	EHTR-FM
	3	21-JAN-20 09:25	24-JAN-20 08:00	0.25	71	hours	EHTR-FM
	4	21-JAN-20 09:00	24-JAN-20 08:00	0.25	71	hours	EHTR-FM
	5	21-JAN-20 10:00	24-JAN-20 08:00	0.25	70	hours	EHTR-FM
	6	21-JAN-20 14:00	24-JAN-20 08:00	0.25	66	hours	EHTR-FM
pH							
	1	21-JAN-20 10:30	22-JAN-20 15:00	0.25	29	hours	EHTR-FM
	2	21-JAN-20 10:20	22-JAN-20 15:00	0.25	29	hours	EHTR-FM
	3	21-JAN-20 09:25	22-JAN-20 15:00	0.25	30	hours	EHTR-FM
	4	21-JAN-20 09:00	22-JAN-20 15:00	0.25	30	hours	EHTR-FM
	5	21-JAN-20 10:00	22-JAN-20 15:00	0.25	29	hours	EHTR-FM
	6	21-JAN-20 14:00	22-JAN-20 15:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2407934 were received on 22-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO QTR GW_2020-01-06** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excl	PDF	EDD
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	VOB1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Filtered - F: Field, L: Lab, FL: Field & Lab; N: None
								Y	N	Y	N	Y	N	N	N
								H2SO4	H2SO4	HCL	HNO3	NONE	HNO3	NONE	
GH_POTW10_WG_2020-01-06_NP	GH_POTW10	WG		1/21/2020	10:30	G	7	1	1	1	1	1	1	1	
GH_POTW15_WG_2020-01-06_NP	GH_POTW15	WG		1/21/2020	10:20	G	7	1	1	1	1	1	1	1	
GH_POTW17_WG_2020-01-06_NP	GH_POTW17	WG		1/21/2020	9:25	G	7	1	1	1	1	1	1	1	
GH_POTW06_WG_2020-01-06_NP	GH_POTW06	WG		1/21/2020	9:00	G	7	1	1	1	1	1	1	1	
GH_POTW09_WG_2020-01-06_NP	GH_POTW09	WG		1/21/2020	10:00	G	7	1	1	1	1	1	1	1	
GH_TRIPGW_WG_2020-01-06_NP	GH_TRIPGW	WG		1/21/2020	14:00	G	7	1	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	1/22/20

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	X		
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Signature	Date/Time

[Handwritten mark]



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 11-FEB-20
Report Date: 11-DEC-20 15:15 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2415709
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 01-03_Q1-2020
Legal Site Desc:

Comments: 11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415709-1 WP 10-FEB-20 08:36 RG_DW-01- 03_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	346			
	Hardness (as CaCO3) (mg/L)	221			
	pH (pH)	8.28			
	ORP (mV)	425			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	225			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	154			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	154			
	Ammonia as N (mg/L)	0.0261			
	Bicarbonate (HCO3) (mg/L)	188			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.86			
	Fluoride (F) (mg/L)	0.118			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	113			
	Nitrate (as N) (mg/L)	0.790			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.242			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	38.4			
	Anion Sum (meq/L)	3.97			
	Cation Sum (meq/L)	4.48			
	Cation - Anion Balance (%)	6.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0755			
	Beryllium (Be)-Total (ug/L)	<0.020			

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415709-1 WP 10-FEB-20 08:36 RG_DW-01- 03_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0124			
	Calcium (Ca)-Total (mg/L)	52.9			
	Chromium (Cr)-Total (mg/L)	0.00027			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.0143			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000990			
	Lithium (Li)-Total (mg/L)	0.0024			
	Magnesium (Mg)-Total (mg/L)	13.5			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00102			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.421			
	Selenium (Se)-Total (ug/L)	3.05			
	Silicon (Si)-Total (mg/L)	1.99			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.28			
	Strontium (Sr)-Total (mg/L)	0.212			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	0.00014			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000800			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0605			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0815			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0088			

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2415709-1			
		Description	WP			
		Sampled Date	10-FEB-20			
		Sampled Time	08:36			
		Client ID	RG_DW-01-03_WP_Q1-2020_NP			
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		62.7			
	Chromium (Cr)-Dissolved (mg/L)		0.00027			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00288			
	Iron (Fe)-Dissolved (mg/L)		<0.010			
	Lead (Pb)-Dissolved (mg/L)		0.000280			
	Lithium (Li)-Dissolved (mg/L)		0.0023			
	Magnesium (Mg)-Dissolved (mg/L)		15.6			
	Manganese (Mn)-Dissolved (mg/L)		<0.00010			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00104			
	Nickel (Ni)-Dissolved (mg/L)		<0.00050			
	Potassium (K)-Dissolved (mg/L)		0.475			
	Selenium (Se)-Dissolved (ug/L)		3.33			
	Silicon (Si)-Dissolved (mg/L)		1.95			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		1.32			
	Strontium (Sr)-Dissolved (mg/L)		0.242			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.000869			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0218			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

01-03_Q1-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2415709

Report Date: 11-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995579							
WG3274615-11	LCS							
Acidity (as CaCO3)			105.0		%		85-115	11-FEB-20
WG3274615-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	11-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995344							
WG3274378-14	LCS							
Alkalinity, Total (as CaCO3)			103.6		%		85-115	11-FEB-20
WG3274378-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Beryllium (Be)-Dissolved			109.1		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4997560							
WG3275126-2	LCS							
Beryllium (Be)-Total			101.4		%		80-120	16-FEB-20
WG3275126-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-FEB-20
BIC-CL								
	Water							
Batch	R4995344							
WG3274378-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-6	LCS							
Bromide (Br)			104.2		%		85-115	11-FEB-20
WG3274649-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-FEB-20
C-DIS-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-6	LCS							
Dissolved Organic Carbon			100.4		%		80-120	17-FEB-20
WG3276670-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-6	LCS							
Total Organic Carbon			103.6		%		80-120	17-FEB-20
WG3276670-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
CL-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6	LCS							
Chloride (Cl)			100.9		%		90-110	11-FEB-20
WG3274649-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	11-FEB-20
CO3-CL	Water							
Batch	R4995344							
WG3274378-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	11-FEB-20
EC-L-PCT-CL	Water							
Batch	R4995344							
WG3274378-14	LCS							
Conductivity (@ 25C)			97.7		%		90-110	11-FEB-20
WG3274378-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-FEB-20
F-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6	LCS							
Fluoride (F)			107.8		%		90-110	11-FEB-20
WG3274649-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	11-FEB-20
HG-D-CVAA-VA	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Batch R4995743								
WG3275217-10 LCS								
	Mercury (Hg)-Dissolved		93.6		%		80-120	13-FEB-20
WG3275217-9 MB		NP						
	Mercury (Hg)-Dissolved		<0.000005C		mg/L		0.000005	13-FEB-20
HG-T-CVAA-VA								
Batch R4996424								
WG3275678-2 LCS								
	Mercury (Hg)-Total		108.3		%		80-120	14-FEB-20
WG3275678-1 MB								
	Mercury (Hg)-Total		<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Batch R4997263								
WG3275455-2 LCS								
	Aluminum (Al)-Dissolved		99.9		%		80-120	15-FEB-20
	Antimony (Sb)-Dissolved		92.1		%		80-120	15-FEB-20
	Arsenic (As)-Dissolved		95.4		%		80-120	15-FEB-20
	Barium (Ba)-Dissolved		101.7		%		80-120	15-FEB-20
	Bismuth (Bi)-Dissolved		113.8		%		80-120	15-FEB-20
	Boron (B)-Dissolved		99.8		%		80-120	15-FEB-20
	Cadmium (Cd)-Dissolved		103.5		%		80-120	15-FEB-20
	Calcium (Ca)-Dissolved		96.0		%		80-120	15-FEB-20
	Chromium (Cr)-Dissolved		98.7		%		80-120	15-FEB-20
	Cobalt (Co)-Dissolved		98.6		%		80-120	15-FEB-20
	Copper (Cu)-Dissolved		96.9		%		80-120	15-FEB-20
	Iron (Fe)-Dissolved		84.2		%		80-120	15-FEB-20
	Lead (Pb)-Dissolved		102.6		%		80-120	15-FEB-20
	Lithium (Li)-Dissolved		95.9		%		80-120	15-FEB-20
	Magnesium (Mg)-Dissolved		93.8		%		80-120	15-FEB-20
	Manganese (Mn)-Dissolved		94.5		%		80-120	15-FEB-20
	Molybdenum (Mo)-Dissolved		95.7		%		80-120	15-FEB-20
	Nickel (Ni)-Dissolved		98.6		%		80-120	15-FEB-20
	Potassium (K)-Dissolved		98.2		%		80-120	15-FEB-20
	Selenium (Se)-Dissolved		96.9		%		80-120	15-FEB-20
	Silicon (Si)-Dissolved		96.4		%		60-140	15-FEB-20
	Silver (Ag)-Dissolved		93.4		%		80-120	15-FEB-20
	Sodium (Na)-Dissolved		98.4		%		80-120	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Strontium (Sr)-Dissolved			94.5		%		80-120	15-FEB-20
Thallium (Tl)-Dissolved			98.0		%		80-120	15-FEB-20
Tin (Sn)-Dissolved			94.9		%		80-120	15-FEB-20
Titanium (Ti)-Dissolved			92.5		%		80-120	15-FEB-20
Uranium (U)-Dissolved			103.5		%		80-120	15-FEB-20
Vanadium (V)-Dissolved			100.2		%		80-120	15-FEB-20
Zinc (Zn)-Dissolved			95.6		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275126-2	LCS							
Aluminum (Al)-Total			104.9		%		80-120	16-FEB-20
Antimony (Sb)-Total			100.1		%		80-120	16-FEB-20
Arsenic (As)-Total			98.1		%		80-120	16-FEB-20
Barium (Ba)-Total			104.7		%		80-120	16-FEB-20
Bismuth (Bi)-Total			101.9		%		80-120	16-FEB-20
Boron (B)-Total			100.2		%		80-120	16-FEB-20
Cadmium (Cd)-Total			103.2		%		80-120	16-FEB-20
Calcium (Ca)-Total			105.6		%		80-120	16-FEB-20
Chromium (Cr)-Total			100.3		%		80-120	16-FEB-20
Cobalt (Co)-Total			101.1		%		80-120	16-FEB-20
Copper (Cu)-Total			102.1		%		80-120	16-FEB-20
Iron (Fe)-Total			98.8		%		80-120	16-FEB-20
Lead (Pb)-Total			102.1		%		80-120	16-FEB-20
Lithium (Li)-Total			100.6		%		80-120	16-FEB-20
Magnesium (Mg)-Total			101.4		%		80-120	16-FEB-20
Manganese (Mn)-Total			102.9		%		80-120	16-FEB-20
Molybdenum (Mo)-Total			105.9		%		80-120	16-FEB-20
Nickel (Ni)-Total			105.5		%		80-120	16-FEB-20
Potassium (K)-Total			107.1		%		80-120	16-FEB-20
Selenium (Se)-Total			95.0		%		80-120	16-FEB-20
Silicon (Si)-Total			95.0		%		80-120	16-FEB-20
Silver (Ag)-Total			102.5		%		80-120	16-FEB-20
Sodium (Na)-Total			103.8		%		80-120	16-FEB-20
Strontium (Sr)-Total			106.8		%		80-120	16-FEB-20
Thallium (Tl)-Total			101.8		%		80-120	16-FEB-20
Tin (Sn)-Total			99.3		%		80-120	16-FEB-20
Titanium (Ti)-Total			94.6		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4997560							
WG3275126-2	LCS							
Uranium (U)-Total			98.7		%		80-120	16-FEB-20
Vanadium (V)-Total			103.4		%		80-120	16-FEB-20
Zinc (Zn)-Total			101.5		%		80-120	16-FEB-20
WG3275126-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R4996802								
WG3274428-11	DUP	L2415709-1						
Ammonia as N		0.0261	0.0265		mg/L	1.5	20	12-FEB-20
WG3274428-10	LCS							
Ammonia as N			99.7		%		85-115	12-FEB-20
WG3274428-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-FEB-20
WG3274428-12	MS	L2415709-1						
Ammonia as N			116.9		%		75-125	12-FEB-20
NO2-L-IC-N-CL								
Batch R4995596								
WG3274649-6	LCS							
Nitrite (as N)			102.2		%		90-110	11-FEB-20
WG3274649-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-FEB-20
NO3-L-IC-N-CL								
Batch R4995596								
WG3274649-6	LCS							
Nitrate (as N)			102.8		%		90-110	11-FEB-20
WG3274649-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-FEB-20
OH-CL								
Batch R4995344								
WG3274378-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-FEB-20
ORP-CL								
Batch R4997929								
WG3277355-5	CRM	CL-ORP						
ORP			228		mV		210-230	18-FEB-20
P-T-L-COL-CL								
Batch R4996808								
WG3275940-11	DUP	L2415709-1						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3275940-4	LCS							
Phosphorus (P)-Total			101.9		%		80-120	14-FEB-20
WG3275940-3	MB							



Quality Control Report

Workorder: L2415709

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R4996808							
WG3275940-3 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-FEB-20
WG3275940-12 MS		L2415709-1						
Phosphorus (P)-Total			75.8		%		70-130	14-FEB-20
PH-CL	Water							
Batch	R4995344							
WG3274378-14 LCS								
pH			7.05		pH		6.9-7.1	11-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4994448							
WG3273573-8 LCS								
Orthophosphate-Dissolved (as P)			109.0		%		80-120	11-FEB-20
WG3273573-7 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6 LCS								
Sulfate (SO4)			102.8		%		90-110	11-FEB-20
WG3274649-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4997726							
WG3276594-8 LCS								
Total Dissolved Solids			106.5		%		85-115	16-FEB-20
WG3276594-7 MB								
Total Dissolved Solids			<10		mg/L		10	16-FEB-20
TKN-L-F-CL	Water							
Batch	R4996729							
WG3275909-10 LCS								
Total Kjeldahl Nitrogen			99.9		%		75-125	14-FEB-20
WG3275909-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL	Water							



Quality Control Report

Workorder: L2415709

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R4997794							
WG3276593-4	LCS							
Total Suspended Solids			87.6		%		85-115	16-FEB-20
WG3276593-3	MB							
Total Suspended Solids			<1.0		mg/L		1	16-FEB-20
TURBIDITY-CL	Water							
Batch	R4995869							
WG3275044-3	DUP	L2415709-1						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	13-FEB-20
WG3275044-2	LCS							
Turbidity			105.0		%		85-115	13-FEB-20
WG3275044-1	MB							
Turbidity			<0.10		NTU		0.1	13-FEB-20

Quality Control Report

Workorder: L2415709

Report Date: 11-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2415709

Report Date: 11-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	10-FEB-20 08:36	18-FEB-20 16:00	0.25	199	hours	EHTR-FM
pH	1	10-FEB-20 08:36	11-FEB-20 14:00	0.25	30	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2415709 were received on 11-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-03_Q1-2020**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Regional Effects Program				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Cam Jaeger				Lab Contact Lyudmyla Shvets				Excel PDF EDD			
Email cam.jaeger@teck.com				Email lyudmyla.shvets@alsglobal.com				Email 1: cam.jaeger@teck.com X X X			
Address 421 Pine Ave				Address 2559 29 st NE				Email 2: jennifer.dewerk@teck.com X X X			
City Sparwood Province BC				City Calgary Province AB				Email 3: teckcoal@equisonline.com X X X			
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 4: X			
Phone Number 250-425-8449				Phone Number 403-407-1800				Email 5: PO number 618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	N	F	N	N
RG_DW-01-03_WP_Q1-2020_NP	RG_DW-01-03	WP	N	Feb 10 2020	8:36	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
								1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	2/11/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jennifer de Werk	250-910-7287
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	Feb 10 2020



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 11-MAR-20
Report Date: 14-DEC-20 15:46 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2426693
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 14-DEC-20: Bicarbonate, Carbonate and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-1 GH_GA-MW-1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 11:15							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	456		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Organic Carbon	3.00		0.50	mg/L		13-MAR-20	R5025958
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	0.300		0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	0.00072		0.00050	ug/L		14-MAR-20	R5026276
Total Organic Carbon	3.63		0.50	mg/L		13-MAR-20	R5025958
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-MAR-20	17-MAR-20	R5027949
Dissolved Metals Filtration Location	FIELD					16-MAR-20	R5027803
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-MAR-20	R5027803
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-MAR-20	17-MAR-20	R5027949
Antimony (Sb)-Dissolved	0.00078		0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Arsenic (As)-Dissolved	0.00068		0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Barium (Ba)-Dissolved	0.0443		0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-MAR-20	17-MAR-20	R5027949
Boron (B)-Dissolved	0.846		0.010	mg/L	16-MAR-20	17-MAR-20	R5027949
Cadmium (Cd)-Dissolved	0.0275		0.0050	ug/L	16-MAR-20	17-MAR-20	R5027949
Calcium (Ca)-Dissolved	67.5		0.050	mg/L	16-MAR-20	17-MAR-20	R5027949
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Cobalt (Co)-Dissolved	0.63	DTMF	0.10	ug/L	16-MAR-20	17-MAR-20	R5027949
Copper (Cu)-Dissolved	0.0543		0.00020	mg/L	16-MAR-20	17-MAR-20	R5027949
Iron (Fe)-Dissolved	0.112		0.010	mg/L	16-MAR-20	17-MAR-20	R5027949
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-MAR-20	17-MAR-20	R5027949
Lithium (Li)-Dissolved	0.169		0.0010	mg/L	16-MAR-20	17-MAR-20	R5027949
Magnesium (Mg)-Dissolved	38.4		0.10	mg/L	16-MAR-20	17-MAR-20	R5027949
Manganese (Mn)-Dissolved	0.341	DTMF	0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Molybdenum (Mo)-Dissolved	0.00659		0.000050	mg/L	16-MAR-20	17-MAR-20	R5027949
Nickel (Ni)-Dissolved	0.00492		0.00050	mg/L	16-MAR-20	17-MAR-20	R5027949
Potassium (K)-Dissolved	3.37		0.050	mg/L	16-MAR-20	17-MAR-20	R5027949
Selenium (Se)-Dissolved	0.148		0.050	ug/L	16-MAR-20	17-MAR-20	R5027949
Silicon (Si)-Dissolved	3.72		0.050	mg/L	16-MAR-20	17-MAR-20	R5027949
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-MAR-20	17-MAR-20	R5027949
Sodium (Na)-Dissolved	187		0.050	mg/L	16-MAR-20	17-MAR-20	R5027949
Strontium (Sr)-Dissolved	4.71		0.00020	mg/L	16-MAR-20	17-MAR-20	R5027949
Thallium (Tl)-Dissolved	0.000033		0.000010	mg/L	16-MAR-20	17-MAR-20	R5027949
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-MAR-20	17-MAR-20	R5027949
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-MAR-20	17-MAR-20	R5027949
Uranium (U)-Dissolved	0.00186		0.000010	mg/L	16-MAR-20	17-MAR-20	R5027949
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-MAR-20	17-MAR-20	R5027949
Zinc (Zn)-Dissolved	0.0056		0.0010	mg/L	16-MAR-20	17-MAR-20	R5027949
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	327		0.50	mg/L		17-MAR-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-1 GH_GA-MW-1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 11:15							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0601		0.0030	mg/L		13-MAR-20	R5025586
Antimony (Sb)-Total	0.00362		0.00010	mg/L		13-MAR-20	R5025586
Arsenic (As)-Total	0.00054		0.00010	mg/L		13-MAR-20	R5025586
Barium (Ba)-Total	0.0373		0.00010	mg/L		13-MAR-20	R5025586
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Boron (B)-Total	0.878		0.010	mg/L		13-MAR-20	R5025586
Cadmium (Cd)-Total	0.0404		0.0050	ug/L		13-MAR-20	R5025586
Calcium (Ca)-Total	58.6		0.050	mg/L		13-MAR-20	R5025586
Chromium (Cr)-Total	0.00076		0.00010	mg/L		13-MAR-20	R5025586
Cobalt (Co)-Total	0.34		0.10	ug/L		13-MAR-20	R5025586
Copper (Cu)-Total	0.117		0.00050	mg/L		13-MAR-20	R5025586
Iron (Fe)-Total	0.125		0.010	mg/L		13-MAR-20	R5025586
Lead (Pb)-Total	0.000148		0.000050	mg/L		13-MAR-20	R5025586
Lithium (Li)-Total	0.181		0.0010	mg/L		13-MAR-20	R5025586
Magnesium (Mg)-Total	29.8		0.10	mg/L		13-MAR-20	R5025586
Manganese (Mn)-Total	0.148		0.00010	mg/L		13-MAR-20	R5025586
Molybdenum (Mo)-Total	0.00522		0.000050	mg/L		13-MAR-20	R5025586
Nickel (Ni)-Total	0.0158		0.00050	mg/L		13-MAR-20	R5025586
Potassium (K)-Total	3.12		0.050	mg/L		13-MAR-20	R5025586
Selenium (Se)-Total	0.159		0.050	ug/L		13-MAR-20	R5025586
Silicon (Si)-Total	3.99		0.10	mg/L		13-MAR-20	R5025586
Silver (Ag)-Total	0.00231		0.000010	mg/L		13-MAR-20	R5025586
Sodium (Na)-Total	167		0.050	mg/L		13-MAR-20	R5025586
Strontium (Sr)-Total	3.89		0.00020	mg/L		13-MAR-20	R5025586
Thallium (Tl)-Total	0.000041		0.000010	mg/L		13-MAR-20	R5025586
Tin (Sn)-Total	0.00022		0.00010	mg/L		13-MAR-20	R5025586
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Uranium (U)-Total	0.00223		0.000010	mg/L		13-MAR-20	R5025586
Vanadium (V)-Total	0.00056		0.00050	mg/L		13-MAR-20	R5025586
Zinc (Zn)-Total	0.0151		0.0030	mg/L		13-MAR-20	R5025586
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	13.2		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	374		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	374		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.119		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.135		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	12.7		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1090		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.437		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Ion Balance	117	BL:INT	-100	%		18-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	7.9			%		17-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-1 GH_GA-MW-1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 11:15							
Matrix: WS							
Ion Balance Calculation							
Anion Sum	12.6			meq/L		17-MAR-20	
Cation Sum	14.8			meq/L		17-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.656		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0297		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	340		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0353		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	226		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	733		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	4.1		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	3.13		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.02		0.10	pH		11-MAR-20	R5021914
L2426693-2 GH_GA-MW-4_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	227		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Organic Carbon	0.58		0.50	mg/L		13-MAR-20	R5025958
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	0.082		0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		14-MAR-20	R5026276
Total Organic Carbon	0.70		0.50	mg/L		13-MAR-20	R5025958
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-MAR-20	13-MAR-20	R5025586
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-MAR-20	13-MAR-20	R5025586
Antimony (Sb)-Dissolved	0.00014		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Barium (Ba)-Dissolved	0.0799		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Boron (B)-Dissolved	0.012		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cadmium (Cd)-Dissolved	0.0070		0.0050	ug/L	13-MAR-20	13-MAR-20	R5025586
Calcium (Ca)-Dissolved	55.6		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-2 GH_GA-MW-4_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	13-MAR-20	13-MAR-20	R5025586
Copper (Cu)-Dissolved	0.00038		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Lithium (Li)-Dissolved	0.0158		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Magnesium (Mg)-Dissolved	19.0		0.10	mg/L	13-MAR-20	13-MAR-20	R5025586
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Molybdenum (Mo)-Dissolved	0.00169		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Potassium (K)-Dissolved	1.05		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Selenium (Se)-Dissolved	1.64		0.050	ug/L	13-MAR-20	13-MAR-20	R5025586
Silicon (Si)-Dissolved	2.43		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Sodium (Na)-Dissolved	6.52		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Strontium (Sr)-Dissolved	0.180		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Uranium (U)-Dissolved	0.00131		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	217		0.50	mg/L		14-MAR-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5025586
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Antimony (Sb)-Total	0.00014		0.00010	mg/L		13-MAR-20	R5025586
Arsenic (As)-Total	0.00013		0.00010	mg/L		13-MAR-20	R5025586
Barium (Ba)-Total	0.0747		0.00010	mg/L		13-MAR-20	R5025586
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Boron (B)-Total	0.020		0.010	mg/L		13-MAR-20	R5025586
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		13-MAR-20	R5025586
Calcium (Ca)-Total	54.6		0.050	mg/L		13-MAR-20	R5025586
Chromium (Cr)-Total	0.00028		0.00010	mg/L		13-MAR-20	R5025586
Cobalt (Co)-Total	<0.10		0.10	ug/L		13-MAR-20	R5025586
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Iron (Fe)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Lead (Pb)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Lithium (Li)-Total	0.0167		0.0010	mg/L		13-MAR-20	R5025586
Magnesium (Mg)-Total	18.2		0.10	mg/L		13-MAR-20	R5025586
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Molybdenum (Mo)-Total	0.00177		0.000050	mg/L		13-MAR-20	R5025586
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Potassium (K)-Total	0.982		0.050	mg/L		13-MAR-20	R5025586
Selenium (Se)-Total	1.40		0.050	ug/L		13-MAR-20	R5025586
Silicon (Si)-Total	2.37		0.10	mg/L		13-MAR-20	R5025586
Silver (Ag)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586
Sodium (Na)-Total	6.31		0.050	mg/L		13-MAR-20	R5025586
Strontium (Sr)-Total	0.167		0.00020	mg/L		13-MAR-20	R5025586
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-2 GH_GA-MW-4_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Tin (Sn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Uranium (U)-Total	0.00135		0.000010	mg/L		13-MAR-20	R5025586
Vanadium (V)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.7		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	186		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	186		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	3.34		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	385		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.128		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Ion Balance	103		-100	%		14-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	1.3			%		14-MAR-20	
Anion Sum	4.53			meq/L		14-MAR-20	
Cation Sum	4.65			meq/L		14-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.388		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	426		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	32.8		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	224		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	0.17		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.02		0.10	pH		11-MAR-20	R5021914
L2426693-3 GH_GWD1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-3 GH_GWD1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	232		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Organic Carbon	<0.50		0.50	mg/L		13-MAR-20	R5025958
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	0.143		0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		14-MAR-20	R5026276
Total Organic Carbon	<0.50		0.50	mg/L		13-MAR-20	R5025958
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-MAR-20	13-MAR-20	R5025586
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-MAR-20	13-MAR-20	R5025586
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Barium (Ba)-Dissolved	0.0843		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Boron (B)-Dissolved	0.012		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cadmium (Cd)-Dissolved	0.0080		0.0050	ug/L	13-MAR-20	13-MAR-20	R5025586
Calcium (Ca)-Dissolved	54.9		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	13-MAR-20	13-MAR-20	R5025586
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Lithium (Li)-Dissolved	0.0161		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Magnesium (Mg)-Dissolved	19.0		0.10	mg/L	13-MAR-20	13-MAR-20	R5025586
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Molybdenum (Mo)-Dissolved	0.00175		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Potassium (K)-Dissolved	1.07		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Selenium (Se)-Dissolved	1.55		0.050	ug/L	13-MAR-20	13-MAR-20	R5025586
Silicon (Si)-Dissolved	2.48		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Sodium (Na)-Dissolved	6.57		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Strontium (Sr)-Dissolved	0.178		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Uranium (U)-Dissolved	0.00136		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	216		0.50	mg/L		14-MAR-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-3 GH_GWD1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Antimony (Sb)-Total	0.00015		0.00010	mg/L		13-MAR-20	R5025586
Arsenic (As)-Total	0.00012		0.00010	mg/L		13-MAR-20	R5025586
Barium (Ba)-Total	0.0774		0.00010	mg/L		13-MAR-20	R5025586
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Boron (B)-Total	0.015		0.010	mg/L		13-MAR-20	R5025586
Cadmium (Cd)-Total	0.0050		0.0050	ug/L		13-MAR-20	R5025586
Calcium (Ca)-Total	54.0		0.050	mg/L		13-MAR-20	R5025586
Chromium (Cr)-Total	0.00024		0.00010	mg/L		13-MAR-20	R5025586
Cobalt (Co)-Total	<0.10		0.10	ug/L		13-MAR-20	R5025586
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Iron (Fe)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Lead (Pb)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Lithium (Li)-Total	0.0163		0.0010	mg/L		13-MAR-20	R5025586
Magnesium (Mg)-Total	18.3		0.10	mg/L		13-MAR-20	R5025586
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Molybdenum (Mo)-Total	0.00168		0.000050	mg/L		13-MAR-20	R5025586
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Potassium (K)-Total	1.02		0.050	mg/L		13-MAR-20	R5025586
Selenium (Se)-Total	1.47		0.050	ug/L		13-MAR-20	R5025586
Silicon (Si)-Total	2.44		0.10	mg/L		13-MAR-20	R5025586
Silver (Ag)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586
Sodium (Na)-Total	6.46		0.050	mg/L		13-MAR-20	R5025586
Strontium (Sr)-Total	0.172		0.00020	mg/L		13-MAR-20	R5025586
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586
Tin (Sn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Uranium (U)-Total	0.00135		0.000010	mg/L		13-MAR-20	R5025586
Vanadium (V)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.2		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	190		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	190		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.0456		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	3.41		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	382		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.129		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Cation - Anion Balance	0.1			%		14-MAR-20	
Anion Sum	4.62			meq/L		14-MAR-20	
Cation Sum	4.62			meq/L		14-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-3 GH_GWD1_WG_2020-01-06_NP Sampled By: JF/MD on 10-MAR-20 @ 13:05 Matrix: WS							
Ion Balance Calculation							
Ion Balance	100		-100	%		14-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.379		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0016		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	434		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	32.7		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	230		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	0.19		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.01		0.10	pH		11-MAR-20	R5021914
L2426693-4 GH_GWB1_WG_2020-01-06_NP Sampled By: JF/MD on 10-MAR-20 @ 13:05 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		14-MAR-20	R5026276
Total Organic Carbon	<0.50		0.50	mg/L		13-MAR-20	R5025958
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		15-MAR-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5025586
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Arsenic (As)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Barium (Ba)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Boron (B)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		13-MAR-20	R5025586
Calcium (Ca)-Total	0.083	RRV	0.050	mg/L		14-MAR-20	R5026420
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Cobalt (Co)-Total	<0.10		0.10	ug/L		13-MAR-20	R5025586
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Iron (Fe)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Lead (Pb)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Lithium (Li)-Total	<0.0010		0.0010	mg/L		13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426693-4 GH_GWB1_WG_2020-01-06_NP							
Sampled By: JF/MD on 10-MAR-20 @ 13:05							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Magnesium (Mg)-Total	<0.10		0.10	mg/L		13-MAR-20	R5025586
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5025586
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Potassium (K)-Total	<0.050		0.050	mg/L		13-MAR-20	R5025586
Selenium (Se)-Total	<0.050		0.050	ug/L		13-MAR-20	R5025586
Silicon (Si)-Total	<0.10		0.10	mg/L		13-MAR-20	R5025586
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-MAR-20	R5026420
Sodium (Na)-Total	<0.050		0.050	mg/L		13-MAR-20	R5025586
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		13-MAR-20	R5025586
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586
Tin (Sn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5025586
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5025586
Uranium (U)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5025586
Vanadium (V)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5025586
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5025586
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.0068	RRV	0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		11-MAR-20	R5022608
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					12-MAR-20	R5023148
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		12-MAR-20	R5022667
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		12-MAR-20	R5022667
Potassium (K)-Dissolved	<0.050		0.050	mg/L		12-MAR-20	R5022667
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		12-MAR-20	R5022667
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Ion Balance	0.0		-100	%		15-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		15-MAR-20	
Anion Sum	<0.10			meq/L		15-MAR-20	
Cation Sum	<0.10			meq/L		15-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-MAR-20	R5021363

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	-4 D-CATIONS SUBSAMPLED/FILTERED/PRESERVED AT THE LAB - Sample was Filtered and Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2426693

Report Date: 14-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0
 Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5021949							
WG3291212-6	DUP	L2426693-3						
Acidity (as CaCO3)		5.2	5.0		mg/L	4.3	20	11-MAR-20
WG3291212-5	LCS							
Acidity (as CaCO3)			97.1		%		85-115	11-MAR-20
WG3291212-8	LCS							
Acidity (as CaCO3)			102.3		%		85-115	11-MAR-20
WG3291212-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	11-MAR-20
WG3291212-7	MB							
Acidity (as CaCO3)			1.1		mg/L		2	11-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5021914							
WG3291145-8	LCS							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	11-MAR-20
WG3291145-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-2	LCS							
Beryllium (Be)-Dissolved			90.6		%		80-120	13-MAR-20
WG3292145-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-MAR-20
Batch	R5027949							
WG3293228-2	LCS							
Beryllium (Be)-Dissolved			95.0		%		80-120	17-MAR-20
WG3293228-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5025586							
WG3291847-2	LCS							
Beryllium (Be)-Total			93.6		%		80-120	13-MAR-20
WG3291847-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-MAR-20
BIC-CL								
	Water							



Quality Control Report

Workorder: L2426693

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL								
Water								
Batch R5021914								
WG3291145-7 MB								
Bicarbonate (HCO3)								
			<5.0		mg/L		5	11-MAR-20
BR-L-IC-N-CL								
Water								
Batch R5022608								
WG3291305-3 DUP								
		L2426693-4	<0.050	RPD-NA	mg/L	N/A	20	11-MAR-20
Bromide (Br)								
WG3291305-2 LCS								
			102.4		%		85-115	11-MAR-20
Bromide (Br)								
WG3291305-1 MB								
			<0.050		mg/L		0.05	11-MAR-20
Bromide (Br)								
WG3291305-4 MS								
		L2426693-4	103.0		%		75-125	11-MAR-20
Bromide (Br)								
C-DIS-ORG-LOW-CL								
Water								
Batch R5025958								
WG3292517-2 LCS								
			100.6		%		80-120	13-MAR-20
Dissolved Organic Carbon								
WG3292517-1 MB								
			<0.50		mg/L		0.5	13-MAR-20
Dissolved Organic Carbon								
C-TOT-ORG-LOW-CL								
Water								
Batch R5025958								
WG3292517-3 DUP								
		L2426693-4	<0.50	RPD-NA	mg/L	N/A	20	13-MAR-20
Total Organic Carbon								
WG3292517-2 LCS								
			101.5		%		80-120	13-MAR-20
Total Organic Carbon								
WG3292517-1 MB								
			<0.50		mg/L		0.5	13-MAR-20
Total Organic Carbon								
WG3292517-4 MS								
		L2426693-4	98.2		%		70-130	13-MAR-20
Total Organic Carbon								
CL-IC-N-CL								
Water								
Batch R5022608								
WG3291305-3 DUP								
		L2426693-4	<0.50	RPD-NA	mg/L	N/A	20	11-MAR-20
Chloride (Cl)								
WG3291305-2 LCS								
			103.1		%		90-110	11-MAR-20
Chloride (Cl)								
WG3291305-1 MB								
			<0.50		mg/L		0.5	11-MAR-20
Chloride (Cl)								
WG3291305-4 MS								
		L2426693-4						



Quality Control Report

Workorder: L2426693

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA								
	Water							
Batch	R5026276							
WG3292644-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	14-MAR-20
WG3292644-6 MS		L2426693-4						
Mercury (Hg)-Total			79.2		%		70-130	14-MAR-20
MET-D-CCMS-CL								
	Water							
Batch	R5022667							
WG3291525-2 LCS		TMRM						
Calcium (Ca)-Dissolved			97.8		%		80-120	12-MAR-20
Magnesium (Mg)-Dissolved			101.7		%		80-120	12-MAR-20
Potassium (K)-Dissolved			100.5		%		80-120	12-MAR-20
Sodium (Na)-Dissolved			100.1		%		80-120	12-MAR-20
WG3291525-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-MAR-20
MET-D-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-2 LCS								
Aluminum (Al)-Dissolved			93.4		%		80-120	13-MAR-20
Antimony (Sb)-Dissolved			96.6		%		80-120	13-MAR-20
Arsenic (As)-Dissolved			94.6		%		80-120	13-MAR-20
Barium (Ba)-Dissolved			103.5		%		80-120	13-MAR-20
Bismuth (Bi)-Dissolved			103.8		%		80-120	13-MAR-20
Boron (B)-Dissolved			90.8		%		80-120	13-MAR-20
Cadmium (Cd)-Dissolved			98.7		%		80-120	13-MAR-20
Calcium (Ca)-Dissolved			101.2		%		80-120	13-MAR-20
Chromium (Cr)-Dissolved			94.1		%		80-120	13-MAR-20
Cobalt (Co)-Dissolved			95.4		%		80-120	13-MAR-20
Copper (Cu)-Dissolved			93.1		%		80-120	13-MAR-20
Iron (Fe)-Dissolved			81.1		%		80-120	13-MAR-20
Lead (Pb)-Dissolved			92.6		%		80-120	13-MAR-20
Lithium (Li)-Dissolved			96.0		%		80-120	13-MAR-20
Magnesium (Mg)-Dissolved			92.4		%		80-120	13-MAR-20
Manganese (Mn)-Dissolved			95.8		%		80-120	13-MAR-20
Molybdenum (Mo)-Dissolved			100.7		%		80-120	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-2	LCS							
Nickel (Ni)-Dissolved			97.3		%		80-120	13-MAR-20
Potassium (K)-Dissolved			97.6		%		80-120	13-MAR-20
Selenium (Se)-Dissolved			94.9		%		80-120	13-MAR-20
Silicon (Si)-Dissolved			97.3		%		60-140	13-MAR-20
Silver (Ag)-Dissolved			99.9		%		80-120	13-MAR-20
Sodium (Na)-Dissolved			100.1		%		80-120	13-MAR-20
Strontium (Sr)-Dissolved			106.9		%		80-120	13-MAR-20
Thallium (Tl)-Dissolved			92.7		%		80-120	13-MAR-20
Tin (Sn)-Dissolved			98.6		%		80-120	13-MAR-20
Titanium (Ti)-Dissolved			93.5		%		80-120	13-MAR-20
Uranium (U)-Dissolved			91.8		%		80-120	13-MAR-20
Vanadium (V)-Dissolved			94.8		%		80-120	13-MAR-20
Zinc (Zn)-Dissolved			92.6		%		80-120	13-MAR-20
WG3292145-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
Batch	R5027949							
WG3293228-2	LCS							
Aluminum (Al)-Dissolved			100.9		%		80-120	17-MAR-20
Antimony (Sb)-Dissolved			93.6		%		80-120	17-MAR-20
Arsenic (As)-Dissolved			97.3		%		80-120	17-MAR-20
Barium (Ba)-Dissolved			102.5		%		80-120	17-MAR-20
Bismuth (Bi)-Dissolved			108.5		%		80-120	17-MAR-20
Boron (B)-Dissolved			95.1		%		80-120	17-MAR-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	17-MAR-20
Calcium (Ca)-Dissolved			98.2		%		80-120	17-MAR-20
Chromium (Cr)-Dissolved			97.6		%		80-120	17-MAR-20
Cobalt (Co)-Dissolved			99.3		%		80-120	17-MAR-20
Copper (Cu)-Dissolved			96.8		%		80-120	17-MAR-20
Iron (Fe)-Dissolved			85.2		%		80-120	17-MAR-20
Lead (Pb)-Dissolved			100.2		%		80-120	17-MAR-20
Lithium (Li)-Dissolved			94.9		%		80-120	17-MAR-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	17-MAR-20
Manganese (Mn)-Dissolved			99.6		%		80-120	17-MAR-20
Molybdenum (Mo)-Dissolved			94.6		%		80-120	17-MAR-20
Nickel (Ni)-Dissolved			97.5		%		80-120	17-MAR-20
Potassium (K)-Dissolved			97.0		%		80-120	17-MAR-20
Selenium (Se)-Dissolved			95.0		%		80-120	17-MAR-20
Silicon (Si)-Dissolved			93.4		%		60-140	17-MAR-20
Silver (Ag)-Dissolved			95.1		%		80-120	17-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5027949							
WG3293228-2	LCS							
Sodium (Na)-Dissolved			107.8		%		80-120	17-MAR-20
Strontium (Sr)-Dissolved			98.1		%		80-120	17-MAR-20
Thallium (Tl)-Dissolved			106.5		%		80-120	17-MAR-20
Tin (Sn)-Dissolved			93.6		%		80-120	17-MAR-20
Titanium (Ti)-Dissolved			96.3		%		80-120	17-MAR-20
Uranium (U)-Dissolved			101.3		%		80-120	17-MAR-20
Vanadium (V)-Dissolved			102.1		%		80-120	17-MAR-20
Zinc (Zn)-Dissolved			100.4		%		80-120	17-MAR-20
WG3293228-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20

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MET-D-CCMS-VA								
	Water							
Batch	R5027949							
WG3293228-1	MB	NP						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5025586							
WG3291847-2	LCS							
Aluminum (Al)-Total			90.6		%		80-120	13-MAR-20
Antimony (Sb)-Total			95.5		%		80-120	13-MAR-20
Arsenic (As)-Total			88.3		%		80-120	13-MAR-20
Barium (Ba)-Total			92.0		%		80-120	13-MAR-20
Bismuth (Bi)-Total			101.9		%		80-120	13-MAR-20
Boron (B)-Total			95.8		%		80-120	13-MAR-20
Cadmium (Cd)-Total			93.8		%		80-120	13-MAR-20
Calcium (Ca)-Total			97.6		%		80-120	13-MAR-20
Chromium (Cr)-Total			91.7		%		80-120	13-MAR-20
Cobalt (Co)-Total			90.6		%		80-120	13-MAR-20
Copper (Cu)-Total			90.1		%		80-120	13-MAR-20
Iron (Fe)-Total			79.9	MES	%		80-120	13-MAR-20
Lead (Pb)-Total			95.0		%		80-120	13-MAR-20
Lithium (Li)-Total			97.8		%		80-120	13-MAR-20
Magnesium (Mg)-Total			88.5		%		80-120	13-MAR-20
Manganese (Mn)-Total			88.8		%		80-120	13-MAR-20
Molybdenum (Mo)-Total			94.0		%		80-120	13-MAR-20
Nickel (Ni)-Total			91.6		%		80-120	13-MAR-20
Potassium (K)-Total			93.3		%		80-120	13-MAR-20
Selenium (Se)-Total			94.0		%		80-120	13-MAR-20
Silicon (Si)-Total			96.2		%		80-120	13-MAR-20
Silver (Ag)-Total			96.0		%		80-120	13-MAR-20
Sodium (Na)-Total			98.9		%		80-120	13-MAR-20
Strontium (Sr)-Total			95.1		%		80-120	13-MAR-20
Thallium (Tl)-Total			95.4		%		80-120	13-MAR-20
Tin (Sn)-Total			93.7		%		80-120	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5025586							
WG3291847-2	LCS							
Titanium (Ti)-Total			88.1		%		80-120	13-MAR-20
Uranium (U)-Total			94.7		%		80-120	13-MAR-20
Vanadium (V)-Total			91.3		%		80-120	13-MAR-20
Zinc (Zn)-Total			92.1		%		80-120	13-MAR-20
WG3291847-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	13-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5025586							
WG3291847-1	MB							
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-MAR-20
Batch		R5026420						
WG3292391-2	LCS							
Aluminum (Al)-Total			93.7		%		80-120	14-MAR-20
Antimony (Sb)-Total			101.8		%		80-120	14-MAR-20
Arsenic (As)-Total			94.1		%		80-120	14-MAR-20
Barium (Ba)-Total			96.9		%		80-120	14-MAR-20
Bismuth (Bi)-Total			98.1		%		80-120	14-MAR-20
Boron (B)-Total			90.5		%		80-120	14-MAR-20
Cadmium (Cd)-Total			96.9		%		80-120	14-MAR-20
Calcium (Ca)-Total			92.4		%		80-120	14-MAR-20
Chromium (Cr)-Total			95.2		%		80-120	14-MAR-20
Cobalt (Co)-Total			95.0		%		80-120	14-MAR-20
Copper (Cu)-Total			95.1		%		80-120	14-MAR-20
Iron (Fe)-Total			100.8		%		80-120	14-MAR-20
Lead (Pb)-Total			99.1		%		80-120	14-MAR-20
Lithium (Li)-Total			90.6		%		80-120	14-MAR-20
Magnesium (Mg)-Total			96.7		%		80-120	14-MAR-20
Manganese (Mn)-Total			96.6		%		80-120	14-MAR-20
Molybdenum (Mo)-Total			99.6		%		80-120	14-MAR-20
Nickel (Ni)-Total			94.5		%		80-120	14-MAR-20
Potassium (K)-Total			96.6		%		80-120	14-MAR-20
Selenium (Se)-Total			96.1		%		80-120	14-MAR-20
Silicon (Si)-Total			94.5		%		80-120	14-MAR-20
Silver (Ag)-Total			101.1		%		80-120	14-MAR-20
Sodium (Na)-Total			96.8		%		80-120	14-MAR-20
Strontium (Sr)-Total			102.2		%		80-120	14-MAR-20
Thallium (Tl)-Total			96.7		%		80-120	14-MAR-20
Tin (Sn)-Total			96.6		%		80-120	14-MAR-20
Titanium (Ti)-Total			95.2		%		80-120	14-MAR-20
Uranium (U)-Total			97.2		%		80-120	14-MAR-20
Vanadium (V)-Total			97.3		%		80-120	14-MAR-20
Zinc (Zn)-Total			92.8		%		80-120	14-MAR-20
WG3292391-1	MB							



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MET-T-CCMS-VA								
	Water							
Batch	R5026420							
WG3292391-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	14-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-MAR-20
WG3292391-4 MS		L2426693-4						
Aluminum (Al)-Total			89.1		%		70-130	14-MAR-20
Antimony (Sb)-Total			97.3		%		70-130	14-MAR-20
Arsenic (As)-Total			92.2		%		70-130	14-MAR-20



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MET-T-CCMS-VA								
	Water							
Batch	R5026420							
WG3292391-4	MS	L2426693-4						
Barium (Ba)-Total			93.4		%		70-130	14-MAR-20
Bismuth (Bi)-Total			98.0		%		70-130	14-MAR-20
Boron (B)-Total			96.0		%		70-130	14-MAR-20
Cadmium (Cd)-Total			97.7		%		70-130	14-MAR-20
Calcium (Ca)-Total			93.5		%		70-130	14-MAR-20
Chromium (Cr)-Total			95.2		%		70-130	14-MAR-20
Cobalt (Co)-Total			95.2		%		70-130	14-MAR-20
Copper (Cu)-Total			96.1		%		70-130	14-MAR-20
Iron (Fe)-Total			95.2		%		70-130	14-MAR-20
Lead (Pb)-Total			95.7		%		70-130	14-MAR-20
Lithium (Li)-Total			94.6		%		70-130	14-MAR-20
Magnesium (Mg)-Total			94.7		%		70-130	14-MAR-20
Manganese (Mn)-Total			94.2		%		70-130	14-MAR-20
Molybdenum (Mo)-Total			95.4		%		70-130	14-MAR-20
Nickel (Ni)-Total			96.0		%		70-130	14-MAR-20
Potassium (K)-Total			93.7		%		70-130	14-MAR-20
Selenium (Se)-Total			98.5		%		70-130	14-MAR-20
Silicon (Si)-Total			93.3		%		70-130	14-MAR-20
Silver (Ag)-Total			100.7		%		70-130	14-MAR-20
Sodium (Na)-Total			93.4		%		70-130	14-MAR-20
Strontium (Sr)-Total			95.2		%		70-130	14-MAR-20
Thallium (Tl)-Total			93.5		%		70-130	14-MAR-20
Tin (Sn)-Total			94.3		%		70-130	14-MAR-20
Titanium (Ti)-Total			93.7		%		70-130	14-MAR-20
Uranium (U)-Total			95.6		%		70-130	14-MAR-20
Vanadium (V)-Total			94.7		%		70-130	14-MAR-20
Zinc (Zn)-Total			94.3		%		70-130	14-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5022969							
WG3291320-6	LCS							
Ammonia as N			103.0		%		85-115	12-MAR-20
WG3291320-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2426693

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R5022608								
WG3291305-3	DUP	L2426693-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-MAR-20
WG3291305-2	LCS							
Nitrite (as N)			102.3		%		90-110	11-MAR-20
WG3291305-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAR-20
WG3291305-4	MS	L2426693-4						
Nitrite (as N)			109.8		%		75-125	11-MAR-20
NO3-L-IC-N-CL								
Batch R5022608								
WG3291305-3	DUP	L2426693-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-MAR-20
WG3291305-2	LCS							
Nitrate (as N)			104.2		%		90-110	11-MAR-20
WG3291305-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-MAR-20
WG3291305-4	MS	L2426693-4						
Nitrate (as N)			112.0		%		75-125	11-MAR-20
OH-CL								
Batch R5021914								
WG3291145-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-MAR-20
ORP-CL								
Batch R5026330								
WG3292649-3	CRM	CL-ORP						
ORP			219		mV		210-230	14-MAR-20
WG3292649-5	CRM	CL-ORP						
ORP			219		mV		210-230	14-MAR-20
P-T-L-COL-CL								
Batch R5022229								
WG3291268-10	LCS							
Phosphorus (P)-Total			98.7		%		80-120	12-MAR-20
WG3291268-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAR-20
PH-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL Water								
Batch	R5021914							
WG3291145-8	LCS							
pH			6.98		pH		6.9-7.1	11-MAR-20
PO4-DO-L-COL-CL Water								
Batch	R5021363							
WG3290519-7	DUP	L2426693-4						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-MAR-20
WG3290519-10	LCS							
Orthophosphate-Dissolved (as P)			105.2		%		80-120	11-MAR-20
WG3290519-6	LCS							
Orthophosphate-Dissolved (as P)			103.3		%		80-120	11-MAR-20
WG3290519-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-MAR-20
WG3290519-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-MAR-20
WG3290519-8	MS	L2426693-4						
Orthophosphate-Dissolved (as P)			102.3		%		70-130	11-MAR-20
SO4-IC-N-CL Water								
Batch	R5022608							
WG3291305-3	DUP	L2426693-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	11-MAR-20
WG3291305-2	LCS							
Sulfate (SO4)			105.6		%		90-110	11-MAR-20
WG3291305-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAR-20
WG3291305-4	MS	L2426693-4						
Sulfate (SO4)			106.7		%		75-125	11-MAR-20
SOLIDS-TDS-CL Water								
Batch	R5028349							
WG3292932-5	LCS							
Total Dissolved Solids			102.7		%		85-115	16-MAR-20
WG3292932-4	MB							
Total Dissolved Solids			<10		mg/L		10	16-MAR-20
TKN-L-F-CL Water								
Batch	R5024547							
WG3291858-3	DUP	L2426693-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-MAR-20
WG3291858-2	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5024547							
WG3291858-2	LCS							
Total Kjeldahl Nitrogen			83.2		%		75-125	13-MAR-20
WG3291858-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAR-20
WG3291858-4	MS	L2426693-4						
Total Kjeldahl Nitrogen			104.8		%		70-130	13-MAR-20
TSS-L-CL								
	Water							
Batch	R5028317							
WG3292931-4	LCS							
Total Suspended Solids			106.7		%		85-115	16-MAR-20
WG3292931-3	MB							
Total Suspended Solids			<1.0		mg/L		1	16-MAR-20
TURBIDITY-CL								
	Water							
Batch	R5021396							
WG3290689-5	LCS							
Turbidity			105.5		%		85-115	11-MAR-20
WG3290689-8	LCS							
Turbidity			105.0		%		85-115	11-MAR-20
WG3290689-4	MB							
Turbidity			<0.10		NTU		0.1	11-MAR-20
WG3290689-7	MB							
Turbidity			<0.10		NTU		0.1	11-MAR-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2426693

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	10-MAR-20 11:15	14-MAR-20 14:00	0.25	99	hours	EHTR-FM
	2	10-MAR-20 13:05	14-MAR-20 14:00	0.25	97	hours	EHTR-FM
	3	10-MAR-20 13:05	14-MAR-20 14:00	0.25	97	hours	EHTR-FM
	4	10-MAR-20 13:05	14-MAR-20 14:00	0.25	97	hours	EHTR-FM
pH							
	1	10-MAR-20 11:15	11-MAR-20 13:00	0.25	26	hours	EHTR-FM
	2	10-MAR-20 13:05	11-MAR-20 13:00	0.25	24	hours	EHTR-FM
	3	10-MAR-20 13:05	11-MAR-20 13:00	0.25	24	hours	EHTR-FM
	4	10-MAR-20 13:05	11-MAR-20 13:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2426693 were received on 11-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				RUSH:						
PROJECT/CLIENT INFO						LABORATORY				OTHER INFO				
Facility Name / Job# Greenhills Operation						Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Leigh Stickney						Lab Contact Lyudmyla Shvets				Email 1: Leigh.Stickney@teck.com		Excel	PDF	EDD
Email leigh.stickney@teck.com						Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: Laura.Ferguson@teck.com		X	X	X
Address P.O. BOX 5000						Address 2559 29 Street NE				Email 3: teckcoal@equilonline.com				X
City Elkford Province BC						City Calgary Province AB				Email 4: jaydon.francis@teck.com		X	X	X
Postal Code V0B1H0 Country Canada						Postal Code T1Y 7B5 Country Canada				Email 5: Brendan.Peachay@teck.com		X	X	X
Phone Number 250-865-3048						Phone Number 403 407 1794				Email 6: D_Equilo-GHD-Field@teck.com		X	X	X
										PO number 684125				

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered: Field, Lab, Field & Lab, None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	BOD/Colour	EPH	PAH			
GH_GA-MW-1_WG_2020-01-06_NP	GH_GA-MW-1	WS		2020/03/10	11:15	G	7	X	X	X	X	X	X	X						
GH_GA-MW-4_WG_2020-01-06_NP	GH_DRY_THICK	WS		2020/03/10	13:05	G	7	X	X	X	X	X	X	X						
GH_GWD1_WG_2020-01-06_NP	GH_GWD1	WS		2020/03/10	13:05	G	7	X	X	X	X	X	X	X						
GH_GWB1_WG_2020-01-06_NP	GH_GWB1	WS		2020/03/10	13:05	G	7			X		X	X	X						



L2426693-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/11/2020

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	JF/MD
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Mobile #
Emergency (1 Business Day) - 100% surcharge			Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

[Handwritten mark]



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 12-MAR-20
Report Date: 18-DEC-20 12:38 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2427272
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 0
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427272-1 GH_GA-MW-3_WG_2020-01-06							
Sampled By: JF/MD on 11-MAR-20 @ 12:50							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	336		5.0	mg/L		12-MAR-20	R5024095
Carbonate (CO3)	<5.0		5.0	mg/L		12-MAR-20	R5024095
Dissolved Organic Carbon	1.81		0.50	mg/L		14-MAR-20	R5026424
Hydroxide (OH)	<5.0		5.0	mg/L		12-MAR-20	R5024095
Total Kjeldahl Nitrogen	1.11	DLM	0.10	mg/L		17-MAR-20	R5028186
Mercury (Hg)-Total	<0.0020	DLM	0.0020	ug/L		17-MAR-20	R5028505
Total Organic Carbon	1.68		0.50	mg/L		14-MAR-20	R5026424
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAR-20	16-MAR-20	R5028414
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5027956
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-MAR-20	16-MAR-20	R5027862
Dissolved Mercury Filtration Location	FIELD					16-MAR-20	R5027837
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5027956
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAR-20	16-MAR-20	R5028414
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Barium (Ba)-Dissolved	0.0907		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	16-MAR-20	R5028414
Boron (B)-Dissolved	0.244		0.010	mg/L	17-MAR-20	16-MAR-20	R5028414
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-MAR-20	16-MAR-20	R5028414
Calcium (Ca)-Dissolved	52.6		0.050	mg/L	17-MAR-20	16-MAR-20	R5028414
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-MAR-20	16-MAR-20	R5028414
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAR-20	16-MAR-20	R5028414
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	16-MAR-20	R5028414
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	16-MAR-20	R5028414
Lithium (Li)-Dissolved	0.0878		0.0010	mg/L	17-MAR-20	16-MAR-20	R5028414
Magnesium (Mg)-Dissolved	33.1		0.10	mg/L	17-MAR-20	16-MAR-20	R5028414
Manganese (Mn)-Dissolved	0.00502		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	16-MAR-20	R5028414
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	16-MAR-20	R5028414
Potassium (K)-Dissolved	2.31		0.050	mg/L	17-MAR-20	16-MAR-20	R5028414
Selenium (Se)-Dissolved	6.23		0.050	ug/L	17-MAR-20	16-MAR-20	R5028414
Silicon (Si)-Dissolved	4.60		0.050	mg/L	17-MAR-20	16-MAR-20	R5028414
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	16-MAR-20	R5028414
Sodium (Na)-Dissolved	33.3		0.050	mg/L	17-MAR-20	16-MAR-20	R5028414
Strontium (Sr)-Dissolved	2.06		0.00020	mg/L	17-MAR-20	16-MAR-20	R5028414
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	16-MAR-20	R5028414
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	16-MAR-20	R5028414
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	16-MAR-20	R5028414
Uranium (U)-Dissolved	0.000159		0.000010	mg/L	17-MAR-20	16-MAR-20	R5028414
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	16-MAR-20	R5028414
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAR-20	16-MAR-20	R5028414
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	268		0.50	mg/L		17-MAR-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		15-MAR-20	R5026434

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427272-1 GH_GA-MW-3_WG_2020-01-06							
Sampled By: JF/MD on 11-MAR-20 @ 12:50							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0546		0.0030	mg/L		15-MAR-20	R5026434
Antimony (Sb)-Total	0.00018		0.00010	mg/L		15-MAR-20	R5026434
Arsenic (As)-Total	0.00013		0.00010	mg/L		15-MAR-20	R5026434
Barium (Ba)-Total	0.0934		0.00010	mg/L		15-MAR-20	R5026434
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		15-MAR-20	R5026434
Boron (B)-Total	0.238		0.010	mg/L		15-MAR-20	R5026434
Cadmium (Cd)-Total	0.0412		0.0050	ug/L		15-MAR-20	R5026434
Calcium (Ca)-Total	72.7		0.050	mg/L		15-MAR-20	R5026434
Chromium (Cr)-Total	0.00108		0.00010	mg/L		15-MAR-20	R5026434
Cobalt (Co)-Total	<0.10		0.10	ug/L		15-MAR-20	R5026434
Copper (Cu)-Total	0.0129		0.00050	mg/L		15-MAR-20	R5026434
Iron (Fe)-Total	0.100		0.010	mg/L		15-MAR-20	R5026434
Lead (Pb)-Total	0.000102		0.000050	mg/L		15-MAR-20	R5026434
Lithium (Li)-Total	0.0832		0.0010	mg/L		15-MAR-20	R5026434
Magnesium (Mg)-Total	45.2		0.10	mg/L		15-MAR-20	R5026434
Manganese (Mn)-Total	0.00717		0.00010	mg/L		15-MAR-20	R5026434
Molybdenum (Mo)-Total	0.000133		0.000050	mg/L		15-MAR-20	R5026434
Nickel (Ni)-Total	0.00180		0.00050	mg/L		15-MAR-20	R5026434
Potassium (K)-Total	2.38		0.050	mg/L		15-MAR-20	R5026434
Selenium (Se)-Total	13.8		0.050	ug/L		15-MAR-20	R5026434
Silicon (Si)-Total	5.11		0.10	mg/L		15-MAR-20	R5026434
Silver (Ag)-Total	0.000274		0.000010	mg/L		15-MAR-20	R5026434
Sodium (Na)-Total	34.0		0.050	mg/L		15-MAR-20	R5026434
Strontium (Sr)-Total	1.86		0.00020	mg/L		15-MAR-20	R5026434
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		15-MAR-20	R5026434
Tin (Sn)-Total	<0.00010		0.00010	mg/L		15-MAR-20	R5026434
Titanium (Ti)-Total	<0.010		0.010	mg/L		15-MAR-20	R5026434
Uranium (U)-Total	0.000281		0.000010	mg/L		15-MAR-20	R5026434
Vanadium (V)-Total	<0.00050		0.00050	mg/L		15-MAR-20	R5026434
Zinc (Zn)-Total	0.0042		0.0030	mg/L		15-MAR-20	R5026434
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.2		1.0	mg/L		12-MAR-20	R5023468
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	276		1.0	mg/L		12-MAR-20	R5024095
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-MAR-20	R5024095
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-MAR-20	R5024095
Alkalinity, Total (as CaCO3)	276		1.0	mg/L		12-MAR-20	R5024095
Ammonia, Total (as N)							
Ammonia as N	0.450	DLHC	0.050	mg/L		13-MAR-20	R5026970
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		20-MAR-20	R5024548
Chloride in Water by IC							
Chloride (Cl)	2.18		0.50	mg/L		20-MAR-20	R5024548
Electrical Conductivity (EC)							
Conductivity (@ 25C)	731		2.0	uS/cm		12-MAR-20	R5024095
Fluoride in Water by IC							
Fluoride (F)	0.139		0.020	mg/L		20-MAR-20	R5024548
Ion Balance Calculation							
Cation - Anion Balance	0.9			%		20-MAR-20	
Anion Sum	6.76			meq/L		20-MAR-20	
Cation Sum	6.88			meq/L		20-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427272-1 GH_GA-MW-3_WG_2020-01-06							
Sampled By: JF/MD on 11-MAR-20 @ 12:50							
Matrix: WS							
Ion Balance Calculation							
Ion Balance	102		-100	%		20-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0421	HTD	0.0050	mg/L		20-MAR-20	R5024548
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0870	HTD	0.0010	mg/L		20-MAR-20	R5024548
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		12-MAR-20	R5024127
Oxidation redution potential by elect.							
ORP	235		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0419		0.0020	mg/L		13-MAR-20	R5024729
Sulfate in Water by IC							
Sulfate (SO4)	56.4		0.30	mg/L		20-MAR-20	R5024548
Total Dissolved Solids							
Total Dissolved Solids	499	DLHC	20	mg/L		18-MAR-20	R5031746
Total Suspended Solids							
Total Suspended Solids	10.8		1.0	mg/L		18-MAR-20	R5031907
Turbidity							
Turbidity	166		0.10	NTU		12-MAR-20	R5024092
pH							
pH	8.12		0.10	pH		12-MAR-20	R5024095

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

0

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2427272

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0
 Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5023468							
WG3291605-2	LCS							
Acidity (as CaCO3)			104.0		%		85-115	12-MAR-20
WG3291605-1	MB							
Acidity (as CaCO3)			1.1		mg/L		2	12-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5024095							
WG3291867-5	LCS							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	12-MAR-20
WG3291867-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5028414							
WG3293459-2	LCS							
Beryllium (Be)-Dissolved			96.1		%		80-120	16-MAR-20
WG3293459-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5026434							
WG3292511-2	LCS							
Beryllium (Be)-Total			95.9		%		80-120	15-MAR-20
WG3292511-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5024548							
WG3292055-6	LCS							
Bromide (Br)			97.5		%		85-115	12-MAR-20
WG3292055-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5026424							
WG3292725-6	LCS							
Dissolved Organic Carbon			91.2		%		80-120	14-MAR-20
WG3292725-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2427272

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5026424							
WG3292725-6	LCS							
Total Organic Carbon			94.5		%		80-120	14-MAR-20
WG3292725-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
CL-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Chloride (Cl)			101.9		%		90-110	12-MAR-20
WG3292055-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-20
EC-L-PCT-CL	Water							
Batch	R5024095							
WG3291867-5	LCS							
Conductivity (@ 25C)			98.0		%		90-110	12-MAR-20
WG3291867-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-MAR-20
F-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Fluoride (F)			105.4		%		90-110	12-MAR-20
WG3292055-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-20
HG-D-CVAA-VA	Water							
Batch	R5027862							
WG3293276-2	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	16-MAR-20
WG3293276-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-MAR-20
HG-T-U-CVAF-VA	Water							
Batch	R5028505							
WG3293978-2	LCS							
Mercury (Hg)-Total			93.0		%		80-120	17-MAR-20
WG3293978-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-MAR-20
MET-D-CCMS-VA	Water							

Quality Control Report

Workorder: L2427272

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5028414							
WG3293459-2	LCS							
Aluminum (Al)-Dissolved			100.5		%		80-120	16-MAR-20
Antimony (Sb)-Dissolved			103.2		%		80-120	16-MAR-20
Arsenic (As)-Dissolved			94.0		%		80-120	16-MAR-20
Barium (Ba)-Dissolved			95.9		%		80-120	16-MAR-20
Bismuth (Bi)-Dissolved			97.8		%		80-120	16-MAR-20
Boron (B)-Dissolved			90.3		%		80-120	16-MAR-20
Cadmium (Cd)-Dissolved			95.9		%		80-120	16-MAR-20
Calcium (Ca)-Dissolved			95.0		%		80-120	16-MAR-20
Chromium (Cr)-Dissolved			98.5		%		80-120	16-MAR-20
Cobalt (Co)-Dissolved			96.4		%		80-120	16-MAR-20
Copper (Cu)-Dissolved			94.0		%		80-120	16-MAR-20
Iron (Fe)-Dissolved			99.9		%		80-120	16-MAR-20
Lead (Pb)-Dissolved			97.1		%		80-120	16-MAR-20
Lithium (Li)-Dissolved			95.3		%		80-120	16-MAR-20
Magnesium (Mg)-Dissolved			97.1		%		80-120	16-MAR-20
Manganese (Mn)-Dissolved			97.0		%		80-120	16-MAR-20
Molybdenum (Mo)-Dissolved			92.7		%		80-120	16-MAR-20
Nickel (Ni)-Dissolved			94.9		%		80-120	16-MAR-20
Potassium (K)-Dissolved			98.9		%		80-120	16-MAR-20
Selenium (Se)-Dissolved			96.7		%		80-120	16-MAR-20
Silicon (Si)-Dissolved			102.5		%		60-140	16-MAR-20
Silver (Ag)-Dissolved			99.2		%		80-120	16-MAR-20
Sodium (Na)-Dissolved			100.0		%		80-120	16-MAR-20
Strontium (Sr)-Dissolved			92.7		%		80-120	16-MAR-20
Thallium (Tl)-Dissolved			97.4		%		80-120	16-MAR-20
Tin (Sn)-Dissolved			99.3		%		80-120	16-MAR-20
Titanium (Ti)-Dissolved			92.7		%		80-120	16-MAR-20
Uranium (U)-Dissolved			99.2		%		80-120	16-MAR-20
Vanadium (V)-Dissolved			96.4		%		80-120	16-MAR-20
Zinc (Zn)-Dissolved			96.0		%		80-120	16-MAR-20
WG3293459-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20



Quality Control Report

Workorder: L2427272

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5028414							
WG3293459-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5026434							
WG3292511-2	LCS							
Aluminum (Al)-Total			106.9		%		80-120	15-MAR-20
Antimony (Sb)-Total			97.6		%		80-120	15-MAR-20
Arsenic (As)-Total			99.1		%		80-120	15-MAR-20
Barium (Ba)-Total			99.5		%		80-120	15-MAR-20



Quality Control Report

Workorder: L2427272

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5026434							
WG3292511-2	LCS							
Bismuth (Bi)-Total			101.6		%		80-120	15-MAR-20
Boron (B)-Total			98.1		%		80-120	15-MAR-20
Cadmium (Cd)-Total			97.6		%		80-120	15-MAR-20
Calcium (Ca)-Total			99.0		%		80-120	15-MAR-20
Chromium (Cr)-Total			100.1		%		80-120	15-MAR-20
Cobalt (Co)-Total			99.1		%		80-120	15-MAR-20
Copper (Cu)-Total			97.6		%		80-120	15-MAR-20
Iron (Fe)-Total			102.7		%		80-120	15-MAR-20
Lead (Pb)-Total			100.6		%		80-120	15-MAR-20
Lithium (Li)-Total			99.7		%		80-120	15-MAR-20
Magnesium (Mg)-Total			103.3		%		80-120	15-MAR-20
Manganese (Mn)-Total			101.3		%		80-120	15-MAR-20
Molybdenum (Mo)-Total			99.3		%		80-120	15-MAR-20
Nickel (Ni)-Total			99.9		%		80-120	15-MAR-20
Potassium (K)-Total			104.2		%		80-120	15-MAR-20
Selenium (Se)-Total			98.5		%		80-120	15-MAR-20
Silicon (Si)-Total			106.0		%		80-120	15-MAR-20
Silver (Ag)-Total			96.8		%		80-120	15-MAR-20
Sodium (Na)-Total			105.3		%		80-120	15-MAR-20
Strontium (Sr)-Total			102.1		%		80-120	15-MAR-20
Thallium (Tl)-Total			100.7		%		80-120	15-MAR-20
Tin (Sn)-Total			94.3		%		80-120	15-MAR-20
Titanium (Ti)-Total			95.4		%		80-120	15-MAR-20
Uranium (U)-Total			102.4		%		80-120	15-MAR-20
Vanadium (V)-Total			102.4		%		80-120	15-MAR-20
Zinc (Zn)-Total			94.5		%		80-120	15-MAR-20
WG3292511-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	15-MAR-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	15-MAR-20



Quality Control Report

Workorder: L2427272

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5026434							
WG3292511-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	15-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	15-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	15-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	15-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	15-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-MAR-20
NH3-L-F-CL		Water						
Batch	R5026970							
WG3292237-2	LCS							
Ammonia as N			99.1		%		85-115	13-MAR-20
WG3292237-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	13-MAR-20
NO2-L-IC-N-CL		Water						
Batch	R5024548							
WG3292055-6	LCS							
Nitrite (as N)			100.9		%		90-110	12-MAR-20
WG3292055-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Nitrate (as N)			107.4		%		90-110	12-MAR-20
WG3292055-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-20
ORP-CL	Water							
Batch	R5026330							
WG3292649-7	CRM	CL-ORP						
ORP			219		mV		210-230	14-MAR-20
P-T-L-COL-CL	Water							
Batch	R5024729							
WG3292086-6	LCS							
Phosphorus (P)-Total			104.3		%		80-120	13-MAR-20
WG3292086-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAR-20
PH-CL	Water							
Batch	R5024095							
WG3291867-5	LCS							
pH			6.99		pH		6.9-7.1	12-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5024127							
WG3291338-6	LCS							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	12-MAR-20
WG3291338-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAR-20
SO4-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Sulfate (SO4)			104.4		%		90-110	12-MAR-20
WG3292055-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5031746							
WG3294407-2	LCS							
Total Dissolved Solids			99.2		%		85-115	18-MAR-20
WG3294407-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R5031746							
WG3294407-1	MB							
Total Dissolved Solids			<10		mg/L		10	18-MAR-20
TKN-L-F-CL								
Water								
Batch	R5028186							
WG3293631-2	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	17-MAR-20
WG3293631-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-MAR-20
TSS-L-CL								
Water								
Batch	R5031907							
WG3294408-2	LCS							
Total Suspended Solids			97.7		%		85-115	18-MAR-20
WG3294408-1	MB							
Total Suspended Solids			<1.0		mg/L		1	18-MAR-20
TURBIDITY-CL								
Water								
Batch	R5024092							
WG3291568-2	LCS							
Turbidity			104.5		%		85-115	12-MAR-20
WG3291568-1	MB							
Turbidity			<0.10		NTU		0.1	12-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-MAR-20 12:50	14-MAR-20 16:00	0.25	75	hours	EHTR-FM
pH	1	11-MAR-20 12:50	12-MAR-20 14:00	0.25	25	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	11-MAR-20 12:50	20-MAR-20 10:02	3	9	days	EHT
Nitrite in Water by IC (Low Level)	1	11-MAR-20 12:50	20-MAR-20 10:02	3	9	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2427272 were received on 12-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CUSTOMER INFO

LABORATORY


OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudmyln Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Lyudmyln.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoat@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Penchev@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125			

SAMPLE DETAILS

ANALYSIS REQUESTED

Field, Lab, Field & Lab, None

 L2427272-COFC	Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y		Y								
									ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH		
	GH_GA-MW-3_WG_2020-01-06_NP	GII_GA-MW-3	WS		2020/03/11	12:50	G	7	X	X	X	X	X	X	X					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

Handwritten signature and date: 3/12/20

SERVICE REQUEST (rush subject to availability)

Regular (default) X	Sampler's Name	JF/MD	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Handwritten number: 7



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 13-MAR-20
Report Date: 21-DEC-20 17:43 (MT)
Version: FINAL REV. 3

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2427867
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2427867-1 to -3.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-1 GH_MW-RLP_WG_2020-03-02_N							
Sampled By: JF/LF on 12-MAR-20 @ 10:56							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	273		5.0	mg/L		13-MAR-20	R5026972
Carbonate (CO3)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Hydroxide (OH)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		19-MAR-20	R5032358
Mercury (Hg)-Total	0.00059		0.00050	ug/L		17-MAR-20	R5028407
Total Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAR-20	17-MAR-20	R5030286
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5028168
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-MAR-20	17-MAR-20	R5028007
Dissolved Mercury Filtration Location	FIELD					17-MAR-20	R5027959
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030548
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAR-20	17-MAR-20	R5030286
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Arsenic (As)-Dissolved	0.00097		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Barium (Ba)-Dissolved	0.0456		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Boron (B)-Dissolved	0.014		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cadmium (Cd)-Dissolved	0.0053		0.0050	ug/L	17-MAR-20	17-MAR-20	R5030286
Calcium (Ca)-Dissolved	60.5		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-MAR-20	17-MAR-20	R5030286
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Iron (Fe)-Dissolved	0.440		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Lithium (Li)-Dissolved	0.0068		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Magnesium (Mg)-Dissolved	31.0		0.10	mg/L	17-MAR-20	17-MAR-20	R5030286
Manganese (Mn)-Dissolved	0.0758		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Molybdenum (Mo)-Dissolved	0.00310		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Nickel (Ni)-Dissolved	0.00450	DTC	0.00050	mg/L	18-MAR-20	18-MAR-20	R5030430
Potassium (K)-Dissolved	1.11		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Selenium (Se)-Dissolved	0.546	DTC	0.050	ug/L	18-MAR-20	18-MAR-20	R5030430
Silicon (Si)-Dissolved	4.57		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Sodium (Na)-Dissolved	3.26		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Strontium (Sr)-Dissolved	0.205		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Uranium (U)-Dissolved	0.000870		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	17-MAR-20	R5030286
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Hardness							
Hardness (as CaCO3)	279		0.50	mg/L		19-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-MAR-20	R5028414

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-1 GH_MW-RLP_WG_2020-03-02_N							
Sampled By: JF/LF on 12-MAR-20 @ 10:56							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.264		0.0030	mg/L		16-MAR-20	R5028414
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Arsenic (As)-Total	0.00126		0.00010	mg/L		16-MAR-20	R5028414
Barium (Ba)-Total	0.0446		0.00010	mg/L		16-MAR-20	R5028414
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-MAR-20	R5028414
Boron (B)-Total	0.015		0.010	mg/L		16-MAR-20	R5028414
Cadmium (Cd)-Total	0.0141		0.0050	ug/L		16-MAR-20	R5028414
Calcium (Ca)-Total	56.2		0.050	mg/L		16-MAR-20	R5028414
Chromium (Cr)-Total	0.00047		0.00010	mg/L		16-MAR-20	R5028414
Cobalt (Co)-Total	0.11		0.10	ug/L		16-MAR-20	R5028414
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-MAR-20	R5028414
Iron (Fe)-Total	0.791		0.010	mg/L		16-MAR-20	R5028414
Lead (Pb)-Total	0.000151		0.000050	mg/L		16-MAR-20	R5028414
Lithium (Li)-Total	0.0066		0.0010	mg/L		16-MAR-20	R5028414
Magnesium (Mg)-Total	27.9		0.10	mg/L		16-MAR-20	R5028414
Manganese (Mn)-Total	0.0857		0.00010	mg/L		16-MAR-20	R5028414
Molybdenum (Mo)-Total	0.00312		0.000050	mg/L		16-MAR-20	R5028414
Nickel (Ni)-Total	0.00183		0.00050	mg/L		16-MAR-20	R5028414
Potassium (K)-Total	1.23		0.050	mg/L		16-MAR-20	R5028414
Selenium (Se)-Total	<0.050		0.050	ug/L		16-MAR-20	R5028414
Silicon (Si)-Total	5.24		0.10	mg/L		16-MAR-20	R5028414
Silver (Ag)-Total	0.000796		0.000010	mg/L		16-MAR-20	R5028414
Sodium (Na)-Total	3.16		0.050	mg/L		16-MAR-20	R5028414
Strontium (Sr)-Total	0.179		0.00020	mg/L		16-MAR-20	R5028414
Thallium (Tl)-Total	0.000014		0.000010	mg/L		16-MAR-20	R5028414
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-MAR-20	R5028414
Uranium (U)-Total	0.00101		0.000010	mg/L		16-MAR-20	R5028414
Vanadium (V)-Total	0.00124		0.00050	mg/L		16-MAR-20	R5028414
Zinc (Zn)-Total	0.0133		0.0030	mg/L		16-MAR-20	R5028414
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	8.0		1.0	mg/L		13-MAR-20	R5026966
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	224		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Total (as CaCO3)	224		1.0	mg/L		13-MAR-20	R5026972
Ammonia, Total (as N)							
Ammonia as N	0.0342		0.0050	mg/L		16-MAR-20	R5028406
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-MAR-20	R5027346
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		13-MAR-20	R5027346
Electrical Conductivity (EC)							
Conductivity (@ 25C)	462		2.0	uS/cm		13-MAR-20	R5026972
Fluoride in Water by IC							
Fluoride (F)	1.76		0.020	mg/L		13-MAR-20	R5027346
Ion Balance Calculation							
Cation - Anion Balance	3.1			%		19-MAR-20	
Anion Sum	5.43			meq/L		19-MAR-20	
Cation Sum	5.77			meq/L		19-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-1 GH_MW-RLP_WG_2020-03-02_N Sampled By: JF/LF on 12-MAR-20 @ 10:56 Matrix: WS							
Ion Balance Calculation							
Ion Balance	106		-100	%		19-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0066		0.0050	mg/L		13-MAR-20	R5027346
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-MAR-20	R5027346
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-MAR-20	R5025885
Oxidation redution potential by elect.							
ORP	320		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0101		0.0020	mg/L		16-MAR-20	R5027370
Sulfate in Water by IC							
Sulfate (SO4)	41.1		0.30	mg/L		13-MAR-20	R5027346
Total Dissolved Solids							
Total Dissolved Solids	272	DLHC	20	mg/L		19-MAR-20	R5033197
Total Suspended Solids							
Total Suspended Solids	5.5		1.0	mg/L		19-MAR-20	R5033222
Turbidity							
Turbidity	11.8		0.10	NTU		13-MAR-20	R5026107
pH							
pH	7.99		0.10	pH		13-MAR-20	R5026972
L2427867-2 GH_MW-TD_WG_2020-03-02_N Sampled By: JF/LF on 12-MAR-20 @ 13:36 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	422		5.0	mg/L		13-MAR-20	R5026972
Carbonate (CO3)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Hydroxide (OH)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Total Kjeldahl Nitrogen	0.086		0.050	mg/L		19-MAR-20	R5032358
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-MAR-20	R5028371
Total Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAR-20	17-MAR-20	R5030286
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5028168
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-MAR-20	17-MAR-20	R5028007
Dissolved Mercury Filtration Location	FIELD					17-MAR-20	R5027959
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5028168
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAR-20	17-MAR-20	R5030286
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Barium (Ba)-Dissolved	0.0237		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Boron (B)-Dissolved	0.356		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cadmium (Cd)-Dissolved	0.0917		0.0050	ug/L	17-MAR-20	17-MAR-20	R5030286
Calcium (Ca)-Dissolved	93.7		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cobalt (Co)-Dissolved	0.49		0.10	ug/L	17-MAR-20	17-MAR-20	R5030286

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-2 GH_MW-TD_WG_2020-03-02_N							
Sampled By: JF/LF on 12-MAR-20 @ 13:36							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00025		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Iron (Fe)-Dissolved	0.417		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Lithium (Li)-Dissolved	0.0389		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Magnesium (Mg)-Dissolved	39.4		0.10	mg/L	17-MAR-20	17-MAR-20	R5030286
Manganese (Mn)-Dissolved	0.829		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Molybdenum (Mo)-Dissolved	0.00269		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Nickel (Ni)-Dissolved	0.00096		0.00050	mg/L	17-MAR-20	17-MAR-20	R5030286
Potassium (K)-Dissolved	2.36		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-MAR-20	17-MAR-20	R5030286
Silicon (Si)-Dissolved	5.89		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Sodium (Na)-Dissolved	30.9		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Strontium (Sr)-Dissolved	1.21		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Thallium (Tl)-Dissolved	0.000177		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Uranium (U)-Dissolved	0.00101		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	17-MAR-20	R5030286
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Hardness							
Hardness (as CaCO3)	396		0.50	mg/L		18-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-MAR-20	R5028414
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		16-MAR-20	R5028414
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Arsenic (As)-Total	0.00015		0.00010	mg/L		16-MAR-20	R5028414
Barium (Ba)-Total	0.0233		0.00010	mg/L		16-MAR-20	R5028414
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-MAR-20	R5028414
Boron (B)-Total	0.372		0.010	mg/L		16-MAR-20	R5028414
Cadmium (Cd)-Total	0.726		0.0050	ug/L		16-MAR-20	R5028414
Calcium (Ca)-Total	83.7		0.050	mg/L		16-MAR-20	R5028414
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Cobalt (Co)-Total	0.49		0.10	ug/L		16-MAR-20	R5028414
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-MAR-20	R5028414
Iron (Fe)-Total	0.542		0.010	mg/L		16-MAR-20	R5028414
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-MAR-20	R5028414
Lithium (Li)-Total	0.0377		0.0010	mg/L		16-MAR-20	R5028414
Magnesium (Mg)-Total	35.3		0.10	mg/L		16-MAR-20	R5028414
Manganese (Mn)-Total	0.770		0.00010	mg/L		16-MAR-20	R5028414
Molybdenum (Mo)-Total	0.00280		0.000050	mg/L		16-MAR-20	R5028414
Nickel (Ni)-Total	0.00105		0.00050	mg/L		16-MAR-20	R5028414
Potassium (K)-Total	2.35		0.050	mg/L		16-MAR-20	R5028414
Selenium (Se)-Total	<0.050		0.050	ug/L		16-MAR-20	R5028414
Silicon (Si)-Total	6.55		0.10	mg/L		16-MAR-20	R5028414
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-MAR-20	R5028414
Sodium (Na)-Total	27.5		0.050	mg/L		16-MAR-20	R5028414
Strontium (Sr)-Total	1.09		0.00020	mg/L		16-MAR-20	R5028414
Thallium (Tl)-Total	0.000194		0.000010	mg/L		16-MAR-20	R5028414
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-2 GH_MW-TD_WG_2020-03-02_N							
Sampled By: JF/LF on 12-MAR-20 @ 13:36							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-MAR-20	R5028414
Uranium (U)-Total	0.00111		0.000010	mg/L		16-MAR-20	R5028414
Vanadium (V)-Total	0.00059		0.00050	mg/L		16-MAR-20	R5028414
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-MAR-20	R5028414
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	23.1		1.0	mg/L		13-MAR-20	R5026966
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	346		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Total (as CaCO3)	346		1.0	mg/L		13-MAR-20	R5026972
Ammonia, Total (as N)							
Ammonia as N	0.0852		0.0050	mg/L		16-MAR-20	R5028406
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-MAR-20	R5027346
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		13-MAR-20	R5027346
Electrical Conductivity (EC)							
Conductivity (@ 25C)	703		2.0	uS/cm		13-MAR-20	R5026972
Fluoride in Water by IC							
Fluoride (F)	0.298		0.020	mg/L		13-MAR-20	R5027346
Ion Balance Calculation							
Cation - Anion Balance	3.8			%		18-MAR-20	
Anion Sum	8.68			meq/L		18-MAR-20	
Cation Sum	9.37			meq/L		18-MAR-20	
Ion Balance Calculation							
Ion Balance	108		-100	%		18-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0748		0.0050	mg/L		13-MAR-20	R5027346
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-MAR-20	R5027346
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-MAR-20	R5025885
Oxidation redution potential by elect.							
ORP	288		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-MAR-20	R5027370
Sulfate in Water by IC							
Sulfate (SO4)	83.9		0.30	mg/L		13-MAR-20	R5027346
Total Dissolved Solids							
Total Dissolved Solids	463	DLHC	20	mg/L		19-MAR-20	R5033197
Total Suspended Solids							
Total Suspended Solids	2.7		1.0	mg/L		19-MAR-20	R5033222
Turbidity							
Turbidity	2.25		0.10	NTU		13-MAR-20	R5026107
pH							
pH	7.72		0.10	pH		13-MAR-20	R5026972
L2427867-3 GH_FRUSGC_WS_2020-03-12_NP							
Sampled By: JF/LF on 12-MAR-20 @ 12:00							
Matrix: WS							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-3 GH_FRUSGC_WS_2020-03-12_NP							
Sampled By: JF/LF on 12-MAR-20 @ 12:00							
Matrix: WS							
Bicarbonate (HCO3)	248		5.0	mg/L		13-MAR-20	R5026972
Carbonate (CO3)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Hydroxide (OH)	<5.0		5.0	mg/L		13-MAR-20	R5026972
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		19-MAR-20	R5032358
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-MAR-20	R5028407
Total Organic Carbon	<0.50		0.50	mg/L		14-MAR-20	R5026408
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAR-20	17-MAR-20	R5030286
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5028168
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-MAR-20	17-MAR-20	R5028007
Dissolved Mercury Filtration Location	FIELD					17-MAR-20	R5027959
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAR-20	R5028168
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAR-20	17-MAR-20	R5030286
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Barium (Ba)-Dissolved	0.123		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Boron (B)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cadmium (Cd)-Dissolved	0.0207		0.0050	ug/L	17-MAR-20	17-MAR-20	R5030286
Calcium (Ca)-Dissolved	118		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-MAR-20	17-MAR-20	R5030286
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Lithium (Li)-Dissolved	0.0187		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Magnesium (Mg)-Dissolved	49.6		0.10	mg/L	17-MAR-20	17-MAR-20	R5030286
Manganese (Mn)-Dissolved	0.00080		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Molybdenum (Mo)-Dissolved	0.000721		0.000050	mg/L	17-MAR-20	17-MAR-20	R5030286
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	17-MAR-20	R5030286
Potassium (K)-Dissolved	1.11		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Selenium (Se)-Dissolved	52.8		0.050	ug/L	17-MAR-20	17-MAR-20	R5030286
Silicon (Si)-Dissolved	2.00		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Sodium (Na)-Dissolved	2.43		0.050	mg/L	17-MAR-20	17-MAR-20	R5030286
Strontium (Sr)-Dissolved	0.179		0.00020	mg/L	17-MAR-20	17-MAR-20	R5030286
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAR-20	17-MAR-20	R5030286
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAR-20	17-MAR-20	R5030286
Uranium (U)-Dissolved	0.00191		0.000010	mg/L	17-MAR-20	17-MAR-20	R5030286
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAR-20	17-MAR-20	R5030286
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAR-20	17-MAR-20	R5030286
Hardness							
Hardness (as CaCO3)	499		0.50	mg/L		18-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-MAR-20	R5028414
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-3 GH_FRUSGC_WS_2020-03-12_NP							
Sampled By: JF/LF on 12-MAR-20 @ 12:00							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0034		0.0030	mg/L		16-MAR-20	R5028414
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Arsenic (As)-Total	0.00011		0.00010	mg/L		16-MAR-20	R5028414
Barium (Ba)-Total	0.116		0.00010	mg/L		16-MAR-20	R5028414
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-MAR-20	R5028414
Boron (B)-Total	<0.010		0.010	mg/L		16-MAR-20	R5028414
Cadmium (Cd)-Total	0.0216		0.0050	ug/L		16-MAR-20	R5028414
Calcium (Ca)-Total	106		0.050	mg/L		16-MAR-20	R5028414
Chromium (Cr)-Total	0.00011		0.00010	mg/L		16-MAR-20	R5028414
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-MAR-20	R5028414
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-MAR-20	R5028414
Iron (Fe)-Total	<0.010		0.010	mg/L		16-MAR-20	R5028414
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-MAR-20	R5028414
Lithium (Li)-Total	0.0179		0.0010	mg/L		16-MAR-20	R5028414
Magnesium (Mg)-Total	45.3		0.10	mg/L		16-MAR-20	R5028414
Manganese (Mn)-Total	0.00098		0.00010	mg/L		16-MAR-20	R5028414
Molybdenum (Mo)-Total	0.000666		0.000050	mg/L		16-MAR-20	R5028414
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-MAR-20	R5028414
Potassium (K)-Total	1.11		0.050	mg/L		16-MAR-20	R5028414
Selenium (Se)-Total	54.8		0.050	ug/L		16-MAR-20	R5028414
Silicon (Si)-Total	2.19		0.10	mg/L		16-MAR-20	R5028414
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-MAR-20	R5028414
Sodium (Na)-Total	2.45		0.050	mg/L		16-MAR-20	R5028414
Strontium (Sr)-Total	0.157		0.00020	mg/L		16-MAR-20	R5028414
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-MAR-20	R5028414
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-MAR-20	R5028414
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-MAR-20	R5028414
Uranium (U)-Total	0.00210		0.000010	mg/L		16-MAR-20	R5028414
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-MAR-20	R5028414
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-MAR-20	R5028414
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.3		1.0	mg/L		13-MAR-20	R5026966
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	203		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-MAR-20	R5026972
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		13-MAR-20	R5026972
Ammonia, Total (as N)							
Ammonia as N	0.0083		0.0050	mg/L		16-MAR-20	R5028406
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-MAR-20	R5027346
Chloride in Water by IC							
Chloride (Cl)	2.12		0.50	mg/L		13-MAR-20	R5027346
Electrical Conductivity (EC)							
Conductivity (@ 25C)	782		2.0	uS/cm		13-MAR-20	R5026972
Fluoride in Water by IC							
Fluoride (F)	0.139		0.020	mg/L		13-MAR-20	R5027346
Ion Balance Calculation							
Ion Balance	107		-100	%		18-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	3.6			%		18-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2427867-3 GH_FRUSGC_WS_2020-03-12_NP							
Sampled By: JF/LF on 12-MAR-20 @ 12:00							
Matrix: WS							
Ion Balance Calculation							
Anion Sum	9.40			meq/L		18-MAR-20	
Cation Sum	10.1			meq/L		18-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	12.4		0.0050	mg/L		13-MAR-20	R5027346
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-MAR-20	R5027346
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		13-MAR-20	R5025885
Oxidation redution potential by elect.							
ORP	441		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-MAR-20	R5027370
Sulfate in Water by IC							
Sulfate (SO4)	211		0.30	mg/L		13-MAR-20	R5027346
Total Dissolved Solids							
Total Dissolved Solids	622	DLHC	20	mg/L		19-MAR-20	R5033197
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		19-MAR-20	R5033222
Turbidity							
Turbidity	0.11		0.10	NTU		13-MAR-20	R5026107
pH							
pH	8.19		0.10	pH		13-MAR-20	R5026972

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2427867-1	GH_MW-RLP_WG_2020-03-0	SR:COG	-3 GH_WC1_WS_2020-03-02_N - Sample Received, Not Listed on Submitted Chain of Custody / Analytical Request Form

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.*

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2427867

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5026966							
WG3292988-5	LCS							
Acidity (as CaCO3)			103.1		%		85-115	13-MAR-20
WG3292988-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	13-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
Alkalinity, Total (as CaCO3)		346	343		mg/L	0.8	20	13-MAR-20
WG3292991-2	LCS							
Alkalinity, Total (as CaCO3)			103.5		%		85-115	13-MAR-20
WG3292991-5	LCS							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	13-MAR-20
WG3292991-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-MAR-20
WG3292991-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5030286							
WG3293745-2	LCS							
Beryllium (Be)-Dissolved			98.3		%		80-120	17-MAR-20
WG3293745-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5028414							
WG3293007-3	DUP	L2427867-3						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-MAR-20
WG3293007-2	LCS							
Beryllium (Be)-Total			100.8		%		80-120	16-MAR-20
WG3293007-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-MAR-20
BIC-CL								
	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
Bicarbonate (HCO3)		422	419		mg/L	0.8	20	13-MAR-20
WG3292991-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAR-20
BR-L-IC-N-CL								
	Water							

Quality Control Report

Workorder: L2427867

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL	Water							
Batch	R5027346							
WG3293079-6	LCS							
Bromide (Br)			97.6		%		85-115	13-MAR-20
WG3293079-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5026408							
WG3292718-10	LCS							
Dissolved Organic Carbon			98.5		%		80-120	14-MAR-20
WG3292718-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5026408							
WG3292718-10	LCS							
Total Organic Carbon			99.7		%		80-120	14-MAR-20
WG3292718-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
CL-IC-N-CL	Water							
Batch	R5027346							
WG3293079-6	LCS							
Chloride (Cl)			102.5		%		90-110	13-MAR-20
WG3293079-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-20
CO3-CL	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	13-MAR-20
WG3292991-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	13-MAR-20
EC-L-PCT-CL	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
Conductivity (@ 25C)		703	705		uS/cm	0.3	10	13-MAR-20
WG3292991-2	LCS							
Conductivity (@ 25C)			98.3		%		90-110	13-MAR-20
WG3292991-5	LCS							
Conductivity (@ 25C)			99.3		%		90-110	13-MAR-20
WG3292991-1	MB							

Quality Control Report

Workorder: L2427867

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL		Water						
Batch	R5026972							
WG3292991-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAR-20
WG3292991-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAR-20
F-IC-N-CL		Water						
Batch	R5027346							
WG3293079-6 LCS								
Fluoride (F)			107.8		%		90-110	13-MAR-20
WG3293079-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-20
HG-D-CVAA-VA		Water						
Batch	R5028007							
WG3293462-7 DUP		L2427867-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	17-MAR-20
WG3293462-6 LCS								
Mercury (Hg)-Dissolved			98.0		%		80-120	17-MAR-20
WG3293462-5 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	17-MAR-20
WG3293462-8 MS		L2427867-2						
Mercury (Hg)-Dissolved			94.9		%		70-130	17-MAR-20
HG-T-U-CVAF-VA		Water						
Batch	R5028371							
WG3293907-2 LCS								
Mercury (Hg)-Total			87.8		%		80-120	17-MAR-20
WG3293907-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-MAR-20
Batch	R5028407							
WG3293977-2 LCS								
Mercury (Hg)-Total			107.8		%		80-120	17-MAR-20
WG3293977-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-MAR-20
MET-D-CCMS-VA		Water						
Batch	R5030286							
WG3293745-2 LCS								
Aluminum (Al)-Dissolved			99.2		%		80-120	17-MAR-20
Antimony (Sb)-Dissolved			100.4		%		80-120	17-MAR-20
Arsenic (As)-Dissolved			97.7		%		80-120	17-MAR-20

Quality Control Report

Workorder: L2427867

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5030286							
WG3293745-2	LCS							
Barium (Ba)-Dissolved			100.2		%		80-120	17-MAR-20
Bismuth (Bi)-Dissolved			114.5		%		80-120	17-MAR-20
Boron (B)-Dissolved			96.5		%		80-120	17-MAR-20
Cadmium (Cd)-Dissolved			101.4		%		80-120	17-MAR-20
Calcium (Ca)-Dissolved			100.4		%		80-120	17-MAR-20
Chromium (Cr)-Dissolved			100.9		%		80-120	17-MAR-20
Cobalt (Co)-Dissolved			100.0		%		80-120	17-MAR-20
Copper (Cu)-Dissolved			98.5		%		80-120	17-MAR-20
Iron (Fe)-Dissolved			84.6		%		80-120	17-MAR-20
Lead (Pb)-Dissolved			99.6		%		80-120	17-MAR-20
Lithium (Li)-Dissolved			98.5		%		80-120	17-MAR-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	17-MAR-20
Manganese (Mn)-Dissolved			103.1		%		80-120	17-MAR-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	17-MAR-20
Nickel (Ni)-Dissolved			98.9		%		80-120	17-MAR-20
Potassium (K)-Dissolved			98.7		%		80-120	17-MAR-20
Selenium (Se)-Dissolved			93.3		%		80-120	17-MAR-20
Silicon (Si)-Dissolved			95.2		%		60-140	17-MAR-20
Silver (Ag)-Dissolved			99.7		%		80-120	17-MAR-20
Sodium (Na)-Dissolved			110.2		%		80-120	17-MAR-20
Strontium (Sr)-Dissolved			107.7		%		80-120	17-MAR-20
Thallium (Tl)-Dissolved			102.8		%		80-120	17-MAR-20
Tin (Sn)-Dissolved			100.4		%		80-120	17-MAR-20
Titanium (Ti)-Dissolved			92.1		%		80-120	17-MAR-20
Uranium (U)-Dissolved			96.4		%		80-120	17-MAR-20
Vanadium (V)-Dissolved			99.6		%		80-120	17-MAR-20
Zinc (Zn)-Dissolved			98.9		%		80-120	17-MAR-20
WG3293745-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5030286							
WG3293745-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Batch	R5030430							
WG3294940-2	LCS							
Aluminum (Al)-Dissolved			99.2		%		80-120	18-MAR-20
Antimony (Sb)-Dissolved			92.0		%		80-120	18-MAR-20
Arsenic (As)-Dissolved			92.6		%		80-120	18-MAR-20
Barium (Ba)-Dissolved			87.6		%		80-120	18-MAR-20
Bismuth (Bi)-Dissolved			104.6		%		80-120	18-MAR-20
Boron (B)-Dissolved			92.1		%		80-120	18-MAR-20
Cadmium (Cd)-Dissolved			90.7		%		80-120	18-MAR-20
Calcium (Ca)-Dissolved			92.9		%		80-120	18-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5030430							
WG3294940-2	LCS							
Chromium (Cr)-Dissolved			93.3		%		80-120	18-MAR-20
Cobalt (Co)-Dissolved			92.6		%		80-120	18-MAR-20
Copper (Cu)-Dissolved			89.8		%		80-120	18-MAR-20
Iron (Fe)-Dissolved			81.0		%		80-120	18-MAR-20
Lead (Pb)-Dissolved			93.6		%		80-120	18-MAR-20
Lithium (Li)-Dissolved			95.3		%		80-120	18-MAR-20
Magnesium (Mg)-Dissolved			92.7		%		80-120	18-MAR-20
Manganese (Mn)-Dissolved			93.3		%		80-120	18-MAR-20
Molybdenum (Mo)-Dissolved			95.2		%		80-120	18-MAR-20
Nickel (Ni)-Dissolved			95.6		%		80-120	18-MAR-20
Potassium (K)-Dissolved			91.9		%		80-120	18-MAR-20
Selenium (Se)-Dissolved			90.4		%		80-120	18-MAR-20
Silicon (Si)-Dissolved			94.5		%		60-140	18-MAR-20
Silver (Ag)-Dissolved			94.2		%		80-120	18-MAR-20
Sodium (Na)-Dissolved			102.5		%		80-120	18-MAR-20
Strontium (Sr)-Dissolved			97.7		%		80-120	18-MAR-20
Thallium (Tl)-Dissolved			92.2		%		80-120	18-MAR-20
Tin (Sn)-Dissolved			90.9		%		80-120	18-MAR-20
Titanium (Ti)-Dissolved			87.3		%		80-120	18-MAR-20
Uranium (U)-Dissolved			92.0		%		80-120	18-MAR-20
Vanadium (V)-Dissolved			94.6		%		80-120	18-MAR-20
Zinc (Zn)-Dissolved			93.8		%		80-120	18-MAR-20
WG3294940-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5030430							
WG3294940-1	MB	NP						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-MAR-20
WG3294940-4	MS	L2427867-1						
Aluminum (Al)-Dissolved			102.2		%		70-130	18-MAR-20
Antimony (Sb)-Dissolved			96.0		%		70-130	18-MAR-20
Arsenic (As)-Dissolved			100.6		%		70-130	18-MAR-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	18-MAR-20
Bismuth (Bi)-Dissolved			73.1		%		70-130	18-MAR-20
Boron (B)-Dissolved			89.3		%		70-130	18-MAR-20
Cadmium (Cd)-Dissolved			99.9		%		70-130	18-MAR-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-MAR-20
Chromium (Cr)-Dissolved			97.6		%		70-130	18-MAR-20
Cobalt (Co)-Dissolved			97.1		%		70-130	18-MAR-20
Copper (Cu)-Dissolved			93.5		%		70-130	18-MAR-20
Iron (Fe)-Dissolved			94.5		%		70-130	18-MAR-20
Lead (Pb)-Dissolved			93.9		%		70-130	18-MAR-20
Lithium (Li)-Dissolved			95.9		%		70-130	18-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5030430							
WG3294940-4 MS		L2427867-1						
Magnesium (Mg)-Dissolved			N/A	MS-B	%	-		18-MAR-20
Manganese (Mn)-Dissolved			N/A	MS-B	%	-		18-MAR-20
Molybdenum (Mo)-Dissolved			97.4		%		70-130	18-MAR-20
Nickel (Ni)-Dissolved			98.1		%		70-130	18-MAR-20
Potassium (K)-Dissolved			111.5		%		70-130	18-MAR-20
Selenium (Se)-Dissolved			90.5		%		70-130	18-MAR-20
Silicon (Si)-Dissolved			90.4		%		70-130	18-MAR-20
Silver (Ag)-Dissolved			74.6		%		70-130	18-MAR-20
Sodium (Na)-Dissolved			N/A	MS-B	%	-		18-MAR-20
Strontium (Sr)-Dissolved			N/A	MS-B	%	-		18-MAR-20
Thallium (Tl)-Dissolved			91.9		%		70-130	18-MAR-20
Tin (Sn)-Dissolved			97.7		%		70-130	18-MAR-20
Titanium (Ti)-Dissolved			97.2		%		70-130	18-MAR-20
Uranium (U)-Dissolved			95.7		%		70-130	18-MAR-20
Vanadium (V)-Dissolved			100.3		%		70-130	18-MAR-20
Zinc (Zn)-Dissolved			99.2		%		70-130	18-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5028414							
WG3293007-3 DUP		L2427867-3						
Aluminum (Al)-Total		0.0034	<0.0030	RPD-NA	mg/L	N/A	20	16-MAR-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAR-20
Arsenic (As)-Total		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	16-MAR-20
Barium (Ba)-Total		0.116	0.116		mg/L	0.2	20	16-MAR-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-MAR-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-MAR-20
Cadmium (Cd)-Total		0.0000216	0.0000216		mg/L	0.1	20	16-MAR-20
Calcium (Ca)-Total		106	106		mg/L	0.6	20	16-MAR-20
Chromium (Cr)-Total		0.00011	0.00015	J	mg/L	0.00003	0.0002	16-MAR-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAR-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-MAR-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-MAR-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-MAR-20
Lithium (Li)-Total		0.0179	0.0174		mg/L	2.5	20	16-MAR-20
Magnesium (Mg)-Total		45.3	45.6		mg/L	0.7	20	16-MAR-20



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MET-T-CCMS-VA								
	Water							
Batch	R5028414							
WG3293007-3	DUP	L2427867-3						
Manganese (Mn)-Total		0.00098	0.00101		mg/L	2.5	20	16-MAR-20
Molybdenum (Mo)-Total		0.000666	0.000658		mg/L	1.2	20	16-MAR-20
Potassium (K)-Total		1.11	1.10		mg/L	0.9	20	16-MAR-20
Selenium (Se)-Total		0.0548	0.0554		mg/L	1.1	20	16-MAR-20
Silicon (Si)-Total		2.19	2.19		mg/L	0.3	20	16-MAR-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-MAR-20
Sodium (Na)-Total		2.45	2.42		mg/L	1.0	20	16-MAR-20
Strontium (Sr)-Total		0.157	0.157		mg/L	0.1	20	16-MAR-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-MAR-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAR-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-MAR-20
Uranium (U)-Total		0.00210	0.00212		mg/L	1.0	20	16-MAR-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-MAR-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	16-MAR-20
WG3293007-2	LCS							
Aluminum (Al)-Total			105.9		%		80-120	16-MAR-20
Antimony (Sb)-Total			102.5		%		80-120	16-MAR-20
Arsenic (As)-Total			95.3		%		80-120	16-MAR-20
Barium (Ba)-Total			96.9		%		80-120	16-MAR-20
Bismuth (Bi)-Total			100.1		%		80-120	16-MAR-20
Boron (B)-Total			92.8		%		80-120	16-MAR-20
Cadmium (Cd)-Total			97.1		%		80-120	16-MAR-20
Calcium (Ca)-Total			97.1		%		80-120	16-MAR-20
Chromium (Cr)-Total			99.4		%		80-120	16-MAR-20
Cobalt (Co)-Total			97.8		%		80-120	16-MAR-20
Copper (Cu)-Total			94.8		%		80-120	16-MAR-20
Iron (Fe)-Total			100.1		%		80-120	16-MAR-20
Lead (Pb)-Total			100.5		%		80-120	16-MAR-20
Lithium (Li)-Total			97.6		%		80-120	16-MAR-20
Magnesium (Mg)-Total			98.2		%		80-120	16-MAR-20
Manganese (Mn)-Total			98.6		%		80-120	16-MAR-20
Molybdenum (Mo)-Total			96.1		%		80-120	16-MAR-20
Nickel (Ni)-Total			96.8		%		80-120	16-MAR-20
Potassium (K)-Total			100.8		%		80-120	16-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5028414							
WG3293007-2	LCS							
Selenium (Se)-Total			99.0		%		80-120	16-MAR-20
Silicon (Si)-Total			102.5		%		80-120	16-MAR-20
Silver (Ag)-Total			97.2		%		80-120	16-MAR-20
Sodium (Na)-Total			100.3		%		80-120	16-MAR-20
Strontium (Sr)-Total			95.1		%		80-120	16-MAR-20
Thallium (Tl)-Total			101.3		%		80-120	16-MAR-20
Tin (Sn)-Total			101.1		%		80-120	16-MAR-20
Titanium (Ti)-Total			94.4		%		80-120	16-MAR-20
Uranium (U)-Total			100.2		%		80-120	16-MAR-20
Vanadium (V)-Total			97.0		%		80-120	16-MAR-20
Zinc (Zn)-Total			94.9		%		80-120	16-MAR-20
WG3293007-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	16-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5028414							
WG3293007-1	MB							
Sodium (Na)-Total			<0.050		mg/L		0.05	16-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5028406							
WG3293193-2	LCS							
Ammonia as N			99.5		%		85-115	16-MAR-20
WG3293193-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5027346							
WG3293079-6	LCS							
Nitrite (as N)			104.8		%		90-110	13-MAR-20
WG3293079-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-20
NO3-L-IC-N-CL								
	Water							
Batch	R5027346							
WG3293079-6	LCS							
Nitrate (as N)			104.4		%		90-110	13-MAR-20
WG3293079-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-20
OH-CL								
	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	13-MAR-20
WG3292991-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-MAR-20
ORP-CL								
	Water							

Quality Control Report

Workorder: L2427867

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5026330							
WG3292649-9	CRM	CL-ORP						
ORP			220		mV		210-230	14-MAR-20
P-T-L-COL-CL	Water							
Batch	R5027370							
WG3292984-6	LCS							
Phosphorus (P)-Total			99.9		%		80-120	16-MAR-20
WG3292984-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAR-20
PH-CL	Water							
Batch	R5026972							
WG3292991-6	DUP	L2427867-2						
pH		7.72	7.74	J	pH	0.02	0.2	13-MAR-20
WG3292991-2	LCS							
pH			6.99		pH		6.9-7.1	13-MAR-20
WG3292991-5	LCS							
pH			6.99		pH		6.9-7.1	13-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5025885							
WG3292249-6	LCS							
Orthophosphate-Dissolved (as P)			104.8		%		80-120	13-MAR-20
WG3292249-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAR-20
SO4-IC-N-CL	Water							
Batch	R5027346							
WG3293079-6	LCS							
Sulfate (SO4)			107.7		%		90-110	13-MAR-20
WG3293079-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5033197							
WG3295208-2	LCS							
Total Dissolved Solids			99.0		%		85-115	19-MAR-20
WG3295208-1	MB							
Total Dissolved Solids			<10		mg/L		10	19-MAR-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5032358							
WG3295597-2	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	19-MAR-20
WG3295597-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAR-20
TSS-L-CL	Water							
Batch	R5033222							
WG3295207-2	LCS							
Total Suspended Solids			96.6		%		85-115	19-MAR-20
WG3295207-1	MB							
Total Suspended Solids			<1.0		mg/L		1	19-MAR-20
TURBIDITY-CL	Water							
Batch	R5026107							
WG3292312-5	LCS							
Turbidity			104.0		%		85-115	13-MAR-20
WG3292312-4	MB							
Turbidity			<0.10		NTU		0.1	13-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	12-MAR-20 10:56	14-MAR-20 16:45	0.25	54	hours	EHTR-FM
	2	12-MAR-20 13:36	14-MAR-20 16:45	0.25	51	hours	EHTR-FM
	3	12-MAR-20 12:00	14-MAR-20 16:45	0.25	53	hours	EHTR-FM
pH	1	12-MAR-20 10:56	13-MAR-20 14:00	0.25	27	hours	EHTR-FM
	2	12-MAR-20 13:36	13-MAR-20 14:00	0.25	24	hours	EHTR-FM
	3	12-MAR-20 12:00	13-MAR-20 14:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2427867 were received on 13-MAR-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: _____ TURNAROUND TIME: _____ RUSH: _____

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudnyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Lyudnyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	laydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Pouchey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	D.Haque-GHO-Field@teck.com	X	X	X
								PO number	684125			

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	BOD/Colour	EPH	PAH
GH_MW-RLP_WG_2020-03-02_N	GH_MW-RLP	WS		2020/03/12	10:56	G	7	X	X	X	X	X	X	X			
GH_MW-TD_WG_2020-03-02_N	GH_MW-TD	WS		2020/03/12	13:36	G	7	X	X	X	X	X	X	X			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				3/13/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	JF/LF	Mobile #
Regular (default) X			
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

[Handwritten signature]



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 17-MAR-20
Report Date: 18-DEC-20 12:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2428858
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 0
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-1 GH_GA-MW-2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 12:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	264		5.0	mg/L		17-MAR-20	R5028949
Carbonate (CO3)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Dissolved Organic Carbon	0.75		0.50	mg/L		19-MAR-20	R5031108
Hydroxide (OH)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		20-MAR-20	R5033022
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		20-MAR-20	R5033423
Total Organic Carbon	0.64		0.50	mg/L		19-MAR-20	R5031108
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	19-MAR-20	19-MAR-20	R5030756
Dissolved Mercury Filtration Location	FIELD					19-MAR-20	R5030626
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-MAR-20	21-MAR-20	R5033633
Antimony (Sb)-Dissolved	0.00187		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Arsenic (As)-Dissolved	0.00023		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Barium (Ba)-Dissolved	0.0428		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Boron (B)-Dissolved	0.020		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cadmium (Cd)-Dissolved	0.0841		0.0050	ug/L	18-MAR-20	21-MAR-20	R5033633
Calcium (Ca)-Dissolved	177		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cobalt (Co)-Dissolved	0.33		0.10	ug/L	18-MAR-20	21-MAR-20	R5033633
Copper (Cu)-Dissolved	0.00592		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Lithium (Li)-Dissolved	0.0192		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Magnesium (Mg)-Dissolved	51.6		0.10	mg/L	18-MAR-20	21-MAR-20	R5033633
Manganese (Mn)-Dissolved	0.0492		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Molybdenum (Mo)-Dissolved	0.0235		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Nickel (Ni)-Dissolved	0.00556		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Potassium (K)-Dissolved	1.44		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Selenium (Se)-Dissolved	42.9		0.050	ug/L	18-MAR-20	21-MAR-20	R5033633
Silicon (Si)-Dissolved	3.60		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Sodium (Na)-Dissolved	10.5		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Strontium (Sr)-Dissolved	0.642		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Thallium (Tl)-Dissolved	0.000015		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Uranium (U)-Dissolved	0.00758		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Zinc (Zn)-Dissolved	0.0089		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Hardness							
Hardness (as CaCO3)	655		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-MAR-20	R5033294

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-1 GH_GA-MW-2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 12:15							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0057		0.0030	mg/L		20-MAR-20	R5033294
Antimony (Sb)-Total	0.00197		0.00010	mg/L		20-MAR-20	R5033294
Arsenic (As)-Total	0.00025		0.00010	mg/L		20-MAR-20	R5033294
Barium (Ba)-Total	0.0408		0.00010	mg/L		20-MAR-20	R5033294
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Boron (B)-Total	0.019		0.010	mg/L		20-MAR-20	R5033294
Cadmium (Cd)-Total	0.0800		0.0050	ug/L		20-MAR-20	R5033294
Calcium (Ca)-Total	172		0.050	mg/L		20-MAR-20	R5033294
Chromium (Cr)-Total	0.00013		0.00010	mg/L		20-MAR-20	R5033294
Cobalt (Co)-Total	1.23		0.10	ug/L		20-MAR-20	R5033294
Copper (Cu)-Total	0.0705		0.00050	mg/L		20-MAR-20	R5033294
Iron (Fe)-Total	0.022		0.010	mg/L		20-MAR-20	R5033294
Lead (Pb)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Lithium (Li)-Total	0.0179		0.0010	mg/L		20-MAR-20	R5033294
Magnesium (Mg)-Total	50.9		0.10	mg/L		20-MAR-20	R5033294
Manganese (Mn)-Total	0.100		0.00010	mg/L		20-MAR-20	R5033294
Molybdenum (Mo)-Total	0.0233		0.000050	mg/L		20-MAR-20	R5033294
Nickel (Ni)-Total	0.00603		0.00050	mg/L		20-MAR-20	R5033294
Potassium (K)-Total	1.39		0.050	mg/L		20-MAR-20	R5033294
Selenium (Se)-Total	41.4		0.050	ug/L		20-MAR-20	R5033294
Silicon (Si)-Total	3.74		0.10	mg/L		20-MAR-20	R5033294
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Sodium (Na)-Total	10.4		0.050	mg/L		20-MAR-20	R5033294
Strontium (Sr)-Total	0.651		0.00020	mg/L		20-MAR-20	R5033294
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Uranium (U)-Total	0.00729		0.000010	mg/L		20-MAR-20	R5033294
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-MAR-20	R5033294
Zinc (Zn)-Total	0.0089		0.0030	mg/L		20-MAR-20	R5033294
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	12.9		1.0	mg/L		17-MAR-20	R5029406
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	216		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Total (as CaCO3)	216		1.0	mg/L		17-MAR-20	R5028949
Ammonia, Total (as N)							
Ammonia as N	0.0690		0.0050	mg/L		18-MAR-20	R5031036
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-MAR-20	R5028969
Chloride in Water by IC							
Chloride (Cl)	7.2	DLHC	2.5	mg/L		17-MAR-20	R5028969
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1160		2.0	uS/cm		17-MAR-20	R5028949
Fluoride in Water by IC							
Fluoride (F)	0.11	DLHC	0.10	mg/L		17-MAR-20	R5028969
Ion Balance Calculation							
Cation - Anion Balance	-3.3			%		23-MAR-20	
Anion Sum	14.5			meq/L		23-MAR-20	
Cation Sum	13.6			meq/L		23-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-1 GH_GA-MW-2_WG_2020-01-06_NP Sampled By: JF/LF on 16-MAR-20 @ 12:15 Matrix: WG							
Ion Balance Calculation							
Ion Balance	93.7		-100	%		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	15.2	DLHC	0.025	mg/L		17-MAR-20	R5028969
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0609	DLHC	0.0050	mg/L		17-MAR-20	R5028969
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0024		0.0010	mg/L		17-MAR-20	R5028808
Oxidation redution potential by elect.							
ORP	461		-1000	mV		17-MAR-20	R5028891
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-MAR-20	R5031966
Sulfate in Water by IC							
Sulfate (SO4)	427	DLHC	1.5	mg/L		17-MAR-20	R5028969
Total Dissolved Solids							
Total Dissolved Solids	963	DLHC	20	mg/L		23-MAR-20	R5036616
Total Suspended Solids							
Total Suspended Solids	2.3		1.0	mg/L		23-MAR-20	R5036553
Turbidity							
Turbidity	0.89		0.10	NTU		17-MAR-20	R5028509
pH							
pH	7.84		0.10	pH		17-MAR-20	R5028949
L2428858-2 GH_MW-ERSC-1_WG_2020-01-06_NP Sampled By: JF/LF on 16-MAR-20 @ 14:17 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	373		5.0	mg/L		17-MAR-20	R5028949
Carbonate (CO3)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Dissolved Organic Carbon	1.78		0.50	mg/L		19-MAR-20	R5031108
Hydroxide (OH)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Total Kjeldahl Nitrogen	0.114		0.050	mg/L		20-MAR-20	R5033022
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		20-MAR-20	R5033423
Total Organic Carbon	1.56		0.50	mg/L		19-MAR-20	R5031108
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-MAR-20	19-MAR-20	R5030756
Dissolved Mercury Filtration Location	FIELD					19-MAR-20	R5030626
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-MAR-20	21-MAR-20	R5033633
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Arsenic (As)-Dissolved	0.00071		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Barium (Ba)-Dissolved	0.226		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Boron (B)-Dissolved	0.014		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Calcium (Ca)-Dissolved	79.3		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cobalt (Co)-Dissolved	0.50		0.10	ug/L	18-MAR-20	21-MAR-20	R5033633

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-2 GH_MW-ERSC-1_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Iron (Fe)-Dissolved	0.745		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Lithium (Li)-Dissolved	0.0091		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Magnesium (Mg)-Dissolved	23.8		0.10	mg/L	18-MAR-20	21-MAR-20	R5033633
Manganese (Mn)-Dissolved	0.0910		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Molybdenum (Mo)-Dissolved	0.00611		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Nickel (Ni)-Dissolved	0.00308		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Potassium (K)-Dissolved	0.836		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Selenium (Se)-Dissolved	0.841		0.050	ug/L	18-MAR-20	21-MAR-20	R5033633
Silicon (Si)-Dissolved	5.26		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Sodium (Na)-Dissolved	3.68		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Strontium (Sr)-Dissolved	0.335		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Uranium (U)-Dissolved	0.000649		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Vanadium (V)-Dissolved	0.00061		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Hardness							
Hardness (as CaCO3)	296		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-MAR-20	R5033294
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0088		0.0030	mg/L		20-MAR-20	R5033294
Antimony (Sb)-Total	0.00014		0.00010	mg/L		20-MAR-20	R5033294
Arsenic (As)-Total	0.00071		0.00010	mg/L		20-MAR-20	R5033294
Barium (Ba)-Total	0.226		0.00010	mg/L		20-MAR-20	R5033294
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Boron (B)-Total	0.015		0.010	mg/L		20-MAR-20	R5033294
Cadmium (Cd)-Total	0.0159		0.0050	ug/L		20-MAR-20	R5033294
Calcium (Ca)-Total	77.3		0.050	mg/L		20-MAR-20	R5033294
Chromium (Cr)-Total	0.00015		0.00010	mg/L		20-MAR-20	R5033294
Cobalt (Co)-Total	0.51		0.10	ug/L		20-MAR-20	R5033294
Copper (Cu)-Total	0.00086		0.00050	mg/L		20-MAR-20	R5033294
Iron (Fe)-Total	0.866		0.010	mg/L		20-MAR-20	R5033294
Lead (Pb)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Lithium (Li)-Total	0.0087		0.0010	mg/L		20-MAR-20	R5033294
Magnesium (Mg)-Total	23.7		0.10	mg/L		20-MAR-20	R5033294
Manganese (Mn)-Total	0.0900		0.00010	mg/L		20-MAR-20	R5033294
Molybdenum (Mo)-Total	0.00618		0.000050	mg/L		20-MAR-20	R5033294
Nickel (Ni)-Total	0.00345		0.00050	mg/L		20-MAR-20	R5033294
Potassium (K)-Total	0.823		0.050	mg/L		20-MAR-20	R5033294
Selenium (Se)-Total	0.790		0.050	ug/L		20-MAR-20	R5033462
Silicon (Si)-Total	5.40		0.10	mg/L		20-MAR-20	R5033294
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Sodium (Na)-Total	3.87		0.050	mg/L		20-MAR-20	R5033294
Strontium (Sr)-Total	0.342		0.00020	mg/L		20-MAR-20	R5033294
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-2 GH_MW-ERSC-1_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Uranium (U)-Total	0.000638		0.000010	mg/L		20-MAR-20	R5033294
Vanadium (V)-Total	0.00077		0.00050	mg/L		20-MAR-20	R5033294
Zinc (Zn)-Total	0.0050		0.0030	mg/L		20-MAR-20	R5033294
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	16.1		1.0	mg/L		17-MAR-20	R5029406
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	306		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Total (as CaCO3)	306		1.0	mg/L		17-MAR-20	R5028949
Ammonia, Total (as N)							
Ammonia as N	0.0383		0.0050	mg/L		18-MAR-20	R5031036
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAR-20	R5028969
Chloride in Water by IC							
Chloride (Cl)	1.16		0.50	mg/L		17-MAR-20	R5028969
Electrical Conductivity (EC)							
Conductivity (@ 25C)	544		2.0	uS/cm		17-MAR-20	R5028949
Fluoride in Water by IC							
Fluoride (F)	0.269		0.020	mg/L		17-MAR-20	R5028969
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		23-MAR-20	
Anion Sum	6.50			meq/L		23-MAR-20	
Cation Sum	6.14			meq/L		23-MAR-20	
Ion Balance Calculation							
Ion Balance	94.4		-100	%		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0124		0.0050	mg/L		17-MAR-20	R5028969
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAR-20	R5028969
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-MAR-20	R5028808
Oxidation redution potential by elect.							
ORP	419		-1000	mV		17-MAR-20	R5028891
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0058		0.0020	mg/L		19-MAR-20	R5031966
Sulfate in Water by IC							
Sulfate (SO4)	16.3		0.30	mg/L		17-MAR-20	R5028969
Total Dissolved Solids							
Total Dissolved Solids	364	DLHC	20	mg/L		23-MAR-20	R5036616
Total Suspended Solids							
Total Suspended Solids	1.9		1.0	mg/L		23-MAR-20	R5036553
Turbidity							
Turbidity	7.99		0.10	NTU		17-MAR-20	R5028509
pH							
pH	7.84		0.10	pH		17-MAR-20	R5028949
L2428858-3 GH_GWB2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-3 GH_GWB2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Carbonate (CO3)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-MAR-20	R5031108
Hydroxide (OH)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		20-MAR-20	R5033022
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		20-MAR-20	R5033423
Total Organic Carbon	<0.50		0.50	mg/L		19-MAR-20	R5031108
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	19-MAR-20	19-MAR-20	R5030756
Dissolved Mercury Filtration Location	FIELD					19-MAR-20	R5030626
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-MAR-20	21-MAR-20	R5033633
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Boron (B)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	18-MAR-20	21-MAR-20	R5033633
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	18-MAR-20	21-MAR-20	R5033633
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	18-MAR-20	21-MAR-20	R5033633
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Potassium (K)-Dissolved	<0.050		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	18-MAR-20	21-MAR-20	R5033633
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-MAR-20	R5033294
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-3 GH_GWB2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		20-MAR-20	R5033294
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Arsenic (As)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Barium (Ba)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Boron (B)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		20-MAR-20	R5033294
Calcium (Ca)-Total	<0.050		0.050	mg/L		20-MAR-20	R5033294
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Cobalt (Co)-Total	<0.10		0.10	ug/L		20-MAR-20	R5033294
Copper (Cu)-Total	<0.00050		0.00050	mg/L		20-MAR-20	R5033294
Iron (Fe)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Lead (Pb)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Lithium (Li)-Total	<0.0010		0.0010	mg/L		20-MAR-20	R5033294
Magnesium (Mg)-Total	<0.10		0.10	mg/L		20-MAR-20	R5033294
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		20-MAR-20	R5033294
Potassium (K)-Total	<0.050		0.050	mg/L		20-MAR-20	R5033294
Selenium (Se)-Total	<0.050		0.050	ug/L		20-MAR-20	R5033462
Silicon (Si)-Total	<0.10		0.10	mg/L		20-MAR-20	R5033294
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Sodium (Na)-Total	<0.050		0.050	mg/L		20-MAR-20	R5033294
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		20-MAR-20	R5033294
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Uranium (U)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Vanadium (V)-Total	<0.00050		0.00050	mg/L		20-MAR-20	R5033294
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		20-MAR-20	R5033294
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.3		1.0	mg/L		17-MAR-20	R5029406
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		18-MAR-20	R5031036
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAR-20	R5028969
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		17-MAR-20	R5028969
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		17-MAR-20	R5028949
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		17-MAR-20	R5028969
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		23-MAR-20	
Anion Sum	<0.10			meq/L		23-MAR-20	
Cation Sum	<0.10			meq/L		23-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-3 GH_GWB2_WG_2020-01-06_NP Sampled By: JF/LF on 16-MAR-20 @ 14:17 Matrix: WG							
Ion Balance Calculation							
Ion Balance	0.0		-100	%		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		17-MAR-20	R5028969
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAR-20	R5028969
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-MAR-20	R5028808
Oxidation redution potential by elect.							
ORP	419		-1000	mV		17-MAR-20	R5028891
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-MAR-20	R5031966
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		17-MAR-20	R5028969
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		23-MAR-20	R5036616
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-MAR-20	R5036553
Turbidity							
Turbidity	<0.10		0.10	NTU		17-MAR-20	R5028509
pH							
pH	5.81		0.10	pH		17-MAR-20	R5028949
L2428858-4 GH_GWD2_WG_2020-01-06_NP Sampled By: JF/LF on 16-MAR-20 @ 14:17 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	385		5.0	mg/L		17-MAR-20	R5028949
Carbonate (CO3)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Dissolved Organic Carbon	2.78		0.50	mg/L		19-MAR-20	R5031108
Hydroxide (OH)	<5.0		5.0	mg/L		17-MAR-20	R5028949
Total Kjeldahl Nitrogen	0.107		0.050	mg/L		20-MAR-20	R5033022
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		20-MAR-20	R5033423
Total Organic Carbon	2.45		0.50	mg/L		19-MAR-20	R5031108
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-MAR-20	19-MAR-20	R5030756
Dissolved Mercury Filtration Location	FIELD					19-MAR-20	R5030626
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-MAR-20	R5030538
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-MAR-20	21-MAR-20	R5033633
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Arsenic (As)-Dissolved	0.00076		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Barium (Ba)-Dissolved	0.231		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Boron (B)-Dissolved	0.014		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	18-MAR-20	21-MAR-20	R5033633
Calcium (Ca)-Dissolved	82.8		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Cobalt (Co)-Dissolved	0.57		0.10	ug/L	18-MAR-20	21-MAR-20	R5033633

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-4 GH_GWD2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00022		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Iron (Fe)-Dissolved	0.751		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Lithium (Li)-Dissolved	0.0092		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Magnesium (Mg)-Dissolved	24.0		0.10	mg/L	18-MAR-20	21-MAR-20	R5033633
Manganese (Mn)-Dissolved	0.0978		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Molybdenum (Mo)-Dissolved	0.00630		0.000050	mg/L	18-MAR-20	21-MAR-20	R5033633
Nickel (Ni)-Dissolved	0.00324		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Potassium (K)-Dissolved	0.836		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Selenium (Se)-Dissolved	0.911		0.050	ug/L	18-MAR-20	21-MAR-20	R5033633
Silicon (Si)-Dissolved	5.26		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Sodium (Na)-Dissolved	3.71		0.050	mg/L	18-MAR-20	21-MAR-20	R5033633
Strontium (Sr)-Dissolved	0.348		0.00020	mg/L	18-MAR-20	21-MAR-20	R5033633
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-MAR-20	21-MAR-20	R5033633
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-MAR-20	21-MAR-20	R5033633
Uranium (U)-Dissolved	0.000666		0.000010	mg/L	18-MAR-20	21-MAR-20	R5033633
Vanadium (V)-Dissolved	0.00068		0.00050	mg/L	18-MAR-20	21-MAR-20	R5033633
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	18-MAR-20	21-MAR-20	R5033633
Hardness							
Hardness (as CaCO3)	305		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-MAR-20	R5033294
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0086		0.0030	mg/L		20-MAR-20	R5033294
Antimony (Sb)-Total	0.00014		0.00010	mg/L		20-MAR-20	R5033294
Arsenic (As)-Total	0.00068		0.00010	mg/L		20-MAR-20	R5033294
Barium (Ba)-Total	0.217		0.00010	mg/L		20-MAR-20	R5033294
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Boron (B)-Total	0.013		0.010	mg/L		20-MAR-20	R5033294
Cadmium (Cd)-Total	0.0181		0.0050	ug/L		20-MAR-20	R5033294
Calcium (Ca)-Total	76.8		0.050	mg/L		20-MAR-20	R5033294
Chromium (Cr)-Total	0.00018		0.00010	mg/L		20-MAR-20	R5033294
Cobalt (Co)-Total	0.52		0.10	ug/L		20-MAR-20	R5033294
Copper (Cu)-Total	0.00097		0.00050	mg/L		20-MAR-20	R5033294
Iron (Fe)-Total	0.850		0.010	mg/L		20-MAR-20	R5033294
Lead (Pb)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033294
Lithium (Li)-Total	0.0077		0.0010	mg/L		20-MAR-20	R5033294
Magnesium (Mg)-Total	23.7		0.10	mg/L		20-MAR-20	R5033294
Manganese (Mn)-Total	0.0848		0.00010	mg/L		20-MAR-20	R5033294
Molybdenum (Mo)-Total	0.00608		0.000050	mg/L		20-MAR-20	R5033294
Nickel (Ni)-Total	0.00330		0.00050	mg/L		20-MAR-20	R5033294
Potassium (K)-Total	0.808		0.050	mg/L		20-MAR-20	R5033294
Selenium (Se)-Total	0.839		0.050	ug/L		20-MAR-20	R5033462
Silicon (Si)-Total	5.43		0.10	mg/L		20-MAR-20	R5033294
Silver (Ag)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Sodium (Na)-Total	3.57		0.050	mg/L		20-MAR-20	R5033294
Strontium (Sr)-Total	0.326		0.00020	mg/L		20-MAR-20	R5033294
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		20-MAR-20	R5033294
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033294

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2428858-4 GH_GWD2_WG_2020-01-06_NP							
Sampled By: JF/LF on 16-MAR-20 @ 14:17							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033294
Uranium (U)-Total	0.000641		0.000010	mg/L		20-MAR-20	R5033294
Vanadium (V)-Total	0.00073		0.00050	mg/L		20-MAR-20	R5033294
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		20-MAR-20	R5033294
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	15.7		1.0	mg/L		17-MAR-20	R5029406
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	316		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-MAR-20	R5028949
Alkalinity, Total (as CaCO3)	316		1.0	mg/L		17-MAR-20	R5028949
Ammonia, Total (as N)							
Ammonia as N	0.0307		0.0050	mg/L		18-MAR-20	R5031036
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAR-20	R5028969
Chloride in Water by IC							
Chloride (Cl)	1.13		0.50	mg/L		17-MAR-20	R5028969
Electrical Conductivity (EC)							
Conductivity (@ 25C)	534		2.0	uS/cm		17-MAR-20	R5028949
Fluoride in Water by IC							
Fluoride (F)	0.236		0.020	mg/L		17-MAR-20	R5028969
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		23-MAR-20	
Anion Sum	6.69			meq/L		23-MAR-20	
Cation Sum	6.33			meq/L		23-MAR-20	
Ion Balance Calculation							
Ion Balance	94.5		-100	%		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0127		0.0050	mg/L		17-MAR-20	R5028969
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAR-20	R5028969
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-MAR-20	R5028808
Oxidation redution potential by elect.							
ORP	462		-1000	mV		17-MAR-20	R5028891
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0071		0.0020	mg/L		19-MAR-20	R5031966
Sulfate in Water by IC							
Sulfate (SO4)	16.3		0.30	mg/L		17-MAR-20	R5028969
Total Dissolved Solids							
Total Dissolved Solids	346	DLHC	20	mg/L		23-MAR-20	R5036616
Total Suspended Solids							
Total Suspended Solids	1.9		1.0	mg/L		23-MAR-20	R5036553
Turbidity							
Turbidity	8.15		0.10	NTU		17-MAR-20	R5028509
pH							
pH	7.85		0.10	pH		17-MAR-20	R5028949

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

0

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2428858

Report Date: 18-DEC-20

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5029406							
WG3294500-6	DUP	L2428858-4						
Acidity (as CaCO3)		15.7	15.8		mg/L	1.0	20	17-MAR-20
WG3294500-5	LCS							
Acidity (as CaCO3)			104.8		%		85-115	17-MAR-20
WG3294500-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	17-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5028949							
WG3294381-9	DUP	L2428858-2						
Alkalinity, Total (as CaCO3)		306	305		mg/L	0.5	20	17-MAR-20
WG3294381-5	LCS							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	17-MAR-20
WG3294381-8	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	17-MAR-20
WG3294381-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-MAR-20
WG3294381-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5033633							
WG3294930-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	21-MAR-20
WG3294930-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5033294							
WG3295273-2	LCS							
Beryllium (Be)-Total			95.9		%		80-120	20-MAR-20
WG3295273-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	20-MAR-20
BIC-CL								
	Water							
Batch	R5028949							
WG3294381-9	DUP	L2428858-2						
Bicarbonate (HCO3)		373	372		mg/L	0.5	20	17-MAR-20
WG3294381-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-MAR-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5028969							
WG3294413-6	LCS							
Bromide (Br)			103.5		%		85-115	17-MAR-20
WG3294413-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAR-20
C-DIS-ORG-LOW-CL Water								
Batch	R5031108							
WG3295216-12	DUP	L2428858-4						
Dissolved Organic Carbon		2.78	2.61		mg/L	6.4	20	19-MAR-20
WG3295216-10	LCS							
Dissolved Organic Carbon			98.2		%		80-120	19-MAR-20
WG3295216-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-MAR-20
WG3295216-11	MS	L2428858-4						
Dissolved Organic Carbon			93.3		%		70-130	19-MAR-20
C-TOT-ORG-LOW-CL Water								
Batch	R5031108							
WG3295216-12	DUP	L2428858-4						
Total Organic Carbon		2.45	1.53	J	mg/L	0.92	1	19-MAR-20
WG3295216-10	LCS							
Total Organic Carbon			98.9		%		80-120	19-MAR-20
WG3295216-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-MAR-20
WG3295216-11	MS	L2428858-4						
Total Organic Carbon			89.4		%		70-130	19-MAR-20
CL-IC-N-CL Water								
Batch	R5028969							
WG3294413-6	LCS							
Chloride (Cl)			106.4		%		90-110	17-MAR-20
WG3294413-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAR-20
CO3-CL Water								
Batch	R5028949							
WG3294381-9	DUP	L2428858-2						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	17-MAR-20
WG3294381-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	17-MAR-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch R5028949								
WG3294381-9	DUP	L2428858-2						
Conductivity (@ 25C)		544	541		uS/cm	0.6	10	17-MAR-20
WG3294381-5	LCS							
Conductivity (@ 25C)			97.5		%		90-110	17-MAR-20
WG3294381-8	LCS							
Conductivity (@ 25C)			97.8		%		90-110	17-MAR-20
WG3294381-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-MAR-20
WG3294381-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-MAR-20
F-IC-N-CL								
Batch R5028969								
WG3294413-6	LCS							
Fluoride (F)			109.0		%		90-110	17-MAR-20
WG3294413-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-MAR-20
HG-D-CVAA-VA								
Batch R5030756								
WG3294998-6	LCS							
Mercury (Hg)-Dissolved			101.4		%		80-120	19-MAR-20
WG3294998-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-MAR-20
HG-T-U-CVAF-VA								
Batch R5033423								
WG3296341-3	DUP	L2428858-2						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	20-MAR-20
WG3296341-2	LCS							
Mercury (Hg)-Total			103.4		%		80-120	20-MAR-20
WG3296341-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	20-MAR-20
WG3296341-4	MS	L2428858-4						
Mercury (Hg)-Total			97.6		%		70-130	20-MAR-20
MET-D-CCMS-VA								
Batch R5033633								
WG3294930-2	LCS							
Aluminum (Al)-Dissolved			100.9		%		80-120	21-MAR-20
Antimony (Sb)-Dissolved			100.0		%		80-120	21-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5033633							
WG3294930-2	LCS							
Arsenic (As)-Dissolved			98.9		%		80-120	21-MAR-20
Barium (Ba)-Dissolved			103.4		%		80-120	21-MAR-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	21-MAR-20
Boron (B)-Dissolved			102.3		%		80-120	21-MAR-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	21-MAR-20
Calcium (Ca)-Dissolved			104.6		%		80-120	21-MAR-20
Chromium (Cr)-Dissolved			101.4		%		80-120	21-MAR-20
Cobalt (Co)-Dissolved			100.0		%		80-120	21-MAR-20
Copper (Cu)-Dissolved			98.2		%		80-120	21-MAR-20
Iron (Fe)-Dissolved			105.7		%		80-120	21-MAR-20
Lead (Pb)-Dissolved			103.9		%		80-120	21-MAR-20
Lithium (Li)-Dissolved			98.9		%		80-120	21-MAR-20
Magnesium (Mg)-Dissolved			103.8		%		80-120	21-MAR-20
Manganese (Mn)-Dissolved			103.1		%		80-120	21-MAR-20
Molybdenum (Mo)-Dissolved			101.2		%		80-120	21-MAR-20
Nickel (Ni)-Dissolved			99.2		%		80-120	21-MAR-20
Potassium (K)-Dissolved			108.1		%		80-120	21-MAR-20
Selenium (Se)-Dissolved			100.4		%		80-120	21-MAR-20
Silicon (Si)-Dissolved			108.6		%		60-140	21-MAR-20
Silver (Ag)-Dissolved			102.0		%		80-120	21-MAR-20
Sodium (Na)-Dissolved			105.0		%		80-120	21-MAR-20
Strontium (Sr)-Dissolved			102.4		%		80-120	21-MAR-20
Thallium (Tl)-Dissolved			100.2		%		80-120	21-MAR-20
Tin (Sn)-Dissolved			97.2		%		80-120	21-MAR-20
Titanium (Ti)-Dissolved			103.6		%		80-120	21-MAR-20
Uranium (U)-Dissolved			103.2		%		80-120	21-MAR-20
Vanadium (V)-Dissolved			102.2		%		80-120	21-MAR-20
Zinc (Zn)-Dissolved			97.4		%		80-120	21-MAR-20
WG3294930-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5033633							
WG3294930-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5033294							
WG3295273-2	LCS							
Aluminum (Al)-Total			99.8		%		80-120	20-MAR-20
Antimony (Sb)-Total			97.9		%		80-120	20-MAR-20
Arsenic (As)-Total			99.8		%		80-120	20-MAR-20
Barium (Ba)-Total			100.3		%		80-120	20-MAR-20
Bismuth (Bi)-Total			93.3		%		80-120	20-MAR-20
Cadmium (Cd)-Total			98.8		%		80-120	20-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5033294							
WG3295273-2	LCS							
Calcium (Ca)-Total			99.0		%		80-120	20-MAR-20
Chromium (Cr)-Total			98.7		%		80-120	20-MAR-20
Cobalt (Co)-Total			98.3		%		80-120	20-MAR-20
Copper (Cu)-Total			97.2		%		80-120	20-MAR-20
Iron (Fe)-Total			102.3		%		80-120	20-MAR-20
Lead (Pb)-Total			96.6		%		80-120	20-MAR-20
Lithium (Li)-Total			94.8		%		80-120	20-MAR-20
Magnesium (Mg)-Total			97.9		%		80-120	20-MAR-20
Manganese (Mn)-Total			98.6		%		80-120	20-MAR-20
Molybdenum (Mo)-Total			96.3		%		80-120	20-MAR-20
Nickel (Ni)-Total			98.0		%		80-120	20-MAR-20
Potassium (K)-Total			108.8		%		80-120	20-MAR-20
Selenium (Se)-Total			103.2		%		80-120	20-MAR-20
Silicon (Si)-Total			104.4		%		80-120	20-MAR-20
Silver (Ag)-Total			98.6		%		80-120	20-MAR-20
Sodium (Na)-Total			100.3		%		80-120	20-MAR-20
Strontium (Sr)-Total			99.98		%		80-120	20-MAR-20
Thallium (Tl)-Total			92.2		%		80-120	20-MAR-20
Tin (Sn)-Total			97.0		%		80-120	20-MAR-20
Titanium (Ti)-Total			100.5		%		80-120	20-MAR-20
Uranium (U)-Total			94.4		%		80-120	20-MAR-20
Vanadium (V)-Total			98.8		%		80-120	20-MAR-20
Zinc (Zn)-Total			98.8		%		80-120	20-MAR-20
WG3295273-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	20-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	20-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5033294							
WG3295273-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAR-20
Batch	R5033462							
WG3295273-2	LCS							
Boron (B)-Total			101.9		%		80-120	20-MAR-20
WG3295273-1	MB							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAR-20
NH3-L-F-CL		Water						
Batch	R5031036							
WG3294657-6	LCS							
Ammonia as N			100.4		%		85-115	18-MAR-20
WG3294657-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-MAR-20
NO2-L-IC-N-CL		Water						
Batch	R5028969							
WG3294413-6	LCS							
Nitrite (as N)			99.7		%		90-110	17-MAR-20
WG3294413-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5028949							
WG3294381-8	LCS							
pH			6.99		pH		6.9-7.1	17-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5028808							
WG3293935-6	LCS							
Orthophosphate-Dissolved (as P)			110.8		%		80-120	17-MAR-20
WG3293935-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-MAR-20
SO4-IC-N-CL	Water							
Batch	R5028969							
WG3294413-6	LCS							
Sulfate (SO4)			97.9		%		90-110	17-MAR-20
WG3294413-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5036616							
WG3296997-2	LCS							
Total Dissolved Solids			100.7		%		85-115	23-MAR-20
WG3296997-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-MAR-20
TKN-L-F-CL	Water							
Batch	R5033022							
WG3295909-6	LCS							
Total Kjeldahl Nitrogen			95.1		%		75-125	20-MAR-20
WG3295909-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAR-20
TSS-L-CL	Water							
Batch	R5036553							
WG3297110-2	LCS							
Total Suspended Solids			103.3		%		85-115	23-MAR-20
WG3297110-1	MB							
Total Suspended Solids			<1.0		mg/L		1	23-MAR-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5028509							
WG3294116-5	LCS							
Turbidity			105.5		%		85-115	17-MAR-20
WG3294116-4	MB							
Turbidity			<0.10		NTU		0.1	17-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	16-MAR-20 12:15	17-MAR-20 16:00	0.25	28	hours	EHTR-FM
	2	16-MAR-20 14:17	17-MAR-20 16:00	0.25	26	hours	EHTR-FM
	3	16-MAR-20 14:17	17-MAR-20 16:00	0.25	26	hours	EHTR-FM
	4	16-MAR-20 14:17	17-MAR-20 16:00	0.25	26	hours	EHTR-FM
pH							
	1	16-MAR-20 12:15	17-MAR-20 09:00	0.25	21	hours	EHTR-FM
	2	16-MAR-20 14:17	17-MAR-20 09:00	0.25	19	hours	EHTR-FM
	3	16-MAR-20 14:17	17-MAR-20 09:00	0.25	19	hours	EHTR-FM
	4	16-MAR-20 14:17	17-MAR-20 09:00	0.25	19	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2428858 were received on 17-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD		
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Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com				X		
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com		X	X	X		
Postal Code	V0B1H0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada	Email 5:	Brendan.Poachey@teck.com		X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125						

SAMPLE DETAILS

ANALYSIS REQUESTED

Filter: Field, Lab, Field & Lab



L2428858-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	BOD/Colour	EPH	PAH
GH_GA-MW-2_WG_2020-01-06_NP	GH_GA-MW-2	WG		2020/03/16	12:15	G	7	X	X	X	X	X	X	X			
GH_MW-ERSC-1_WG_2020-01-06_NP	GH_MW-ERSC-1	WG		2020/03/16	14:17	G	7	X	X	X	X	X	X	X			
GH_GWB2_WG_2020-01-06_NP	GH_GWB2	WG		2020/03/16	14:17	G	7	X	X	X	X	X	X	X			
GH_GWD2_WG_2020-01-06_NP	GH_GWD2	WG		2020/03/16	14:17	G	7	X	X	X	X	X	X	X			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3/17

0850

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Sampler's Name	JF/LF	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

10°C



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 18-MAR-20
Report Date: 29-DEC-20 12:17 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2429452
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 0
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2429452-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429452-1 GH_MW-UTC-1B_WG_2020-01-06_NP							
Sampled By: JF/LF on 17-MAR-20 @ 12:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	284		5.0	mg/L		18-MAR-20	R5031166
Carbonate (CO3)	<5.0		5.0	mg/L		18-MAR-20	R5031166
Dissolved Organic Carbon	0.88		0.50	mg/L		21-MAR-20	R5033769
Hydroxide (OH)	<5.0		5.0	mg/L		18-MAR-20	R5031166
Total Kjeldahl Nitrogen	0.089		0.050	mg/L		20-MAR-20	R5033022
Mercury (Hg)-Total	0.00225		0.00050	ug/L		24-MAR-20	R5036210
Total Organic Carbon	1.54		0.50	mg/L		21-MAR-20	R5033769
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-MAR-20	21-MAR-20	R5034867
Dissolved Metals Filtration Location	FIELD					20-MAR-20	R5033168
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	19-MAR-20	19-MAR-20	R5030756
Dissolved Mercury Filtration Location	FIELD					19-MAR-20	R5032787
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-MAR-20	R5033168
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-MAR-20	21-MAR-20	R5034867
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Barium (Ba)-Dissolved	0.0759		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-MAR-20	21-MAR-20	R5034867
Boron (B)-Dissolved	0.085		0.010	mg/L	20-MAR-20	21-MAR-20	R5034867
Cadmium (Cd)-Dissolved	0.0104		0.0050	ug/L	20-MAR-20	21-MAR-20	R5034867
Calcium (Ca)-Dissolved	67.2		0.050	mg/L	20-MAR-20	21-MAR-20	R5034867
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-MAR-20	21-MAR-20	R5034867
Copper (Cu)-Dissolved	0.00108		0.00020	mg/L	20-MAR-20	21-MAR-20	R5034867
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-MAR-20	21-MAR-20	R5034867
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-MAR-20	21-MAR-20	R5034867
Lithium (Li)-Dissolved	0.0376		0.0010	mg/L	20-MAR-20	21-MAR-20	R5034867
Magnesium (Mg)-Dissolved	20.4		0.10	mg/L	20-MAR-20	21-MAR-20	R5034867
Manganese (Mn)-Dissolved	0.00858		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Molybdenum (Mo)-Dissolved	0.00138		0.000050	mg/L	20-MAR-20	21-MAR-20	R5034867
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-MAR-20	21-MAR-20	R5034867
Potassium (K)-Dissolved	1.22		0.050	mg/L	20-MAR-20	21-MAR-20	R5034867
Selenium (Se)-Dissolved	1.89		0.050	ug/L	20-MAR-20	21-MAR-20	R5034867
Silicon (Si)-Dissolved	4.18		0.050	mg/L	20-MAR-20	21-MAR-20	R5034867
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-MAR-20	21-MAR-20	R5034867
Sodium (Na)-Dissolved	17.3		0.050	mg/L	20-MAR-20	21-MAR-20	R5034867
Strontium (Sr)-Dissolved	1.11		0.00020	mg/L	20-MAR-20	21-MAR-20	R5034867
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-MAR-20	21-MAR-20	R5034867
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-MAR-20	21-MAR-20	R5034867
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-MAR-20	21-MAR-20	R5034867
Uranium (U)-Dissolved	0.000289		0.000010	mg/L	20-MAR-20	21-MAR-20	R5034867
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-MAR-20	21-MAR-20	R5034867
Zinc (Zn)-Dissolved	0.0041		0.0010	mg/L	20-MAR-20	21-MAR-20	R5034867
Hardness							
Hardness (as CaCO3)	252		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		20-MAR-20	R5033169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429452-1 GH_MW-UTC-1B_WG_2020-01-06_NP							
Sampled By: JF/LF on 17-MAR-20 @ 12:10							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.290		0.0030	mg/L		20-MAR-20	R5033169
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033169
Arsenic (As)-Total	0.00029		0.00010	mg/L		20-MAR-20	R5033169
Barium (Ba)-Total	0.0866		0.00010	mg/L		20-MAR-20	R5033169
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		20-MAR-20	R5033169
Boron (B)-Total	0.087		0.010	mg/L		20-MAR-20	R5033169
Cadmium (Cd)-Total	0.0288		0.0050	ug/L		20-MAR-20	R5033169
Calcium (Ca)-Total	71.9		0.050	mg/L		20-MAR-20	R5033169
Chromium (Cr)-Total	0.00054		0.00010	mg/L		20-MAR-20	R5033169
Cobalt (Co)-Total	0.28		0.10	ug/L		20-MAR-20	R5033169
Copper (Cu)-Total	0.00098		0.00050	mg/L		20-MAR-20	R5033169
Iron (Fe)-Total	1.18		0.010	mg/L		20-MAR-20	R5033169
Lead (Pb)-Total	0.000343		0.000050	mg/L		20-MAR-20	R5033169
Lithium (Li)-Total	0.0408		0.0010	mg/L		20-MAR-20	R5033169
Magnesium (Mg)-Total	22.3		0.10	mg/L		20-MAR-20	R5033169
Manganese (Mn)-Total	0.0286		0.00010	mg/L		20-MAR-20	R5033169
Molybdenum (Mo)-Total	0.00135		0.000050	mg/L		20-MAR-20	R5033169
Nickel (Ni)-Total	0.00109		0.00050	mg/L		20-MAR-20	R5033169
Potassium (K)-Total	1.27		0.050	mg/L		20-MAR-20	R5033169
Selenium (Se)-Total	2.17		0.050	ug/L		20-MAR-20	R5033169
Silicon (Si)-Total	4.82		0.10	mg/L		20-MAR-20	R5033169
Silver (Ag)-Total	0.000037		0.000010	mg/L		20-MAR-20	R5033169
Sodium (Na)-Total	17.5		0.050	mg/L		20-MAR-20	R5033169
Strontium (Sr)-Total	1.11		0.00020	mg/L		20-MAR-20	R5033169
Thallium (Tl)-Total	0.000012		0.000010	mg/L		20-MAR-20	R5033169
Tin (Sn)-Total	<0.00010		0.00010	mg/L		20-MAR-20	R5033169
Titanium (Ti)-Total	<0.010		0.010	mg/L		20-MAR-20	R5033169
Uranium (U)-Total	0.000316		0.000010	mg/L		20-MAR-20	R5033169
Vanadium (V)-Total	0.00090		0.00050	mg/L		20-MAR-20	R5033169
Zinc (Zn)-Total	0.0112		0.0030	mg/L		20-MAR-20	R5033169
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.2		1.0	mg/L		18-MAR-20	R5031046
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	233		1.0	mg/L		18-MAR-20	R5031166
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-MAR-20	R5031166
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-MAR-20	R5031166
Alkalinity, Total (as CaCO3)	233		1.0	mg/L		18-MAR-20	R5031166
Ammonia, Total (as N)							
Ammonia as N	0.0095		0.0050	mg/L		19-MAR-20	R5033178
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		18-MAR-20	R5031748
Chloride in Water by IC							
Chloride (Cl)	13.4		0.50	mg/L		18-MAR-20	R5031748
Electrical Conductivity (EC)							
Conductivity (@ 25C)	506		2.0	uS/cm		18-MAR-20	R5031166
Fluoride in Water by IC							
Fluoride (F)	0.218		0.020	mg/L		18-MAR-20	R5031748
Ion Balance Calculation							
Cation - Anion Balance	-1.0			%		23-MAR-20	
Anion Sum	5.94			meq/L		23-MAR-20	
Cation Sum	5.82			meq/L		23-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429452-1 GH_MW-UTC-1B_WG_2020-01-06_NP							
Sampled By: JF/LF on 17-MAR-20 @ 12:10							
Matrix: WG							
Ion Balance Calculation							
Ion Balance	98.0		-100	%		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0330		0.0050	mg/L		18-MAR-20	R5031748
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		18-MAR-20	R5031748
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		18-MAR-20	R5031028
Oxidation redution potential by elect.							
ORP	328		-1000	mV		20-MAR-20	R5033560
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0179		0.0020	mg/L		23-MAR-20	R5034104
Sulfate in Water by IC							
Sulfate (SO4)	42.9		0.30	mg/L		18-MAR-20	R5031748
Total Dissolved Solids							
Total Dissolved Solids	319	DLHC	20	mg/L		24-MAR-20	R5039028
Total Suspended Solids							
Total Suspended Solids	18.6		1.0	mg/L		24-MAR-20	R5038827
Turbidity							
Turbidity	16.2		0.10	NTU		19-MAR-20	R5032967
pH							
pH	8.03		0.10	pH		18-MAR-20	R5031166

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

0

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2429452

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5031046							
WG3295172-11	LCS							
Acidity (as CaCO3)			104.1		%		85-115	18-MAR-20
WG3295172-10	MB							
Acidity (as CaCO3)			1.0		mg/L		2	18-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5031166							
WG3295230-11	LCS							
Alkalinity, Total (as CaCO3)			99.3		%		85-115	18-MAR-20
WG3295230-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5034867							
WG3296068-2	LCS							
Beryllium (Be)-Dissolved			99.4		%		80-120	21-MAR-20
WG3296068-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5033169							
WG3295698-2	LCS							
Beryllium (Be)-Total			94.0		%		80-120	20-MAR-20
WG3295698-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	20-MAR-20
BIC-CL								
	Water							
Batch	R5031166							
WG3295230-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Bromide (Br)			<0.050		mg/L	N/A	20	18-MAR-20
WG3295461-5	LCS							
Bromide (Br)			103.5		%		85-115	18-MAR-20
WG3295461-4	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-MAR-20
WG3295461-8	MS	L2429452-1						
Bromide (Br)			112.6		%		75-125	18-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5033769							
WG3296775-2	LCS							
Dissolved Organic Carbon			117.1		%		80-120	21-MAR-20
WG3296775-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-MAR-20
C-TOT-ORG-LOW-CL Water								
Batch	R5033769							
WG3296775-2	LCS							
Total Organic Carbon			115.0		%		80-120	21-MAR-20
WG3296775-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-MAR-20
CL-IC-N-CL Water								
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Chloride (Cl)		13.4	13.3		mg/L	0.5	20	18-MAR-20
WG3295461-5	LCS							
Chloride (Cl)			105.7		%		90-110	18-MAR-20
WG3295461-4	MB							
Chloride (Cl)			<0.50		mg/L		0.5	18-MAR-20
WG3295461-8	MS	L2429452-1						
Chloride (Cl)			119.2		%		75-125	18-MAR-20
CO3-CL Water								
Batch	R5031166							
WG3295230-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	18-MAR-20
EC-L-PCT-CL Water								
Batch	R5031166							
WG3295230-11	LCS							
Conductivity (@ 25C)			99.3		%		90-110	18-MAR-20
WG3295230-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-MAR-20
F-IC-N-CL Water								
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Fluoride (F)		0.218	0.204		mg/L	6.8	20	18-MAR-20
WG3295461-5	LCS							
Fluoride (F)			109.8		%		90-110	18-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch R5031748								
WG3295461-4 MB								
Fluoride (F)			<0.020		mg/L		0.02	18-MAR-20
HG-D-CVAA-VA								
Water								
Batch R5030756								
WG3295706-6 LCS								
Mercury (Hg)-Dissolved			99.9		%		80-120	19-MAR-20
WG3295706-5 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	19-MAR-20
HG-T-U-CVAF-VA								
Water								
Batch R5036210								
WG3298067-2 LCS								
Mercury (Hg)-Total			97.6		%		80-120	24-MAR-20
WG3298067-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-MAR-20
MET-D-CCMS-VA								
Water								
Batch R5034867								
WG3296068-2 LCS								
Aluminum (Al)-Dissolved			99.6		%		80-120	21-MAR-20
Antimony (Sb)-Dissolved			99.0		%		80-120	21-MAR-20
Arsenic (As)-Dissolved			96.3		%		80-120	21-MAR-20
Barium (Ba)-Dissolved			98.7		%		80-120	21-MAR-20
Bismuth (Bi)-Dissolved			93.2		%		80-120	21-MAR-20
Boron (B)-Dissolved			99.8		%		80-120	21-MAR-20
Cadmium (Cd)-Dissolved			99.6		%		80-120	21-MAR-20
Calcium (Ca)-Dissolved			98.6		%		80-120	21-MAR-20
Chromium (Cr)-Dissolved			101.7		%		80-120	21-MAR-20
Cobalt (Co)-Dissolved			98.3		%		80-120	21-MAR-20
Copper (Cu)-Dissolved			97.2		%		80-120	21-MAR-20
Iron (Fe)-Dissolved			99.2		%		80-120	21-MAR-20
Lead (Pb)-Dissolved			94.7		%		80-120	21-MAR-20
Lithium (Li)-Dissolved			95.0		%		80-120	21-MAR-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	21-MAR-20
Manganese (Mn)-Dissolved			99.9		%		80-120	21-MAR-20
Molybdenum (Mo)-Dissolved			96.9		%		80-120	21-MAR-20
Nickel (Ni)-Dissolved			98.4		%		80-120	21-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5034867							
WG3296068-2	LCS							
Potassium (K)-Dissolved			101.6		%		80-120	21-MAR-20
Selenium (Se)-Dissolved			99.4		%		80-120	21-MAR-20
Silicon (Si)-Dissolved			100.3		%		60-140	21-MAR-20
Silver (Ag)-Dissolved			92.9		%		80-120	21-MAR-20
Sodium (Na)-Dissolved			105.9		%		80-120	21-MAR-20
Strontium (Sr)-Dissolved			105.3		%		80-120	21-MAR-20
Thallium (Tl)-Dissolved			96.1		%		80-120	21-MAR-20
Tin (Sn)-Dissolved			95.2		%		80-120	21-MAR-20
Titanium (Ti)-Dissolved			95.7		%		80-120	21-MAR-20
Uranium (U)-Dissolved			92.3		%		80-120	21-MAR-20
Vanadium (V)-Dissolved			101.3		%		80-120	21-MAR-20
Zinc (Zn)-Dissolved			108.2		%		80-120	21-MAR-20
WG3296068-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5034867							
WG3296068-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5033169							
WG3295698-2	LCS							
Aluminum (Al)-Total			105.9		%		80-120	20-MAR-20
Antimony (Sb)-Total			99.8		%		80-120	20-MAR-20
Arsenic (As)-Total			99.7		%		80-120	20-MAR-20
Barium (Ba)-Total			98.6		%		80-120	20-MAR-20
Bismuth (Bi)-Total			104.9		%		80-120	20-MAR-20
Boron (B)-Total			96.8		%		80-120	20-MAR-20
Cadmium (Cd)-Total			95.8		%		80-120	20-MAR-20
Calcium (Ca)-Total			102.5		%		80-120	20-MAR-20
Chromium (Cr)-Total			100.4		%		80-120	20-MAR-20
Cobalt (Co)-Total			99.3		%		80-120	20-MAR-20
Copper (Cu)-Total			98.4		%		80-120	20-MAR-20
Iron (Fe)-Total			95.2		%		80-120	20-MAR-20
Lead (Pb)-Total			102.8		%		80-120	20-MAR-20
Lithium (Li)-Total			94.0		%		80-120	20-MAR-20
Magnesium (Mg)-Total			101.5		%		80-120	20-MAR-20
Manganese (Mn)-Total			99.5		%		80-120	20-MAR-20
Molybdenum (Mo)-Total			99.3		%		80-120	20-MAR-20
Nickel (Ni)-Total			99.4		%		80-120	20-MAR-20
Potassium (K)-Total			99.3		%		80-120	20-MAR-20
Selenium (Se)-Total			102.7		%		80-120	20-MAR-20
Silicon (Si)-Total			102.7		%		80-120	20-MAR-20
Silver (Ag)-Total			91.4		%		80-120	20-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5033169							
WG3295698-2	LCS							
Sodium (Na)-Total			105.9		%		80-120	20-MAR-20
Strontium (Sr)-Total			97.1		%		80-120	20-MAR-20
Thallium (Tl)-Total			97.6		%		80-120	20-MAR-20
Tin (Sn)-Total			95.1		%		80-120	20-MAR-20
Titanium (Ti)-Total			95.3		%		80-120	20-MAR-20
Uranium (U)-Total			97.9		%		80-120	20-MAR-20
Vanadium (V)-Total			102.0		%		80-120	20-MAR-20
Zinc (Zn)-Total			99.4		%		80-120	20-MAR-20
WG3295698-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	20-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	20-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5033169							
WG3295698-1	MB							
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5033178							
WG3295629-6	LCS							
Ammonia as N			98.6		%		85-115	19-MAR-20
WG3295629-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
WG3295461-5	LCS							
Nitrite (as N)			103.1		%		90-110	18-MAR-20
WG3295461-4	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-MAR-20
WG3295461-8	MS	L2429452-1						
Nitrite (as N)			118.1		%		75-125	18-MAR-20
NO3-L-IC-N-CL								
	Water							
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Nitrate (as N)		0.0330	0.0256	J	mg/L	0.0074	0.01	18-MAR-20
WG3295461-5	LCS							
Nitrate (as N)			107.0		%		90-110	18-MAR-20
WG3295461-4	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-MAR-20
WG3295461-8	MS	L2429452-1						
Nitrate (as N)			120.7		%		75-125	18-MAR-20
OH-CL								
	Water							
Batch	R5031166							
WG3295230-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-MAR-20



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ORP-CL	Water							
Batch	R5033560							
WG3296382-1	CRM	CL-ORP						
ORP			226		mV		210-230	20-MAR-20
P-T-L-COL-CL	Water							
Batch	R5034104							
WG3296972-6	LCS							
Phosphorus (P)-Total			107.5		%		80-120	23-MAR-20
WG3296972-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-MAR-20
PH-CL	Water							
Batch	R5031166							
WG3295230-11	LCS							
pH			7.00		pH		6.9-7.1	18-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5031028							
WG3294719-15	LCS							
Orthophosphate-Dissolved (as P)			109.0		%		80-120	18-MAR-20
WG3294719-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-MAR-20
SO4-IC-N-CL	Water							
Batch	R5031748							
WG3295461-6	DUP	L2429452-1						
Sulfate (SO4)		42.9	42.7		mg/L	0.4	20	18-MAR-20
WG3295461-5	LCS							
Sulfate (SO4)			105.1		%		90-110	18-MAR-20
WG3295461-4	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-MAR-20
WG3295461-8	MS	L2429452-1						
Sulfate (SO4)			117.0		%		75-125	18-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5039028							
WG3297653-2	LCS							
Total Dissolved Solids			103.4		%		85-115	24-MAR-20
WG3297653-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-MAR-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5033022							
WG3295909-14 LCS								
Total Kjeldahl Nitrogen			88.5		%		75-125	20-MAR-20
WG3295909-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAR-20
TSS-L-CL	Water							
Batch	R5038827							
WG3297639-2 LCS								
Total Suspended Solids			92.9		%		85-115	24-MAR-20
WG3297639-1 MB								
Total Suspended Solids			<1.0		mg/L		1	24-MAR-20
TURBIDITY-CL	Water							
Batch	R5032967							
WG3295687-5 LCS								
Turbidity			104.0		%		85-115	19-MAR-20
WG3295687-4 MB								
Turbidity			<0.10		NTU		0.1	19-MAR-20

Quality Control Report

Workorder: L2429452

Report Date: 29-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2429452

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	17-MAR-20 12:10	20-MAR-20 09:45	0.25	70	hours	EHTR-FM
pH	1	17-MAR-20 12:10	18-MAR-20 09:00	0.25	21	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2429452 were received on 18-MAR-20 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				RUSH:			
PROJECT/CLIENT INFO		LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation	Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Leigh Stickney	Lab Contact	Lyudmyla Shvets		Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000	Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC		Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada		Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048	Postal Code	T1Y 7B5		Email 6:	DL-Equits-GHQ-Field@teck.com	X	X	X
		Phone Number	403 407 1794		PO number	684125			

SAMPLE DETAILS Filtered: Field, Lab, Field & Lab, N/A

 L2429452-COFC	Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED							BOD/Colour	EPH	PAH						
									ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC									
GH_MW-UTC-IB_WG_2020-01-06_NP	GH_MW-UTC-IB	WG			2020/03/17	12:10	G	7	Y	Y	N	Y	N	N	H2SO4									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	REINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/18/20

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Sampler's Name	JF/LF
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Mobile #
			Date/Time

6



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 19-MAR-20
Report Date: 18-DEC-20 12:48 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2429916
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: GHO_QTR_GW_2020-01-
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429916-1 GH_MW-GHC-1A_WG_2020-01-06_NP							
Sampled By: CLIENT on 18-MAR-20 @ 15:20							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	364		5.0	mg/L		19-MAR-20	R5032912
Carbonate (CO3)	<5.0		5.0	mg/L		19-MAR-20	R5032912
Dissolved Organic Carbon	1.53		0.50	mg/L		23-MAR-20	R5035086
Hydroxide (OH)	<5.0		5.0	mg/L		19-MAR-20	R5032912
Total Kjeldahl Nitrogen	0.063		0.050	mg/L		25-MAR-20	R5038207
Mercury (Hg)-Total	0.00059		0.00050	ug/L		24-MAR-20	R5036227
Total Organic Carbon	1.35		0.50	mg/L		23-MAR-20	R5035086
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAR-20	23-MAR-20	R5034671
Dissolved Metals Filtration Location	FIELD					22-MAR-20	R5033813
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	23-MAR-20	R5034968
Dissolved Mercury Filtration Location	FIELD					23-MAR-20	R5033992
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-MAR-20	R5033813
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAR-20	24-MAR-20	R5036747
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Barium (Ba)-Dissolved	0.0862		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Boron (B)-Dissolved	0.029		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Cadmium (Cd)-Dissolved	0.0255		0.0050	ug/L	22-MAR-20	23-MAR-20	R5034671
Calcium (Ca)-Dissolved	154		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-MAR-20	23-MAR-20	R5034671
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	22-MAR-20	23-MAR-20	R5034671
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Lithium (Li)-Dissolved	0.0149		0.0010	mg/L	22-MAR-20	23-MAR-20	R5034671
Magnesium (Mg)-Dissolved	59.2		0.10	mg/L	22-MAR-20	23-MAR-20	R5034671
Manganese (Mn)-Dissolved	0.00011		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Molybdenum (Mo)-Dissolved	0.000693		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Nickel (Ni)-Dissolved	0.00085		0.00050	mg/L	22-MAR-20	23-MAR-20	R5034671
Potassium (K)-Dissolved	1.58		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Selenium (Se)-Dissolved	3.62		0.050	ug/L	22-MAR-20	23-MAR-20	R5034671
Silicon (Si)-Dissolved	4.54		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Sodium (Na)-Dissolved	5.18		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Strontium (Sr)-Dissolved	0.522		0.00020	mg/L	22-MAR-20	23-MAR-20	R5034671
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Uranium (U)-Dissolved	0.00259		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAR-20	23-MAR-20	R5034671
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	22-MAR-20	23-MAR-20	R5034671
Hardness							
Hardness (as CaCO3)	628		0.50	mg/L		24-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-MAR-20	R5034809

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429916-1 GH_MW-GHC-1A_WG_2020-01-06_NP							
Sampled By: CLIENT on 18-MAR-20 @ 15:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0425		0.0030	mg/L		23-MAR-20	R5034809
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Arsenic (As)-Total	0.00018		0.00010	mg/L		23-MAR-20	R5034809
Barium (Ba)-Total	0.0844		0.00010	mg/L		23-MAR-20	R5034809
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Boron (B)-Total	0.035		0.010	mg/L		23-MAR-20	R5034809
Cadmium (Cd)-Total	0.0263		0.0050	ug/L		23-MAR-20	R5034809
Calcium (Ca)-Total	158		0.050	mg/L		23-MAR-20	R5034809
Chromium (Cr)-Total	0.00046		0.00010	mg/L		23-MAR-20	R5034809
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-MAR-20	R5034809
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Iron (Fe)-Total	0.342		0.010	mg/L		23-MAR-20	R5034809
Lead (Pb)-Total	0.000063		0.000050	mg/L		23-MAR-20	R5034809
Lithium (Li)-Total	0.0170		0.0010	mg/L		23-MAR-20	R5034809
Magnesium (Mg)-Total	56.8		0.10	mg/L		23-MAR-20	R5034809
Manganese (Mn)-Total	0.00200		0.00010	mg/L		23-MAR-20	R5034809
Molybdenum (Mo)-Total	0.000731		0.000050	mg/L		23-MAR-20	R5034809
Nickel (Ni)-Total	0.00125		0.00050	mg/L		23-MAR-20	R5034809
Potassium (K)-Total	1.45		0.050	mg/L		23-MAR-20	R5034809
Selenium (Se)-Total	3.56		0.050	ug/L		23-MAR-20	R5034809
Silicon (Si)-Total	4.78		0.10	mg/L		23-MAR-20	R5034809
Silver (Ag)-Total	0.000107		0.000010	mg/L		23-MAR-20	R5034809
Sodium (Na)-Total	5.08		0.050	mg/L		23-MAR-20	R5034809
Strontium (Sr)-Total	0.489		0.00020	mg/L		23-MAR-20	R5034809
Thallium (Tl)-Total	0.000027		0.000010	mg/L		23-MAR-20	R5034809
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Uranium (U)-Total	0.00302		0.000010	mg/L		23-MAR-20	R5034809
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-MAR-20	R5034809
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	16.9		1.0	mg/L		19-MAR-20	R5032942
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	298		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Total (as CaCO3)	298		1.0	mg/L		19-MAR-20	R5032912
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		20-MAR-20	R5033279
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		19-MAR-20	R5033069
Chloride in Water by IC							
Chloride (Cl)	3.4	DLHC	2.5	mg/L		19-MAR-20	R5033069
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1060		2.0	uS/cm		19-MAR-20	R5032912
Fluoride in Water by IC							
Fluoride (F)	0.53	DLHC	0.10	mg/L		19-MAR-20	R5033069
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		24-MAR-20	
Anion Sum	13.6			meq/L		24-MAR-20	
Cation Sum	12.8			meq/L		24-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429916-1 GH_MW-GHC-1A_WG_2020-01-06_NP Sampled By: CLIENT on 18-MAR-20 @ 15:20 Matrix: WG							
Ion Balance Calculation							
Ion Balance	94.4		-100	%		24-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.081	DLHC	0.025	mg/L		19-MAR-20	R5033069
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		19-MAR-20	R5033069
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0042		0.0010	mg/L		19-MAR-20	R5032901
Oxidation redution potential by elect.							
ORP	497		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0152		0.0020	mg/L		24-MAR-20	R5036209
Sulfate in Water by IC							
Sulfate (SO4)	360	DLHC	1.5	mg/L		19-MAR-20	R5033069
Total Dissolved Solids							
Total Dissolved Solids	855	DLHC	20	mg/L		25-MAR-20	R5041109
Total Suspended Solids							
Total Suspended Solids	6.6		1.0	mg/L		25-MAR-20	R5040927
Turbidity							
Turbidity	5.87		0.10	NTU		20-MAR-20	R5033570
pH							
pH	7.86		0.10	pH		19-MAR-20	R5032912
L2429916-2 GH_MW-GHC-1B_WG_2020-01-06_NP Sampled By: CLIENT on 18-MAR-20 @ 13:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	298		5.0	mg/L		19-MAR-20	R5032912
Carbonate (CO3)	<5.0		5.0	mg/L		19-MAR-20	R5032912
Dissolved Organic Carbon	1.87		0.50	mg/L		23-MAR-20	R5035086
Hydroxide (OH)	<5.0		5.0	mg/L		19-MAR-20	R5032912
Total Kjeldahl Nitrogen	0.231		0.050	mg/L		25-MAR-20	R5038207
Mercury (Hg)-Total	0.00364		0.00050	ug/L		24-MAR-20	R5036227
Total Organic Carbon	2.52		0.50	mg/L		23-MAR-20	R5035086
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAR-20	23-MAR-20	R5034671
Dissolved Metals Filtration Location	FIELD					22-MAR-20	R5033813
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-MAR-20	23-MAR-20	R5034968
Dissolved Mercury Filtration Location	FIELD					23-MAR-20	R5033992
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-MAR-20	R5033813
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAR-20	24-MAR-20	R5036747
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Arsenic (As)-Dissolved	0.00083		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Barium (Ba)-Dissolved	0.0317		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Boron (B)-Dissolved	0.031		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Cadmium (Cd)-Dissolved	0.0235		0.0050	ug/L	22-MAR-20	23-MAR-20	R5034671
Calcium (Ca)-Dissolved	265		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Cobalt (Co)-Dissolved	0.23		0.10	ug/L	22-MAR-20	23-MAR-20	R5034671

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429916-2 GH_MW-GHC-1B_WG_2020-01-06_NP							
Sampled By: CLIENT on 18-MAR-20 @ 13:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00033		0.00020	mg/L	22-MAR-20	23-MAR-20	R5034671
Iron (Fe)-Dissolved	0.471		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Lithium (Li)-Dissolved	0.0180		0.0010	mg/L	22-MAR-20	23-MAR-20	R5034671
Magnesium (Mg)-Dissolved	64.4		0.10	mg/L	22-MAR-20	23-MAR-20	R5034671
Manganese (Mn)-Dissolved	0.0971		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Molybdenum (Mo)-Dissolved	0.000908		0.000050	mg/L	22-MAR-20	23-MAR-20	R5034671
Nickel (Ni)-Dissolved	0.00133		0.00050	mg/L	22-MAR-20	23-MAR-20	R5034671
Potassium (K)-Dissolved	2.06		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Selenium (Se)-Dissolved	0.433		0.050	ug/L	22-MAR-20	23-MAR-20	R5034671
Silicon (Si)-Dissolved	5.43		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Sodium (Na)-Dissolved	4.52		0.050	mg/L	22-MAR-20	23-MAR-20	R5034671
Strontium (Sr)-Dissolved	0.787		0.00020	mg/L	22-MAR-20	23-MAR-20	R5034671
Thallium (Tl)-Dissolved	0.000012		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-MAR-20	23-MAR-20	R5034671
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAR-20	23-MAR-20	R5034671
Uranium (U)-Dissolved	0.00154		0.000010	mg/L	22-MAR-20	23-MAR-20	R5034671
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAR-20	23-MAR-20	R5034671
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	22-MAR-20	23-MAR-20	R5034671
Hardness							
Hardness (as CaCO3)	928		0.50	mg/L		24-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.023		0.020	ug/L		23-MAR-20	R5034809
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.360		0.0030	mg/L		23-MAR-20	R5034809
Antimony (Sb)-Total	0.00011		0.00010	mg/L		23-MAR-20	R5034809
Arsenic (As)-Total	0.00138		0.00010	mg/L		23-MAR-20	R5034809
Barium (Ba)-Total	0.0396		0.00010	mg/L		23-MAR-20	R5034809
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Boron (B)-Total	0.033		0.010	mg/L		23-MAR-20	R5034809
Cadmium (Cd)-Total	0.0452		0.0050	ug/L		23-MAR-20	R5034809
Calcium (Ca)-Total	243		0.050	mg/L		23-MAR-20	R5034809
Chromium (Cr)-Total	0.00064		0.00010	mg/L		23-MAR-20	R5034809
Cobalt (Co)-Total	0.52		0.10	ug/L		23-MAR-20	R5034809
Copper (Cu)-Total	0.00111		0.00050	mg/L		23-MAR-20	R5034809
Iron (Fe)-Total	1.56		0.010	mg/L		23-MAR-20	R5034809
Lead (Pb)-Total	0.000446		0.000050	mg/L		23-MAR-20	R5034809
Lithium (Li)-Total	0.0180		0.0010	mg/L		23-MAR-20	R5034809
Magnesium (Mg)-Total	59.2		0.10	mg/L		23-MAR-20	R5034809
Manganese (Mn)-Total	0.116		0.00010	mg/L		23-MAR-20	R5034809
Molybdenum (Mo)-Total	0.000924		0.000050	mg/L		23-MAR-20	R5034809
Nickel (Ni)-Total	0.00231		0.00050	mg/L		23-MAR-20	R5034809
Potassium (K)-Total	1.99		0.050	mg/L		23-MAR-20	R5034809
Selenium (Se)-Total	0.574		0.050	ug/L		23-MAR-20	R5034809
Silicon (Si)-Total	5.88		0.10	mg/L		23-MAR-20	R5034809
Silver (Ag)-Total	0.000012		0.000010	mg/L		23-MAR-20	R5034809
Sodium (Na)-Total	4.36		0.050	mg/L		23-MAR-20	R5034809
Strontium (Sr)-Total	0.700		0.00020	mg/L		23-MAR-20	R5034809
Thallium (Tl)-Total	0.000023		0.000010	mg/L		23-MAR-20	R5034809
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429916-2 GH_MW-GHC-1B_WG_2020-01-06_NP							
Sampled By: CLIENT on 18-MAR-20 @ 13:50							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Uranium (U)-Total	0.00158		0.000010	mg/L		23-MAR-20	R5034809
Vanadium (V)-Total	0.00143		0.00050	mg/L		23-MAR-20	R5034809
Zinc (Zn)-Total	0.0056		0.0030	mg/L		23-MAR-20	R5034809
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	19.0		1.0	mg/L		19-MAR-20	R5032942
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	244		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-MAR-20	R5032912
Alkalinity, Total (as CaCO3)	244		1.0	mg/L		19-MAR-20	R5032912
Ammonia, Total (as N)							
Ammonia as N	0.113		0.0050	mg/L		20-MAR-20	R5033279
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		19-MAR-20	R5033069
Chloride in Water by IC							
Chloride (Cl)	9.6	DLHC	2.5	mg/L		19-MAR-20	R5033069
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1400		2.0	uS/cm		19-MAR-20	R5032912
Fluoride in Water by IC							
Fluoride (F)	0.11	DLHC	0.10	mg/L		19-MAR-20	R5033069
Ion Balance Calculation							
Ion Balance	103		-100	%		24-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	1.2			%		24-MAR-20	
Anion Sum	18.4			meq/L		24-MAR-20	
Cation Sum	18.8			meq/L		24-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		19-MAR-20	R5033069
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		19-MAR-20	R5033069
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		19-MAR-20	R5032901
Oxidation redution potential by elect.							
ORP	490		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0292		0.0020	mg/L		24-MAR-20	R5036209
Sulfate in Water by IC							
Sulfate (SO4)	634	DLHC	1.5	mg/L		19-MAR-20	R5033069
Total Dissolved Solids							
Total Dissolved Solids	1260	DLHC	20	mg/L		25-MAR-20	R5041109
Total Suspended Solids							
Total Suspended Solids	25.8		1.0	mg/L		25-MAR-20	R5040927
Turbidity							
Turbidity	21.1		0.10	NTU		20-MAR-20	R5033570
pH							
pH	7.81		0.10	pH		19-MAR-20	R5032912

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GHO_QTR_GW_2020-01-

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2429916

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5032942							
WG3295901-8	LCS							
Acidity (as CaCO3)			105.0		%		85-115	19-MAR-20
WG3295901-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	19-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5032912							
WG3295863-11	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	19-MAR-20
WG3295863-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5034671							
WG3296802-2	LCS							
Beryllium (Be)-Dissolved			93.2		%		80-120	23-MAR-20
WG3296802-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5034809							
WG3296634-2	LCS							
Beryllium (Be)-Total			97.1		%		80-120	23-MAR-20
WG3296634-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-MAR-20
BIC-CL								
	Water							
Batch	R5032912							
WG3295863-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5033069							
WG3296035-10	LCS							
Bromide (Br)			101.2		%		85-115	19-MAR-20
WG3296035-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	19-MAR-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5035086							
WG3297644-2 LCS								
Dissolved Organic Carbon			95.7		%		80-120	23-MAR-20
WG3297644-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5035086							
WG3297644-2 LCS								
Total Organic Carbon			99.0		%		80-120	23-MAR-20
WG3297644-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	23-MAR-20
CL-IC-N-CL	Water							
Batch	R5033069							
WG3296035-10 LCS								
Chloride (Cl)			104.0		%		90-110	19-MAR-20
WG3296035-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	19-MAR-20
CO3-CL	Water							
Batch	R5032912							
WG3295863-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	19-MAR-20
EC-L-PCT-CL	Water							
Batch	R5032912							
WG3295863-11 LCS								
Conductivity (@ 25C)			100.5		%		90-110	19-MAR-20
WG3295863-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	19-MAR-20
F-IC-N-CL	Water							
Batch	R5033069							
WG3296035-10 LCS								
Fluoride (F)			96.5		%		90-110	19-MAR-20
WG3296035-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	19-MAR-20
HG-D-CVAA-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Batch R5034968								
WG3297086-2	LCS							
Mercury (Hg)-Dissolved			96.9		%		80-120	23-MAR-20
WG3297086-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-MAR-20
HG-T-U-CVAF-VA								
Batch R5036227								
WG3298068-3	DUP	L2429916-1						
Mercury (Hg)-Total		0.00059	0.00058	RPD-NA	ug/L	N/A	20	24-MAR-20
WG3298068-2	LCS							
Mercury (Hg)-Total			94.0		%		80-120	24-MAR-20
WG3298068-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-MAR-20
WG3298068-4	MS	L2429916-2						
Mercury (Hg)-Total			89.2		%		70-130	24-MAR-20
MET-D-CCMS-VA								
Batch R5034671								
WG3296802-2	LCS							
Aluminum (Al)-Dissolved			100.1		%		80-120	23-MAR-20
Antimony (Sb)-Dissolved			102.8		%		80-120	23-MAR-20
Arsenic (As)-Dissolved			98.0		%		80-120	23-MAR-20
Barium (Ba)-Dissolved			100.3		%		80-120	23-MAR-20
Bismuth (Bi)-Dissolved			101.2		%		80-120	23-MAR-20
Boron (B)-Dissolved			94.2		%		80-120	23-MAR-20
Cadmium (Cd)-Dissolved			97.2		%		80-120	23-MAR-20
Calcium (Ca)-Dissolved			97.2		%		80-120	23-MAR-20
Chromium (Cr)-Dissolved			99.4		%		80-120	23-MAR-20
Cobalt (Co)-Dissolved			96.6		%		80-120	23-MAR-20
Copper (Cu)-Dissolved			98.0		%		80-120	23-MAR-20
Iron (Fe)-Dissolved			86.8		%		80-120	23-MAR-20
Lead (Pb)-Dissolved			103.1		%		80-120	23-MAR-20
Lithium (Li)-Dissolved			90.3		%		80-120	23-MAR-20
Magnesium (Mg)-Dissolved			99.7		%		80-120	23-MAR-20
Manganese (Mn)-Dissolved			100.4		%		80-120	23-MAR-20
Molybdenum (Mo)-Dissolved			102.6		%		80-120	23-MAR-20
Nickel (Ni)-Dissolved			97.4		%		80-120	23-MAR-20
Potassium (K)-Dissolved			108.0		%		80-120	23-MAR-20



Quality Control Report

Workorder: L2429916

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5034671							
WG3296802-2	LCS							
Selenium (Se)-Dissolved			103.6		%		80-120	23-MAR-20
Silicon (Si)-Dissolved			104.7		%		60-140	23-MAR-20
Silver (Ag)-Dissolved			99.8		%		80-120	23-MAR-20
Sodium (Na)-Dissolved			102.0		%		80-120	23-MAR-20
Strontium (Sr)-Dissolved			104.0		%		80-120	23-MAR-20
Thallium (Tl)-Dissolved			103.6		%		80-120	23-MAR-20
Tin (Sn)-Dissolved			98.6		%		80-120	23-MAR-20
Titanium (Ti)-Dissolved			97.8		%		80-120	23-MAR-20
Uranium (U)-Dissolved			97.9		%		80-120	23-MAR-20
Vanadium (V)-Dissolved			99.4		%		80-120	23-MAR-20
Zinc (Zn)-Dissolved			94.2		%		80-120	23-MAR-20
WG3296802-1	MB	NP						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5034671							
WG3296802-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-MAR-20
Batch	R5036747							
WG3296802-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296634-2	LCS							
Aluminum (Al)-Total			105.1		%		80-120	23-MAR-20
Antimony (Sb)-Total			103.4		%		80-120	23-MAR-20
Arsenic (As)-Total			98.3		%		80-120	23-MAR-20
Barium (Ba)-Total			100.5		%		80-120	23-MAR-20
Bismuth (Bi)-Total			96.9		%		80-120	23-MAR-20
Boron (B)-Total			98.7		%		80-120	23-MAR-20
Cadmium (Cd)-Total			100.9		%		80-120	23-MAR-20
Calcium (Ca)-Total			100.1		%		80-120	23-MAR-20
Chromium (Cr)-Total			97.5		%		80-120	23-MAR-20
Cobalt (Co)-Total			99.1		%		80-120	23-MAR-20
Copper (Cu)-Total			97.1		%		80-120	23-MAR-20
Iron (Fe)-Total			103.8		%		80-120	23-MAR-20
Lead (Pb)-Total			97.2		%		80-120	23-MAR-20
Lithium (Li)-Total			94.8		%		80-120	23-MAR-20
Magnesium (Mg)-Total			100.1		%		80-120	23-MAR-20
Manganese (Mn)-Total			102.0		%		80-120	23-MAR-20
Molybdenum (Mo)-Total			99.3		%		80-120	23-MAR-20
Nickel (Ni)-Total			99.7		%		80-120	23-MAR-20
Potassium (K)-Total			102.1		%		80-120	23-MAR-20
Selenium (Se)-Total			101.8		%		80-120	23-MAR-20
Silicon (Si)-Total			102.4		%		80-120	23-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5034809							
WG3296634-2	LCS							
Silver (Ag)-Total			96.4		%		80-120	23-MAR-20
Sodium (Na)-Total			104.3		%		80-120	23-MAR-20
Strontium (Sr)-Total			102.0		%		80-120	23-MAR-20
Thallium (Tl)-Total			98.7		%		80-120	23-MAR-20
Tin (Sn)-Total			99.0		%		80-120	23-MAR-20
Titanium (Ti)-Total			98.5		%		80-120	23-MAR-20
Uranium (U)-Total			98.9		%		80-120	23-MAR-20
Vanadium (V)-Total			101.9		%		80-120	23-MAR-20
Zinc (Zn)-Total			98.9		%		80-120	23-MAR-20
WG3296634-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	23-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	23-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	23-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	23-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	23-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Water								
Batch	R5034809							
WG3296634-1	MB							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-MAR-20
NH3-L-F-CL								
Water								
Batch	R5033279							
WG3295964-11	DUP	L2429916-2						
Ammonia as N		0.113	0.113		mg/L	0.3	20	20-MAR-20
WG3295964-10	LCS							
Ammonia as N			106.9		%		85-115	20-MAR-20
WG3295964-6	LCS							
Ammonia as N			98.7		%		85-115	20-MAR-20
WG3295964-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-20
WG3295964-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-20
WG3295964-12	MS	L2429916-2						
Ammonia as N			N/A	MS-B	%		-	20-MAR-20
NO2-L-IC-N-CL								
Water								
Batch	R5033069							
WG3296035-10	LCS							
Nitrite (as N)			105.2		%		90-110	19-MAR-20
WG3296035-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	19-MAR-20
NO3-L-IC-N-CL								
Water								
Batch	R5033069							
WG3296035-10	LCS							
Nitrate (as N)			105.8		%		90-110	19-MAR-20
WG3296035-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	19-MAR-20
OH-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch R5032912 WG3295863-10 MB Hydroxide (OH)			<5.0		mg/L		5	19-MAR-20
ORP-CL	Water							
Batch R5036213 WG3298083-5 CRM ORP		CL-ORP	227		mV		210-230	24-MAR-20
P-T-L-COL-CL	Water							
Batch R5036209 WG3297847-10 LCS Phosphorus (P)-Total			105.8		%		80-120	24-MAR-20
Batch R5036209 WG3297847-9 MB Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-MAR-20
PH-CL	Water							
Batch R5032912 WG3295863-11 LCS pH			7.00		pH		6.9-7.1	19-MAR-20
PO4-DO-L-COL-CL	Water							
Batch R5032901 WG3295652-11 LCS Orthophosphate-Dissolved (as P)			106.7		%		80-120	19-MAR-20
Batch R5032901 WG3295652-3 MB Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-MAR-20
SO4-IC-N-CL	Water							
Batch R5033069 WG3296035-10 LCS Sulfate (SO4)			105.9		%		90-110	19-MAR-20
Batch R5033069 WG3296035-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-20
SOLIDS-TDS-CL	Water							
Batch R5041109 WG3298483-6 DUP Total Dissolved Solids		L2429916-2 1260	1250		mg/L	1.2	20	25-MAR-20
Batch R5041109 WG3298483-2 LCS Total Dissolved Solids			102.3		%		85-115	25-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5041109							
WG3298483-5	LCS							
Total Dissolved Solids			102.9		%		85-115	25-MAR-20
WG3298483-1	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAR-20
WG3298483-4	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAR-20
TKN-L-F-CL		Water						
Batch	R5038207							
WG3298548-2	LCS							
Total Kjeldahl Nitrogen			107.4		%		75-125	25-MAR-20
WG3298548-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAR-20
TSS-L-CL		Water						
Batch	R5040927							
WG3298476-4	LCS							
Total Suspended Solids			94.8		%		85-115	25-MAR-20
WG3298476-3	MB							
Total Suspended Solids			<1.0		mg/L		1	25-MAR-20
TURBIDITY-CL		Water						
Batch	R5033570							
WG3296381-5	LCS							
Turbidity			104.0		%		85-115	20-MAR-20
WG3296381-4	MB							
Turbidity			<0.10		NTU		0.1	20-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	18-MAR-20 15:20	24-MAR-20 09:45	0.25	138	hours	EHTR-FM
	2	18-MAR-20 13:50	24-MAR-20 09:45	0.25	140	hours	EHTR-FM
pH	1	18-MAR-20 15:20	19-MAR-20 09:00	0.25	18	hours	EHTR-FM
	2	18-MAR-20 13:50	19-MAR-20 09:00	0.25	19	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2429916 were received on 19-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO_QTR_GW_2020-01-06** TURNAROUND TIME: RUSH:

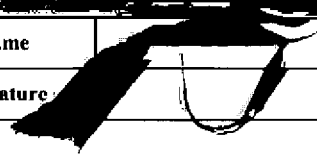
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N				
GH_MW-GHC-1A_WG_2020-01-06_NP	GH_MW-GHC-1A	WG		3/18/2020	15:20	G	7	H2SO4	H2SO4	HCL	HNO3	NONE	HNO3	NONE					
GH_MW-GHC-1B_WG_2020-01-06_NP	GH_MW-GHC-1B	WG		3/18/2020	13:50	G	7	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA					



L2429916-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Braun,</i>	<i>3/19 8:50am 8:00</i>

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) X	Priority (2-3 business days) - 50% surcharge		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 20-MAR-20
Report Date: 21-DEC-20 17:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2430249
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: GHO_QTR_GW_2020
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2430249-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2430249-1 GH_MW-PC_WG_2020-01-06_NP							
Sampled By: BP/MM on 19-MAR-20 @ 14:35							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	246		5.0	mg/L		23-MAR-20	R5035534
Carbonate (CO3)	<5.0		5.0	mg/L		23-MAR-20	R5035534
Dissolved Organic Carbon	1.39		0.50	mg/L		24-MAR-20	R5037189
Hydroxide (OH)	<5.0		5.0	mg/L		23-MAR-20	R5035534
Total Kjeldahl Nitrogen	0.318		0.050	mg/L		25-MAR-20	R5038207
Mercury (Hg)-Total	0.00932		0.00050	ug/L		24-MAR-20	R5036210
Total Organic Carbon	2.26		0.50	mg/L		24-MAR-20	R5037189
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-MAR-20	24-MAR-20	R5036853
Dissolved Metals Filtration Location	FIELD					23-MAR-20	R5034688
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-MAR-20	24-MAR-20	R5035166
Dissolved Mercury Filtration Location	FIELD					24-MAR-20	R5035027
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					23-MAR-20	R5034688
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-MAR-20	24-MAR-20	R5036853
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	23-MAR-20	24-MAR-20	R5038429
Arsenic (As)-Dissolved	0.00029		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Barium (Ba)-Dissolved	0.0638		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Boron (B)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Cadmium (Cd)-Dissolved	0.0468		0.0050	ug/L	23-MAR-20	24-MAR-20	R5036853
Calcium (Ca)-Dissolved	107		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	23-MAR-20	24-MAR-20	R5036853
Copper (Cu)-Dissolved	0.0444		0.00020	mg/L	23-MAR-20	24-MAR-20	R5036853
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Lead (Pb)-Dissolved	0.000093		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Lithium (Li)-Dissolved	0.0069		0.0010	mg/L	23-MAR-20	24-MAR-20	R5036853
Magnesium (Mg)-Dissolved	79.0		0.10	mg/L	23-MAR-20	24-MAR-20	R5036853
Manganese (Mn)-Dissolved	0.00075		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Molybdenum (Mo)-Dissolved	0.00289		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Nickel (Ni)-Dissolved	0.00123		0.00050	mg/L	23-MAR-20	24-MAR-20	R5036853
Potassium (K)-Dissolved	1.06		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Selenium (Se)-Dissolved	61.5		0.050	ug/L	23-MAR-20	24-MAR-20	R5036853
Silicon (Si)-Dissolved	2.31		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Sodium (Na)-Dissolved	0.981		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Strontium (Sr)-Dissolved	0.137		0.00020	mg/L	23-MAR-20	24-MAR-20	R5036853
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Tin (Sn)-Dissolved	0.00012		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Uranium (U)-Dissolved	0.00475		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-MAR-20	24-MAR-20	R5036853
Zinc (Zn)-Dissolved	0.0043		0.0010	mg/L	23-MAR-20	24-MAR-20	R5036853
Hardness							
Hardness (as CaCO3)	593		0.50	mg/L		25-MAR-20	
Teck Total Metals Package without Hg							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.281		0.020	ug/L		30-MAR-20	R5045417

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2430249-1 GH_MW-PC_WG_2020-01-06_NP							
Sampled By: BP/MM on 19-MAR-20 @ 14:35							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	2.77		0.0030	mg/L		30-MAR-20	R5045417
Antimony (Sb)-Total	0.00020		0.00010	mg/L		30-MAR-20	R5045417
Arsenic (As)-Total	0.00201		0.00010	mg/L		30-MAR-20	R5045417
Barium (Ba)-Total	0.301		0.00010	mg/L		30-MAR-20	R5045417
Bismuth (Bi)-Total	0.000083		0.000050	mg/L		30-MAR-20	R5045417
Boron (B)-Total	<0.010		0.010	mg/L		30-MAR-20	R5045417
Cadmium (Cd)-Total	0.346		0.0050	ug/L		30-MAR-20	R5045417
Calcium (Ca)-Total	115		0.050	mg/L		30-MAR-20	R5045417
Chromium (Cr)-Total	0.00313		0.00010	mg/L		30-MAR-20	R5045417
Cobalt (Co)-Total	16.8		0.10	ug/L		30-MAR-20	R5045417
Copper (Cu)-Total	0.196		0.00050	mg/L		30-MAR-20	R5045417
Iron (Fe)-Total	2.97		0.010	mg/L		30-MAR-20	R5045417
Lead (Pb)-Total	0.00506		0.000050	mg/L		30-MAR-20	R5045417
Lithium (Li)-Total	0.0081		0.0010	mg/L		30-MAR-20	R5045417
Magnesium (Mg)-Total	89.5		0.0050	mg/L		30-MAR-20	R5045417
Manganese (Mn)-Total	0.708		0.00010	mg/L		30-MAR-20	R5045417
Molybdenum (Mo)-Total	0.00330		0.000050	mg/L		30-MAR-20	R5045417
Nickel (Ni)-Total	0.0178		0.00050	mg/L		30-MAR-20	R5045417
Potassium (K)-Total	1.62		0.050	mg/L		30-MAR-20	R5045417
Selenium (Se)-Total	64.3		0.050	ug/L		30-MAR-20	R5045417
Silicon (Si)-Total	8.23		0.10	mg/L		30-MAR-20	R5045417
Silver (Ag)-Total	0.000039		0.000010	mg/L		30-MAR-20	R5045417
Sodium (Na)-Total	1.11		0.050	mg/L		30-MAR-20	R5045417
Strontium (Sr)-Total	0.165		0.00020	mg/L		30-MAR-20	R5045417
Thallium (Tl)-Total	0.000070		0.000010	mg/L		30-MAR-20	R5045417
Tin (Sn)-Total	0.00021		0.00010	mg/L		30-MAR-20	R5045417
Titanium (Ti)-Total	0.036		0.010	mg/L		30-MAR-20	R5045417
Uranium (U)-Total	0.00559		0.000010	mg/L		30-MAR-20	R5045417
Vanadium (V)-Total	0.00491		0.00050	mg/L		30-MAR-20	R5045417
Zinc (Zn)-Total	0.0204		0.0030	mg/L		30-MAR-20	R5045417
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.1		1.0	mg/L		23-MAR-20	R5035589
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		23-MAR-20	R5035534
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-MAR-20	R5035534
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-MAR-20	R5035534
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		23-MAR-20	R5035534
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		23-MAR-20	R5035907
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		20-MAR-20	R5033578
Chloride in Water by IC							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		20-MAR-20	R5033578
Electrical Conductivity (EC)							
Conductivity (@ 25C)	982		2.0	uS/cm		23-MAR-20	R5035534
Fluoride in Water by IC							
Fluoride (F)	0.22	DLHC	0.10	mg/L		20-MAR-20	R5033578
Ion Balance Calculation							
Cation - Anion Balance	-6.3			%		26-MAR-20	
Anion Sum	13.5			meq/L		26-MAR-20	
Cation Sum	11.9			meq/L		26-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2430249-1 GH_MW-PC_WG_2020-01-06_NP							
Sampled By: BP/MM on 19-MAR-20 @ 14:35							
Matrix: WG							
Ion Balance Calculation							
Ion Balance	88.2		-100	%		27-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.84	DLHC	0.025	mg/L		20-MAR-20	R5033578
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		20-MAR-20	R5033578
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0088		0.0010	mg/L		20-MAR-20	R5033433
Oxidation redution potential by elect.							
ORP	486		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0967		0.0020	mg/L		25-MAR-20	R5038171
Sulfate in Water by IC							
Sulfate (SO4)	448	DLHC	1.5	mg/L		20-MAR-20	R5033578
Total Dissolved Solids							
Total Dissolved Solids	893	DLHC	20	mg/L		26-MAR-20	R5042868
Total Suspended Solids							
Total Suspended Solids	139		1.0	mg/L		26-MAR-20	R5043006
Turbidity							
Turbidity	82.3		0.10	NTU		20-MAR-20	R5033570
pH							
pH	8.15		0.10	pH		23-MAR-20	R5035534

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-CL	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-CL	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GHO_QTR_GW_2020

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2430249

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5035589							
WG3297844-2	LCS							
Acidity (as CaCO3)			97.1		%		85-115	23-MAR-20
WG3297844-1	MB							
Acidity (as CaCO3)			1.6		mg/L		2	23-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5035534							
WG3297815-2	LCS							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	23-MAR-20
WG3297815-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5036853							
WG3297340-2	LCS							
Beryllium (Be)-Dissolved			94.4		%		80-120	24-MAR-20
WG3297340-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-MAR-20
BE-T-L-CCMS-CL								
	Water							
Batch	R5045417							
WG3300898-2	LCS	TMRM						
Beryllium (Be)-Total			91.0		%		80-120	30-MAR-20
WG3300898-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	30-MAR-20
BIC-CL								
	Water							
Batch	R5035534							
WG3297815-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5033578							
WG3296562-6	LCS							
Bromide (Br)			102.6		%		85-115	20-MAR-20
WG3296562-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-MAR-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2430249

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5037189							
WG3298457-2 LCS								
Dissolved Organic Carbon			99.6		%		80-120	24-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5037189							
WG3298457-2 LCS								
Total Organic Carbon			101.3		%		80-120	24-MAR-20
WG3298457-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	24-MAR-20
CL-IC-N-CL	Water							
Batch	R5033578							
WG3296562-6 LCS								
Chloride (Cl)			106.0		%		90-110	20-MAR-20
WG3296562-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	20-MAR-20
CO3-CL	Water							
Batch	R5035534							
WG3297815-1 MB								
Carbonate (CO3)			<5.0		mg/L		5	23-MAR-20
EC-L-PCT-CL	Water							
Batch	R5035534							
WG3297815-2 LCS								
Conductivity (@ 25C)			97.1		%		90-110	23-MAR-20
WG3297815-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	23-MAR-20
F-IC-N-CL	Water							
Batch	R5033578							
WG3296562-6 LCS								
Fluoride (F)			103.1		%		90-110	20-MAR-20
WG3296562-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-MAR-20
HG-D-CVAA-VA	Water							
Batch	R5035166							
WG3297572-2 LCS								
Mercury (Hg)-Dissolved			99.9		%		80-120	24-MAR-20
WG3297572-1 MB		NP						



Quality Control Report

Workorder: L2430249

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5035166							
WG3297572-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-MAR-20
HG-T-U-CVAF-VA								
Water								
Batch	R5036210							
WG3298067-2	LCS							
Mercury (Hg)-Total			97.6		%		80-120	24-MAR-20
WG3298067-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-MAR-20
MET-D-CCMS-VA								
Water								
Batch	R5036853							
WG3297340-2	LCS							
Aluminum (Al)-Dissolved			94.7		%		80-120	24-MAR-20
Antimony (Sb)-Dissolved			98.3		%		80-120	24-MAR-20
Arsenic (As)-Dissolved			92.1		%		80-120	24-MAR-20
Barium (Ba)-Dissolved			95.2		%		80-120	24-MAR-20
Bismuth (Bi)-Dissolved			98.0		%		80-120	24-MAR-20
Boron (B)-Dissolved			96.0		%		80-120	24-MAR-20
Cadmium (Cd)-Dissolved			95.5		%		80-120	24-MAR-20
Calcium (Ca)-Dissolved			95.1		%		80-120	24-MAR-20
Chromium (Cr)-Dissolved			93.1		%		80-120	24-MAR-20
Cobalt (Co)-Dissolved			92.8		%		80-120	24-MAR-20
Copper (Cu)-Dissolved			93.3		%		80-120	24-MAR-20
Iron (Fe)-Dissolved			98.4		%		80-120	24-MAR-20
Lead (Pb)-Dissolved			97.9		%		80-120	24-MAR-20
Lithium (Li)-Dissolved			95.3		%		80-120	24-MAR-20
Magnesium (Mg)-Dissolved			93.1		%		80-120	24-MAR-20
Manganese (Mn)-Dissolved			96.0		%		80-120	24-MAR-20
Molybdenum (Mo)-Dissolved			97.9		%		80-120	24-MAR-20
Nickel (Ni)-Dissolved			92.8		%		80-120	24-MAR-20
Potassium (K)-Dissolved			93.6		%		80-120	24-MAR-20
Selenium (Se)-Dissolved			97.6		%		80-120	24-MAR-20
Silicon (Si)-Dissolved			102.3		%		60-140	24-MAR-20
Silver (Ag)-Dissolved			96.5		%		80-120	24-MAR-20
Sodium (Na)-Dissolved			100.3		%		80-120	24-MAR-20
Strontium (Sr)-Dissolved			99.7		%		80-120	24-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5036853							
WG3297340-2	LCS							
Thallium (Tl)-Dissolved			94.9		%		80-120	24-MAR-20
Tin (Sn)-Dissolved			97.8		%		80-120	24-MAR-20
Titanium (Ti)-Dissolved			92.0		%		80-120	24-MAR-20
Uranium (U)-Dissolved			95.1		%		80-120	24-MAR-20
Vanadium (V)-Dissolved			95.2		%		80-120	24-MAR-20
Zinc (Zn)-Dissolved			93.1		%		80-120	24-MAR-20
WG3297340-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5036853							
WG3297340-1	MB	NP						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
MET-T-CCMS-CL								
	Water							
Batch	R5045417							
WG3300898-2	LCS	TMRM						
Aluminum (Al)-Total			98.9		%		80-120	30-MAR-20
Antimony (Sb)-Total			93.7		%		80-120	30-MAR-20
Arsenic (As)-Total			96.0		%		80-120	30-MAR-20
Barium (Ba)-Total			100.5		%		80-120	30-MAR-20
Bismuth (Bi)-Total			95.9		%		80-120	30-MAR-20
Boron (B)-Total			84.9		%		80-120	30-MAR-20
Cadmium (Cd)-Total			96.0		%		80-120	30-MAR-20
Calcium (Ca)-Total			93.7		%		80-120	30-MAR-20
Chromium (Cr)-Total			96.5		%		80-120	30-MAR-20
Cobalt (Co)-Total			96.5		%		80-120	30-MAR-20
Copper (Cu)-Total			96.1		%		80-120	30-MAR-20
Iron (Fe)-Total			98.0		%		80-120	30-MAR-20
Lead (Pb)-Total			95.3		%		80-120	30-MAR-20
Lithium (Li)-Total			93.5		%		80-120	30-MAR-20
Magnesium (Mg)-Total			97.7		%		80-120	30-MAR-20
Manganese (Mn)-Total			98.8		%		80-120	30-MAR-20
Molybdenum (Mo)-Total			95.2		%		80-120	30-MAR-20
Nickel (Ni)-Total			96.4		%		80-120	30-MAR-20
Potassium (K)-Total			97.1		%		80-120	30-MAR-20
Selenium (Se)-Total			93.7		%		80-120	30-MAR-20
Silicon (Si)-Total			99.4		%		60-140	30-MAR-20
Silver (Ag)-Total			95.6		%		80-120	30-MAR-20
Sodium (Na)-Total			92.2		%		80-120	30-MAR-20
Strontium (Sr)-Total			95.4		%		80-120	30-MAR-20
Thallium (Tl)-Total			93.6		%		80-120	30-MAR-20
Tin (Sn)-Total			93.9		%		80-120	30-MAR-20
Titanium (Ti)-Total			96.1		%		80-120	30-MAR-20
Uranium (U)-Total			94.1		%		80-120	30-MAR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-CL								
	Water							
Batch	R5045417							
WG3300898-2	LCS	TMRM						
Vanadium (V)-Total			97.8		%		80-120	30-MAR-20
Zinc (Zn)-Total			92.2		%		80-120	30-MAR-20
WG3300898-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	30-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	30-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	30-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	30-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	30-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	30-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-MAR-20
Silicon (Si)-Total			<0.050		mg/L		0.05	30-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	30-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	30-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	30-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-MAR-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5035907								
WG3297316-7	DUP	L2430249-1						
Ammonia as N		<0.0050	0.0061	RPD-NA	mg/L	N/A	20	23-MAR-20
WG3297316-6	LCS							
Ammonia as N			109.1		%		85-115	23-MAR-20
WG3297316-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-MAR-20
WG3297316-8	MS	L2430249-1						
Ammonia as N			115.5		%		75-125	23-MAR-20
NO2-L-IC-N-CL								
Batch R5033578								
WG3296562-6	LCS							
Nitrite (as N)			106.4		%		90-110	20-MAR-20
WG3296562-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-MAR-20
NO3-L-IC-N-CL								
Batch R5033578								
WG3296562-6	LCS							
Nitrate (as N)			107.2		%		90-110	20-MAR-20
WG3296562-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-MAR-20
OH-CL								
Batch R5035534								
WG3297815-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	23-MAR-20
ORP-CL								
Batch R5036213								
WG3298083-9	CRM	CL-ORP						
ORP			227		mV		210-230	24-MAR-20
P-T-L-COL-CL								
Batch R5038171								
WG3298744-2	LCS							
Phosphorus (P)-Total			99.8		%		80-120	25-MAR-20
WG3298744-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-MAR-20
PH-CL								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5035534							
WG3297815-2	LCS							
pH			6.97		pH		6.9-7.1	23-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5033433							
WG3296354-2	LCS							
Orthophosphate-Dissolved (as P)			103.9		%		80-120	20-MAR-20
WG3296354-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-MAR-20
SO4-IC-N-CL	Water							
Batch	R5033578							
WG3296562-6	LCS							
Sulfate (SO4)			109.7		%		90-110	20-MAR-20
WG3296562-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5042868							
WG3299150-2	LCS							
Total Dissolved Solids			101.9		%		85-115	26-MAR-20
WG3299150-1	MB							
Total Dissolved Solids			<10		mg/L		10	26-MAR-20
TKN-L-F-CL	Water							
Batch	R5038207							
WG3298548-2	LCS							
Total Kjeldahl Nitrogen			107.4		%		75-125	25-MAR-20
WG3298548-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAR-20
TSS-L-CL	Water							
Batch	R5043006							
WG3299140-2	LCS							
Total Suspended Solids			87.5		%		85-115	26-MAR-20
WG3299140-1	MB							
Total Suspended Solids			<1.0		mg/L		1	26-MAR-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R5033570							
WG3296381-15	DUP	L2430249-1						
Turbidity		82.3	82.2		NTU	0.1	15	20-MAR-20
WG3296381-14	LCS							
Turbidity			103.5		%		85-115	20-MAR-20
WG3296381-13	MB							
Turbidity			<0.10		NTU		0.1	20-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	19-MAR-20 14:35	24-MAR-20 12:00	0.25	117	hours	EHTR-FM
pH	1	19-MAR-20 14:35	23-MAR-20 14:00	0.25	96	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2430249 were received on 20-MAR-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO_QTR_GW_2020-01-06**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@eguisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	HG-T-U-CVAF-VA	Filtered F	Field L	Lab	Field R	Lab	None	
GH_MW-PC1_WG_2020-01-06_NP	GH_MW-PC1	WG		3/19/2020	14:35	G	7	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/20/20

SERVICE REQUEST (rush subject to availability)	Sampler's Name	BP/MM	Mobile #
Regular (default) <input checked="" type="checkbox"/>			
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature		Date/Time



L2430249-COFC

[Handwritten signature]



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 18-DEC-20 14:27 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2446440
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 01-03_Q2-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:11

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446440-1 WP 11-MAY-20 08:28 RG_DW-01- 03_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	363			
	Hardness (as CaCO3) (mg/L)	208			
	pH (pH)	7.73			
	ORP (mV)	372			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	197 ^{DLHC}			
	Turbidity (NTU)	0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	152			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	186			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.12			
	Fluoride (F) (mg/L)	0.153			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	1.21			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.210			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	44.7			
	Anion Sum (meq/L)	4.10			
	Cation Sum (meq/L)	4.22			
	Cation - Anion Balance (%)	1.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0824			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446440-1 WP 11-MAY-20 08:28 RG_DW-01- 03_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0092			
	Calcium (Ca)-Total (mg/L)	56.0			
	Chromium (Cr)-Total (mg/L)	0.00027			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00907			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000625			
	Lithium (Li)-Total (mg/L)	0.0026			
	Magnesium (Mg)-Total (mg/L)	14.6			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00103			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.439			
	Selenium (Se)-Total (ug/L)	4.44			
	Silicon (Si)-Total (mg/L)	2.22			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.34			
	Strontium (Sr)-Total (mg/L)	0.228			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000909			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0312			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0764			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0098			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2446440-1 WP 11-MAY-20 08:28 RG_DW-01- 03_WP_Q2- 2020_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	58.5			
	Chromium (Cr)-Dissolved (mg/L)	0.00027			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00370			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000286			
	Lithium (Li)-Dissolved (mg/L)	0.0025			
	Magnesium (Mg)-Dissolved (mg/L)	15.0			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000957			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.445			
	Selenium (Se)-Dissolved (ug/L)	4.71			
	Silicon (Si)-Dissolved (mg/L)	2.13			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.38			
	Strontium (Sr)-Dissolved (mg/L)	0.239			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000839			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0182			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L2446440-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2446440-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2446440-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2446440-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2446440-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

01-03_Q2-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2446440

Report Date: 18-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5083036							
WG3323148-8	LCS							
Acidity (as CaCO3)			93.2		%		85-115	13-MAY-20
WG3323148-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	13-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5083297							
WG3323209-14	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	13-MAY-20
WG3323209-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Beryllium (Be)-Dissolved			96.4		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5086478							
WG3323266-2	LCS							
Beryllium (Be)-Total			95.3		%		80-120	14-MAY-20
WG3323266-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-MAY-20
BIC-CL								
	Water							
Batch	R5083297							
WG3323209-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5083997							
WG3323374-6	LCS							
Bromide (Br)			100.7		%		85-115	13-MAY-20
WG3323374-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-MAY-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2446440

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Dissolved Organic Carbon			93.3		%		80-120	19-MAY-20
WG3325047-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Total Organic Carbon			94.2		%		80-120	19-MAY-20
WG3325047-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
CL-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Chloride (Cl)			102.7		%		90-110	13-MAY-20
WG3323374-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	13-MAY-20
CO3-CL	Water							
Batch	R5083297							
WG3323209-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5083297							
WG3323209-14 LCS								
Conductivity (@ 25C)			101.7		%		90-110	13-MAY-20
WG3323209-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAY-20
F-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Fluoride (F)			105.5		%		90-110	13-MAY-20
WG3323374-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-MAY-20
HG-D-CVAA-VA	Water							

Quality Control Report

Workorder: L2446440

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5085901							
WG3323804-10	LCS							
Mercury (Hg)-Dissolved			105.3		%		80-120	15-MAY-20
WG3323804-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA								
Water								
Batch	R5085901							
WG3323960-2	LCS							
Mercury (Hg)-Total			103.5		%		80-120	15-MAY-20
WG3323960-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-MAY-20
MET-D-CCMS-VA								
Water								
Batch	R5084472							
WG3323479-2	LCS							
Aluminum (Al)-Dissolved			98.7		%		80-120	15-MAY-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			97.9		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			94.9		%		80-120	15-MAY-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	15-MAY-20
Boron (B)-Dissolved			89.5		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			97.7		%		80-120	15-MAY-20
Calcium (Ca)-Dissolved			101.1		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			98.4		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			97.1		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			95.8		%		80-120	15-MAY-20
Iron (Fe)-Dissolved			94.2		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			94.0		%		80-120	15-MAY-20
Lithium (Li)-Dissolved			96.4		%		80-120	15-MAY-20
Magnesium (Mg)-Dissolved			94.4		%		80-120	15-MAY-20
Manganese (Mn)-Dissolved			97.6		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			98.5		%		80-120	15-MAY-20
Potassium (K)-Dissolved			98.1		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			103.7		%		80-120	15-MAY-20
Silicon (Si)-Dissolved			101.9		%		60-140	15-MAY-20
Silver (Ag)-Dissolved			98.7		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			102.9		%		80-120	15-MAY-20



Quality Control Report

Workorder: L2446440

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Strontium (Sr)-Dissolved			110.8		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			101.4		%		80-120	15-MAY-20
Tin (Sn)-Dissolved			98.7		%		80-120	15-MAY-20
Titanium (Ti)-Dissolved			96.3		%		80-120	15-MAY-20
Uranium (U)-Dissolved			93.3		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			97.4		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			97.1		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5086478							
WG3323266-2	LCS							
Aluminum (Al)-Total			98.5		%		80-120	14-MAY-20
Antimony (Sb)-Total			98.4		%		80-120	14-MAY-20
Arsenic (As)-Total			95.4		%		80-120	14-MAY-20
Barium (Ba)-Total			101.6		%		80-120	14-MAY-20
Bismuth (Bi)-Total			104.4		%		80-120	14-MAY-20
Boron (B)-Total			90.4		%		80-120	14-MAY-20
Cadmium (Cd)-Total			95.5		%		80-120	14-MAY-20
Calcium (Ca)-Total			102.0		%		80-120	14-MAY-20
Chromium (Cr)-Total			97.2		%		80-120	14-MAY-20
Cobalt (Co)-Total			96.8		%		80-120	14-MAY-20
Copper (Cu)-Total			96.0		%		80-120	14-MAY-20
Iron (Fe)-Total			96.6		%		80-120	14-MAY-20
Lead (Pb)-Total			103.3		%		80-120	14-MAY-20
Lithium (Li)-Total			105.4		%		80-120	14-MAY-20
Magnesium (Mg)-Total			96.8		%		80-120	14-MAY-20
Manganese (Mn)-Total			97.4		%		80-120	14-MAY-20
Molybdenum (Mo)-Total			95.0		%		80-120	14-MAY-20
Nickel (Ni)-Total			97.4		%		80-120	14-MAY-20
Potassium (K)-Total			98.9		%		80-120	14-MAY-20
Selenium (Se)-Total			96.4		%		80-120	14-MAY-20
Silicon (Si)-Total			98.5		%		80-120	14-MAY-20
Silver (Ag)-Total			96.6		%		80-120	14-MAY-20
Sodium (Na)-Total			100.2		%		80-120	14-MAY-20
Strontium (Sr)-Total			101.5		%		80-120	14-MAY-20
Thallium (Tl)-Total			98.5		%		80-120	14-MAY-20
Tin (Sn)-Total			97.7		%		80-120	14-MAY-20
Titanium (Ti)-Total			93.8		%		80-120	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5086478							
WG3323266-2	LCS							
Uranium (U)-Total			103.6		%		80-120	14-MAY-20
Vanadium (V)-Total			96.7		%		80-120	14-MAY-20
Zinc (Zn)-Total			95.7		%		80-120	14-MAY-20
WG3323266-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	14-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5091837							
WG3325366-10	LCS							
Ammonia as N			99.3		%		85-115	19-MAY-20
WG3325366-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6	LCS							
Nitrite (as N)			104.9		%		90-110	13-MAY-20
WG3323374-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6	LCS							
Nitrate (as N)			103.5		%		90-110	13-MAY-20
WG3323374-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAY-20
OH-CL	Water							
Batch	R5083297							
WG3323209-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-MAY-20
ORP-CL	Water							
Batch	R5092422							
WG3325615-5	CRM	CL-ORP						
ORP			224		mV		210-230	19-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-30	LCS							
Phosphorus (P)-Total			109.7		%		80-120	13-MAY-20
WG3322703-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
pH			6.99		pH		6.9-7.1	13-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5082066							
WG3322055-10 LCS								
Orthophosphate-Dissolved (as P)			108.7		%		80-120	12-MAY-20
WG3322055-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAY-20
SO4-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Sulfate (SO4)			104.9		%		90-110	13-MAY-20
WG3323374-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5087837							
WG3323488-14 LCS								
Total Dissolved Solids			100.1		%		85-115	14-MAY-20
WG3323488-13 MB								
Total Dissolved Solids			<10		mg/L		10	14-MAY-20
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22 LCS								
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL	Water							
Batch	R5088638							
WG3323949-29 LCS								
Total Suspended Solids			107.4		%		85-115	15-MAY-20
WG3323949-28 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL	Water							
Batch	R5082876							
WG3323022-2 LCS								
Turbidity			103.0		%		85-115	13-MAY-20
WG3323022-1 MB								
Turbidity			<0.10		NTU		0.1	13-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-MAY-20 08:28	19-MAY-20 19:00	0.25	203	hours	EHTR-FM
pH	1	11-MAY-20 08:28	13-MAY-20 13:00	0.25	53	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2446440 were received on 12-MAY-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-03_Q2-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N
RG_DW-01-03_WP_Q2-2020_NP	RG_DW-01-03	WP	N	11-May-20	8:28	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TRN/TOC	IG-D-CVAF-VA	IG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	<i>5/12 0920</i>

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	<i>May 11, 2020</i>

7°C



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

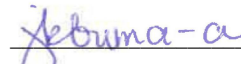
Date Received: 29-MAY-20
Report Date: 18-DEC-20 13:50 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2454006
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-05-27-WG
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454006-1 GH_MW-GHC-1S_WG_2020-04-06_NP							
Sampled By: BP on 27-MAY-20 @ 17:45							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	263		5.0	mg/L		03-JUN-20	R5106220
Carbonate (CO3)	<5.0		5.0	mg/L		03-JUN-20	R5106220
Dissolved Organic Carbon	1.37		0.50	mg/L		07-JUN-20	R5110810
Hardness (as CaCO3)	784		0.50	mg/L		05-JUN-20	
Hydroxide (OH)	<5.0		5.0	mg/L		03-JUN-20	R5106220
Total Kjeldahl Nitrogen	0.098		0.050	mg/L		05-JUN-20	R5110046
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-JUN-20	R5108278
Total Organic Carbon	1.39		0.50	mg/L		07-JUN-20	R5110810
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	05-JUN-20	R5109937
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105895
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	05-JUN-20	06-JUN-20	R5110081
Dissolved Mercury Filtration Location	FIELD					05-JUN-20	R5109958
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105895
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	05-JUN-20	R5109937
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Arsenic (As)-Dissolved	0.00087		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Barium (Ba)-Dissolved	0.0288		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Boron (B)-Dissolved	0.030		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Cadmium (Cd)-Dissolved	0.0281		0.0050	ug/L	03-JUN-20	05-JUN-20	R5109937
Calcium (Ca)-Dissolved	223		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Cobalt (Co)-Dissolved	0.50		0.10	ug/L	03-JUN-20	05-JUN-20	R5109937
Copper (Cu)-Dissolved	0.00020		0.00020	mg/L	03-JUN-20	05-JUN-20	R5109937
Iron (Fe)-Dissolved	0.522		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Lithium (Li)-Dissolved	0.0193		0.0010	mg/L	03-JUN-20	05-JUN-20	R5109937
Magnesium (Mg)-Dissolved	55.4		0.10	mg/L	03-JUN-20	05-JUN-20	R5109937
Manganese (Mn)-Dissolved	0.259		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Molybdenum (Mo)-Dissolved	0.000921		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Nickel (Ni)-Dissolved	0.00140		0.00050	mg/L	03-JUN-20	05-JUN-20	R5109937
Potassium (K)-Dissolved	1.75		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Selenium (Se)-Dissolved	0.087		0.050	ug/L	03-JUN-20	05-JUN-20	R5109937
Silicon (Si)-Dissolved	5.37		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Sodium (Na)-Dissolved	4.51		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Strontium (Sr)-Dissolved	0.690		0.00020	mg/L	03-JUN-20	05-JUN-20	R5109937
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Uranium (U)-Dissolved	0.00188		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	05-JUN-20	R5109937
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	03-JUN-20	05-JUN-20	R5109937
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	7.2		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454006-1 GH_MW-GHC-1S_WG_2020-04-06_NP Sampled By: BP on 27-MAY-20 @ 17:45 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	215		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Total (as CaCO3)	215		1.0	mg/L		03-JUN-20	R5106220
Ammonia, Total (as N)							
Ammonia as N	0.0370		0.0050	mg/L		06-JUN-20	R5110244
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-MAY-20	R5102422
Chloride in Water by IC							
Chloride (Cl)	8.9	DLHC	2.5	mg/L		30-MAY-20	R5102422
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1340		2.0	uS/cm		03-JUN-20	R5106220
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		30-MAY-20	R5102422
Ion Balance Calculation							
Ion Balance	96.6		-100	%		05-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.7			%		05-JUN-20	
Anion Sum	16.5			meq/L		05-JUN-20	
Cation Sum	15.9			meq/L		05-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		30-MAY-20	R5102422
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-MAY-20	R5102422
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-MAY-20	R5102132
Oxidation redution potential by elect.							
ORP	461		-1000	mV		08-JUN-20	R5111019
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-JUN-20	R5103589
Sulfate in Water by IC							
Sulfate (SO4)	574	DLHC	1.5	mg/L		30-MAY-20	R5102422
Total Dissolved Solids							
Total Dissolved Solids	1170	DLHC	20	mg/L		03-JUN-20	R5108616
Total Suspended Solids							
Total Suspended Solids	4.6		1.0	mg/L		03-JUN-20	R5108476
Turbidity							
Turbidity	6.33		0.10	NTU		30-MAY-20	R5102327
pH							
pH	8.07		0.10	pH		03-JUN-20	R5106220
L2454006-2 GH_MW-GHC-1D_WG_2020-04-06_NP Sampled By: BP on 27-MAY-20 @ 17:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	287		5.0	mg/L		03-JUN-20	R5106220
Carbonate (CO3)	<5.0		5.0	mg/L		03-JUN-20	R5106220
Dissolved Organic Carbon	1.16		0.50	mg/L		07-JUN-20	R5110810
Hardness (as CaCO3)	647		0.50	mg/L		05-JUN-20	
Hydroxide (OH)	<5.0		5.0	mg/L		03-JUN-20	R5106220
Total Kjeldahl Nitrogen	0.073		0.050	mg/L		05-JUN-20	R5110046
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-JUN-20	R5108278

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454006-2 GH_MW-GHC-1D_WG_2020-04-06_NP							
Sampled By: BP on 27-MAY-20 @ 17:00							
Matrix: WG							
Total Organic Carbon	1.05		0.50	mg/L		07-JUN-20	R5110810
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	05-JUN-20	R5109937
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105895
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-JUN-20	06-JUN-20	R5110081
Dissolved Mercury Filtration Location	FIELD					05-JUN-20	R5109958
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105895
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	05-JUN-20	R5109937
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Barium (Ba)-Dissolved	0.0963		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Boron (B)-Dissolved	0.030		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Cadmium (Cd)-Dissolved	0.0207		0.0050	ug/L	03-JUN-20	05-JUN-20	R5109937
Calcium (Ca)-Dissolved	168		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-JUN-20	05-JUN-20	R5109937
Copper (Cu)-Dissolved	0.00052		0.00020	mg/L	03-JUN-20	05-JUN-20	R5109937
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Lithium (Li)-Dissolved	0.0165		0.0010	mg/L	03-JUN-20	05-JUN-20	R5109937
Magnesium (Mg)-Dissolved	55.5		0.10	mg/L	03-JUN-20	05-JUN-20	R5109937
Manganese (Mn)-Dissolved	0.00028		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Molybdenum (Mo)-Dissolved	0.000681		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Nickel (Ni)-Dissolved	0.00061		0.00050	mg/L	03-JUN-20	05-JUN-20	R5109937
Potassium (K)-Dissolved	1.42		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Selenium (Se)-Dissolved	3.00		0.050	ug/L	03-JUN-20	05-JUN-20	R5109937
Silicon (Si)-Dissolved	4.46		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Sodium (Na)-Dissolved	4.69		0.050	mg/L	03-JUN-20	05-JUN-20	R5109937
Strontium (Sr)-Dissolved	0.517		0.00020	mg/L	03-JUN-20	05-JUN-20	R5109937
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	05-JUN-20	R5109937
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	05-JUN-20	R5109937
Uranium (U)-Dissolved	0.00306		0.000010	mg/L	03-JUN-20	05-JUN-20	R5109937
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	05-JUN-20	R5109937
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	03-JUN-20	05-JUN-20	R5109937
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.5		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	235		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-JUN-20	R5106220
Alkalinity, Total (as CaCO3)	235		1.0	mg/L		03-JUN-20	R5106220
Ammonia, Total (as N)							
Ammonia as N	0.0184		0.0050	mg/L		06-JUN-20	R5110244
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-MAY-20	R5102422
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454006-2 GH_MW-GHC-1D_WG_2020-04-06_NP							
Sampled By: BP on 27-MAY-20 @ 17:00							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	4.6	DLHC	2.5	mg/L		30-MAY-20	R5102422
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1070		2.0	uS/cm		03-JUN-20	R5106220
Fluoride in Water by IC							
Fluoride (F)	0.48	DLHC	0.10	mg/L		30-MAY-20	R5102422
Ion Balance Calculation							
Ion Balance	94.3		-100	%		05-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		05-JUN-20	
Anion Sum	14.0			meq/L		05-JUN-20	
Cation Sum	13.2			meq/L		05-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.067	DLHC	0.025	mg/L		30-MAY-20	R5102422
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-MAY-20	R5102422
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0041		0.0010	mg/L		29-MAY-20	R5102132
Oxidation redution potential by elect.							
ORP	499		-1000	mV		08-JUN-20	R5111019
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0053		0.0020	mg/L		02-JUN-20	R5103589
Sulfate in Water by IC							
Sulfate (SO4)	438	DLHC	1.5	mg/L		30-MAY-20	R5102422
Total Dissolved Solids							
Total Dissolved Solids	887	DLHC	20	mg/L		03-JUN-20	R5108616
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		03-JUN-20	R5108476
Turbidity							
Turbidity	1.04		0.10	NTU		30-MAY-20	R5102327
pH							
pH	7.99		0.10	pH		03-JUN-20	R5106220

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-05-27-WG

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2454006

Report Date: 18-DEC-20

Page 1 of 9

Client: TECK COAL LIMITED (GREENHILLS)

BOX 5000
Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-14	LCS							
Acidity (as CaCO3)			95.5		%		85-115	02-JUN-20
WG3334185-13	MB							
Acidity (as CaCO3)			1.4		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5106220							
WG3335073-5	LCS							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	03-JUN-20
WG3335073-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-2	LCS							
Beryllium (Be)-Dissolved			96.3		%		80-120	05-JUN-20
WG3334871-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5102422							
WG3332319-10	LCS							
Bromide (Br)			97.6		%		85-115	30-MAY-20
WG3332319-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5110810							
WG3337503-2	LCS							
Dissolved Organic Carbon			101.1		%		80-120	07-JUN-20
WG3337503-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5110810							
WG3337503-2	LCS							
Total Organic Carbon			99.6		%		80-120	07-JUN-20
WG3337503-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-JUN-20
CL-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5102422							
WG3332319-10	LCS							
Chloride (Cl)			102.3		%		90-110	30-MAY-20
WG3332319-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-MAY-20
EC-L-PCT-CL	Water							
Batch	R5106220							
WG3335073-5	LCS							
Conductivity (@ 25C)			98.6		%		90-110	03-JUN-20
WG3335073-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-20
F-IC-N-CL	Water							
Batch	R5102422							
WG3332319-10	LCS							
Fluoride (F)			97.2		%		90-110	30-MAY-20
WG3332319-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5110081							
WG3336497-2	LCS							
Mercury (Hg)-Dissolved			100.6		%		80-120	06-JUN-20
WG3336497-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-JUN-20
HG-T-U-CVAF-VA	Water							
Batch	R5108278							
WG3335657-2	LCS							
Mercury (Hg)-Total			92.0		%		80-120	04-JUN-20
WG3335657-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-JUN-20
MET-D-CCMS-VA	Water							
Batch	R5109937							
WG3334871-2	LCS							
Aluminum (Al)-Dissolved			97.9		%		80-120	05-JUN-20
Antimony (Sb)-Dissolved			99.2		%		80-120	05-JUN-20
Arsenic (As)-Dissolved			98.0		%		80-120	05-JUN-20
Barium (Ba)-Dissolved			106.1		%		80-120	05-JUN-20
Bismuth (Bi)-Dissolved			96.2		%		80-120	05-JUN-20
Boron (B)-Dissolved			85.6		%		80-120	05-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-2	LCS							
Cadmium (Cd)-Dissolved			98.4		%		80-120	05-JUN-20
Calcium (Ca)-Dissolved			98.3		%		80-120	05-JUN-20
Chromium (Cr)-Dissolved			98.5		%		80-120	05-JUN-20
Cobalt (Co)-Dissolved			96.1		%		80-120	05-JUN-20
Copper (Cu)-Dissolved			96.3		%		80-120	05-JUN-20
Iron (Fe)-Dissolved			91.9		%		80-120	05-JUN-20
Lead (Pb)-Dissolved			99.7		%		80-120	05-JUN-20
Lithium (Li)-Dissolved			96.0		%		80-120	05-JUN-20
Magnesium (Mg)-Dissolved			95.3		%		80-120	05-JUN-20
Manganese (Mn)-Dissolved			100.7		%		80-120	05-JUN-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	05-JUN-20
Nickel (Ni)-Dissolved			97.3		%		80-120	05-JUN-20
Potassium (K)-Dissolved			101.9		%		80-120	05-JUN-20
Selenium (Se)-Dissolved			96.0		%		80-120	05-JUN-20
Silicon (Si)-Dissolved			102.1		%		60-140	05-JUN-20
Silver (Ag)-Dissolved			104.4		%		80-120	05-JUN-20
Sodium (Na)-Dissolved			103.3		%		80-120	05-JUN-20
Strontium (Sr)-Dissolved			109.2		%		80-120	05-JUN-20
Thallium (Tl)-Dissolved			97.8		%		80-120	05-JUN-20
Tin (Sn)-Dissolved			98.1		%		80-120	05-JUN-20
Titanium (Ti)-Dissolved			94.8		%		80-120	05-JUN-20
Uranium (U)-Dissolved			105.0		%		80-120	05-JUN-20
Vanadium (V)-Dissolved			101.9		%		80-120	05-JUN-20
Zinc (Zn)-Dissolved			95.9		%		80-120	05-JUN-20
WG3334871-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109937							
WG3334871-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5110244							
WG3336853-30	LCS							
Ammonia as N			113.4		%		85-115	06-JUN-20
WG3336853-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-JUN-20
NO2-L-IC-N-CL								
	Water							
Batch	R5102422							
WG3332319-10	LCS							
Nitrite (as N)			95.7		%		90-110	30-MAY-20
WG3332319-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-MAY-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5102422							
WG3332319-10	LCS							
Nitrate (as N)			103.3		%		90-110	30-MAY-20
WG3332319-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-MAY-20
ORP-CL	Water							
Batch	R5111019							
WG3337702-1	CRM	CL-ORP						
ORP			224		mV		210-230	08-JUN-20
P-T-L-COL-CL	Water							
Batch	R5103589							
WG3333580-26	LCS							
Phosphorus (P)-Total			109.5		%		80-120	02-JUN-20
WG3333580-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-JUN-20
PH-CL	Water							
Batch	R5106220							
WG3335073-5	LCS							
pH			6.97		pH		6.9-7.1	03-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5102132							
WG3331795-14	LCS							
Orthophosphate-Dissolved (as P)			103.2		%		80-120	29-MAY-20
WG3331795-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-20
SO4-IC-N-CL	Water							
Batch	R5102422							
WG3332319-10	LCS							
Sulfate (SO4)			104.9		%		90-110	30-MAY-20
WG3332319-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5108616							
WG3334208-17	LCS							
Total Dissolved Solids			100.2		%		85-115	03-JUN-20
WG3334208-16	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch R5108616								
WG3334208-16 MB								
Total Dissolved Solids			<10		mg/L		10	03-JUN-20
TKN-L-F-CL								
Water								
Batch R5110046								
WG3336636-10 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	05-JUN-20
WG3336636-14 LCS								
Total Kjeldahl Nitrogen			83.5		%		75-125	05-JUN-20
WG3336636-2 LCS								
Total Kjeldahl Nitrogen			87.6		%		75-125	05-JUN-20
WG3336636-6 LCS								
Total Kjeldahl Nitrogen			87.9		%		75-125	05-JUN-20
WG3336636-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
TSS-L-CL								
Water								
Batch R5108476								
WG3334504-12 LCS								
Total Suspended Solids			95.6		%		85-115	03-JUN-20
WG3334504-11 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL								
Water								
Batch R5102327								
WG3332171-21 DUP								
Turbidity		L2454006-2 1.04	1.11		NTU	6.5	15	30-MAY-20
WG3332171-17 LCS								
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-20 LCS								
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-16 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20
WG3332171-19 MB								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5102327							
WG3332171-19 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	27-MAY-20 17:45	08-JUN-20 06:15	0.25	276	hours	EHTR-FM
	2	27-MAY-20 17:00	08-JUN-20 06:15	0.25	277	hours	EHTR-FM
pH	1	27-MAY-20 17:45	03-JUN-20 13:00	0.25	163	hours	EHTR-FM
	2	27-MAY-20 17:00	03-JUN-20 13:00	0.25	164	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2454006 were received on 29-MAY-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-05-27-WG		TURNAROUND TIME:				RUSH:			
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jeremy Enns				Lab Contact Lyudmyla Shvets			Excel PDF EDD		
Email Jeremy.Enns@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com			Email 1: Leigh.Stickney@teck.com X X X		
Address P.O. BOX 5000				Address 2559 29 Street NE			Email 2: Laura.Ferguson@teck.com X X X		
							Email 3: teckcoal@equisonline.com X X X		
City Elkford Province BC				City Calgary Province AB			Email 4: jaydon.francis@teck.com X X X		
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Canada			Email 5: Brendan.Peachey@teck.com X X X		
Phone Number 250-865-3048				Phone Number 403 407 1794			Email 6: DL-Equis-GHO-Field@teck.com X X X		
							PO number 684125		

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	TSS/TURB					
GH_MW-GHC-1S_WG_2020-04-06_NP	GH_MW-GHC-1S	WG		5/27/2020	17:45	G	6	1	1	1	1		1	1						
GH_MW-GHC-ID_WG_2020-04-06_NP	GH_MW-GHC-ID	WG		5/27/2020	17:00	G	6	1	1	1	1		1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/24 930

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Sampler's Name	BP	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time	May 28, 2020
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



L2454006-COFC



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 02-JUN-20
Report Date: 29-DEC-20 16:24 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2454962
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 1
Legal Site Desc:

Comments: 12-29-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-1 GH_POTW06_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:14							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	384		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	0.72		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.255		0.050	mg/L		03-JUN-20	R5105196
Total Organic Carbon	0.65		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	0.0047		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.0589		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.014		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0483		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	184		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00080		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	0.025		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000274		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0136		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	99.6		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.00162		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.000836		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00090		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.70		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	23.3		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.21		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	8.60		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.325		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.00351		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	870		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-1 GH_POTW06_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:14							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0550		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.014		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0475		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	177		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	0.00022		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	0.00256		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.014		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000326		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0148		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	101		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.00138		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.000789		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00092		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.63		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	21.7		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	4.44		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	8.78		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.336		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	0.00018		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.00356		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	0.0049		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	11.1		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	315		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	315		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	20.0	DLHC	2.5	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1300		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.18	DLHC	0.10	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Ion Balance	104		-100	%		04-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		04-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-1 GH_POTW06_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:14							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	17.1			meq/L		04-JUN-20	
Cation Sum	17.8			meq/L		04-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.08	DLHC	0.025	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	500		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	490	DLHC	1.5	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	1060	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	0.14		0.10	NTU		02-JUN-20	R5103768
pH							
pH	7.73		0.10	pH		02-JUN-20	R5103909
L2454962-2 GH_POTW09_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 14:02							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	319		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-JUN-20	R5105196
Total Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00053		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.0366		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.018		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0099		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	116		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-2 GH_POTW09_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 14:02							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00275		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	0.161		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000460		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0128		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	46.2		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.191		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.00223		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00190		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.71		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	5.37		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.70		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	8.43		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.349		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.00246		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0055		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	479		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00055		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0345		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.017		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0084		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	100		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	0.19		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	0.00271		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.184		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000569		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0125		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	45.8		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.186		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.00218		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00175		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.60		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	5.52		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	4.82		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	8.59		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.361		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000016		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-2 GH_POTW09_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 14:02							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.00246		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	0.0063		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.7		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	261		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	261		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0276		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	8.14		0.50	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	759		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.802		0.020	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Cation - Anion Balance	4.5			%		04-JUN-20	
Anion Sum	9.14			meq/L		04-JUN-20	
Cation Sum	10.0			meq/L		04-JUN-20	
Ion Balance Calculation							
Ion Balance	109		-100	%		04-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0313		0.0050	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	372		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	175		0.30	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	542	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	0.72		0.10	NTU		02-JUN-20	R5103768
pH							
pH	8.01		0.10	pH		02-JUN-20	R5103909
L2454962-3 GH_POTW10_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-3 GH_POTW10_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Bicarbonate (HCO3)	290		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.111		0.050	mg/L		03-JUN-20	R5105196
Total Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					04-JUN-20	R5108797
Aluminum (Al)-Dissolved	0.0068		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.0236		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.043		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0339	DTC	0.0050	ug/L	04-JUN-20	04-JUN-20	R5107957
Calcium (Ca)-Dissolved	107		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00032		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	0.033		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000182		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0187		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	44.5		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.00626		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.00277		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00326		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.90		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	23.9		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.96		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	5.60		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.627		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	0.00025		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.000646		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0227	DTC	0.0010	mg/L	04-JUN-20	04-JUN-20	R5107957
Hardness							
Hardness (as CaCO3)	450		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-3 GH_POTW10_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00022		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0256		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.045		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0061		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	100		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.034		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000138		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0199		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	44.7		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.00641		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.00266		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00231		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.83		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	24.8		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	5.23		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	5.59		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.680		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000017		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.000619		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.9		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	237		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	237		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	7.01		0.50	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	749		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.815		0.020	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Ion Balance	103		-100	%		04-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.5			%		04-JUN-20	
Anion Sum	9.00			meq/L		04-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-3 GH_POTW10_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:42 Matrix: WG							
Ion Balance Calculation							
Cation Sum	9.28			meq/L		04-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.621		0.0050	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0013		0.0010	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	431		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	191		0.30	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	534	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	0.27		0.10	NTU		02-JUN-20	R5103768
pH							
pH	7.88		0.10	pH		02-JUN-20	R5103909
L2454962-4 GH_POTW15_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:40 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	294		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	0.75		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-JUN-20	R5105196
Total Organic Carbon	0.83		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	0.0061		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00163		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.0232		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.020		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0341	DTMF	0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	149		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00033		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-4 GH_POTW15_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:40							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	0.661		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000125		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0169		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	51.5		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.210		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.00248		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00145		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.69		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	0.085		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.26		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	12.9		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.414		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.00142		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0046		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	584		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00154		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0213		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.019		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0143		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	135		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	0.22		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.752		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000130		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0174		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	51.4		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.200		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.00229		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00195		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.57		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	0.066		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	4.44		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	13.2		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.429		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000015		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-4 GH_POTW15_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:40 Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.00139		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.8		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	241		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	241		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0387		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.148		0.050	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	37.7		0.50	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	964		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.167		0.020	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Ion Balance	107		-100	%		04-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	3.2			%		04-JUN-20	
Anion Sum	11.6			meq/L		04-JUN-20	
Cation Sum	12.3			meq/L		04-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	366		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	273		0.30	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	728	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	1.1		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	6.00		0.10	NTU		02-JUN-20	R5103768
pH							
pH	7.73		0.10	pH		02-JUN-20	R5103909
L2454962-5 GH_POTW17_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:30 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	352		5.0	mg/L		02-JUN-20	R5103909

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-5 GH_POTW17_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:30							
Matrix: WG							
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	0.78	DTC	0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.056		0.050	mg/L		03-JUN-20	R5105196
Total Organic Carbon	0.63	DTC	0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.0294		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.021		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0624		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	195		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.15		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	0.125		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000220		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0150		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	83.4		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.0784		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.00115		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.0199		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.78		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	5.69		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.48		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	9.28		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.462		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.00227		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0030		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	829		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-5 GH_POTW17_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:30							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00020		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0278		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.021		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0512		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	179		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	0.15		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.208		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000197		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0159		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	82.7		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.0731		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.000990		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.0148		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.66		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	6.22		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	4.72		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	9.36		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.486		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000011		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.00227		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	0.0031		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	9.7		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	289		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	289		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0109		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	19.0	DLHC	2.5	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1240		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.16	DLHC	0.10	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Ion Balance	104		-100	%		04-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	2.0			%		04-JUN-20	
Anion Sum	16.4			meq/L		04-JUN-20	
Cation Sum	17.0			meq/L		04-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-5 GH_POTW17_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:30 Matrix: WG							
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.212	DLHC	0.025	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect. ORP	437		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC Sulfate (SO4)	482	DLHC	1.5	mg/L		02-JUN-20	R5103959
Total Dissolved Solids Total Dissolved Solids	976	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity Turbidity	1.64		0.10	NTU		02-JUN-20	R5103768
pH pH	7.71		0.10	pH		02-JUN-20	R5103909
L2454962-6 GH_GWD2_WG_2020-04-06_NP Sampled By: JF/SS on 31-MAY-20 @ 13:42 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	272		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	0.63		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.086		0.050	mg/L		03-JUN-20	R5105196
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-JUN-20	R5108278
Total Organic Carbon	0.59		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					04-JUN-20	R5108797
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00076	DTC	0.00010	mg/L	04-JUN-20	04-JUN-20	R5107957
Barium (Ba)-Dissolved	0.0226		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.026		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	0.0096		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	134		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00061		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	0.107		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-6 GH_GWD2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0166		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	50.0		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.107	DTC	0.00010	mg/L	04-JUN-20	04-JUN-20	R5107957
Molybdenum (Mo)-Dissolved	0.00246		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.0106	DTC	0.00050	mg/L	04-JUN-20	04-JUN-20	R5107957
Potassium (K)-Dissolved	1.69		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	6.23		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	4.42		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	11.0		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.513		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.00111		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0047		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	541		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00056		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.0232		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.030		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0064		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	115		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	0.232		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.000113		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0183		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	48.7		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.0668		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.00245		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00390		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.69		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	9.93		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	4.83		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	9.30		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.571		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000015		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	0.00034		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.000988		0.000010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-6 GH_GWD2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.1		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	223		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	223		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0134		0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.059		0.050	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	22.0		0.50	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	859		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.561		0.020	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Ion Balance	114		-100	%		04-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	6.5			%		04-JUN-20	
Anion Sum	9.95			meq/L		04-JUN-20	
Cation Sum	11.3			meq/L		04-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.342		0.0050	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0020		0.0010	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	419		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	231		0.30	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	636	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	1.37		0.10	NTU		02-JUN-20	R5103768
pH							
pH	7.77		0.10	pH		02-JUN-20	R5103909
L2454962-7 GH_GWB2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-7 GH_GWB2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.111	RRV	0.050	mg/L		03-JUN-20	R5105196
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-JUN-20	R5108278
Total Organic Carbon	<0.50		0.50	mg/L		02-JUN-20	R5104253
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-20	04-JUN-20	R5106299
Dissolved Mercury Filtration Location	FIELD					04-JUN-20	R5106098
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	<0.050		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		04-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-7 GH_GWB2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	<0.050		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	<0.0010		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	<0.10		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	<0.050		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	<0.050		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	<0.10		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	<0.050		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.1		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.147	RRV	0.0050	mg/L		03-JUN-20	R5104422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		02-JUN-20	R5103959
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		02-JUN-20	R5103959
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		02-JUN-20	R5103959
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		04-JUN-20	
Anion Sum	<0.10			meq/L		04-JUN-20	
Cation Sum	<0.10			meq/L		04-JUN-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		04-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454962-7 GH_GWB2_WG_2020-04-06_NP							
Sampled By: JF/SS on 31-MAY-20 @ 13:42							
Matrix: WG							
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		02-JUN-20	R5103959
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		02-JUN-20	R5103959
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-20	R5104569
Oxidation redution potential by elect.							
ORP	531		-1000	mV		02-JUN-20	R5103794
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-20	R5104551
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		02-JUN-20	R5103959
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	<0.10		0.10	NTU		02-JUN-20	R5103768
pH							
pH	5.59		0.10	pH		02-JUN-20	R5103909

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2454962

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-20	LCS							
Acidity (as CaCO3)			100.1		%		85-115	02-JUN-20
WG3334185-19	MB							
Acidity (as CaCO3)			1.1		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-20	LCS							
Alkalinity, Total (as CaCO3)			103.1		%		85-115	02-JUN-20
WG3334218-19	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-2	LCS							
Beryllium (Be)-Dissolved			95.0		%		80-120	04-JUN-20
WG3334633-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5107957							
WG3334621-3	DUP	L2454962-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	04-JUN-20
WG3334621-2	LCS							
Beryllium (Be)-Total			92.2		%		80-120	04-JUN-20
WG3334621-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	04-JUN-20
WG3334621-4	MS	L2454962-2						
Beryllium (Be)-Total			86.9		%		70-130	04-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-19	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5103959							
WG3334223-11	DUP	L2454962-7						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-JUN-20
WG3334223-10	LCS							
Bromide (Br)			99.0		%		85-115	02-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5103959							
WG3334223-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-JUN-20
WG3334223-12	MS	L2454962-7						
Bromide (Br)			106.2		%		75-125	02-JUN-20
C-DIS-ORG-LOW-CL Water								
Batch	R5104253							
WG3334259-6	LCS							
Dissolved Organic Carbon			96.4		%		80-120	02-JUN-20
WG3334259-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-JUN-20
C-TOT-ORG-LOW-CL Water								
Batch	R5104253							
WG3334259-6	LCS							
Total Organic Carbon			105.3		%		80-120	02-JUN-20
WG3334259-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-JUN-20
CL-IC-N-CL Water								
Batch	R5103959							
WG3334223-11	DUP	L2454962-7						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-JUN-20
WG3334223-10	LCS							
Chloride (Cl)			104.6		%		90-110	02-JUN-20
WG3334223-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	02-JUN-20
WG3334223-12	MS	L2454962-7						
Chloride (Cl)			114.0		%		75-125	02-JUN-20
CO3-CL Water								
Batch	R5103909							
WG3334218-19	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL Water								
Batch	R5103909							
WG3334218-20	LCS							
Conductivity (@ 25C)			101.8		%		90-110	02-JUN-20
WG3334218-19	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5103959							
WG3334223-11	DUP	L2454962-7						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	02-JUN-20
WG3334223-10	LCS							
Fluoride (F)			108.9		%		90-110	02-JUN-20
WG3334223-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	02-JUN-20
WG3334223-12	MS	L2454962-7						
Fluoride (F)			117.5		%		75-125	02-JUN-20
HG-D-CVAA-VA								
Water								
Batch	R5106299							
WG3334989-2	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	04-JUN-20
WG3334989-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-20
WG3334989-4	MS	L2454962-1						
Mercury (Hg)-Dissolved			99.5		%		70-130	04-JUN-20
HG-T-U-CVAF-VA								
Water								
Batch	R5108278							
WG3335657-2	LCS							
Mercury (Hg)-Total			92.0		%		80-120	04-JUN-20
WG3335657-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-JUN-20
WG3335657-4	MS	L2454962-7						
Mercury (Hg)-Total			91.9		%		70-130	04-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5107957							
WG3335806-3	DUP	L2454962-3						
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Arsenic (As)-Dissolved		0.00021	0.00020		mg/L	1.5	20	04-JUN-20
Barium (Ba)-Dissolved		0.0236	0.0240		mg/L	1.5	20	04-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20
Boron (B)-Dissolved		0.043	0.041		mg/L	1.8	20	04-JUN-20
Cadmium (Cd)-Dissolved		0.0000339	0.0000383		mg/L	12	20	04-JUN-20
Calcium (Ca)-Dissolved		107	96.1		mg/L	0.1	20	04-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Copper (Cu)-Dissolved		0.00032	0.00040		mg/L	0.7	20	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-3	DUP	L2454962-3						
Iron (Fe)-Dissolved		0.033	0.038		mg/L	0.9	20	04-JUN-20
Lead (Pb)-Dissolved		0.000182	0.000163		mg/L	2.1	20	04-JUN-20
Lithium (Li)-Dissolved		0.0187	0.0195		mg/L	0.0	20	04-JUN-20
Magnesium (Mg)-Dissolved		44.5	43.0		mg/L	0.5	20	04-JUN-20
Manganese (Mn)-Dissolved		0.00626	0.00588		mg/L	1.2	20	04-JUN-20
Molybdenum (Mo)-Dissolved		0.00277	0.00258		mg/L	1.4	20	04-JUN-20
Nickel (Ni)-Dissolved		0.00326	0.00303		mg/L	0.1	20	04-JUN-20
Potassium (K)-Dissolved		1.90	1.74		mg/L	1.2	20	04-JUN-20
Selenium (Se)-Dissolved		0.0239	0.0239		mg/L	3.9	20	04-JUN-20
Silicon (Si)-Dissolved		4.96	4.95		mg/L	2.8	20	04-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Sodium (Na)-Dissolved		5.60	5.26		mg/L	0.7	20	04-JUN-20
Strontium (Sr)-Dissolved		0.627	0.611		mg/L	1.3	20	04-JUN-20
Thallium (Tl)-Dissolved		0.000013	0.000013		mg/L	10	20	04-JUN-20
Tin (Sn)-Dissolved		0.00025	0.00022		mg/L	1.1	20	04-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Uranium (U)-Dissolved		0.000646	0.000632		mg/L	1.7	20	04-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-JUN-20
Zinc (Zn)-Dissolved		0.0227	0.0229		mg/L	0.9	20	04-JUN-20
WG3335806-2								
	LCS							
Aluminum (Al)-Dissolved			101.9		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			105.3		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			103.2		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			103.8		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			105.4		%		80-120	04-JUN-20
Boron (B)-Dissolved			91.7		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			104.7		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			101.6		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			102.9		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			104.0		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			103.3		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			102.0		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			100.1		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			105.8		%		80-120	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-2	LCS							
Magnesium (Mg)-Dissolved			108.0		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			101.3		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			97.6		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			103.7		%		80-120	04-JUN-20
Potassium (K)-Dissolved			98.3		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			101.1		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			104.5		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			100.7		%		80-120	04-JUN-20
Sodium (Na)-Dissolved			106.8		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			110.9		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			101.9		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			98.0		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			97.4		%		80-120	04-JUN-20
Uranium (U)-Dissolved			99.4		%		80-120	04-JUN-20
Vanadium (V)-Dissolved			105.9		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			100.9		%		80-120	04-JUN-20
WG3335806-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-1	MB	NP						
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
WG3335806-4	MS	L2454962-6						
Aluminum (Al)-Dissolved			95.0		%		70-130	04-JUN-20
Antimony (Sb)-Dissolved			97.5		%		70-130	04-JUN-20
Arsenic (As)-Dissolved			110.8		%		70-130	04-JUN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Bismuth (Bi)-Dissolved			82.5		%		70-130	04-JUN-20
Boron (B)-Dissolved			91.9		%		70-130	04-JUN-20
Cadmium (Cd)-Dissolved			98.8		%		70-130	04-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Chromium (Cr)-Dissolved			98.5		%		70-130	04-JUN-20
Cobalt (Co)-Dissolved			93.9		%		70-130	04-JUN-20
Copper (Cu)-Dissolved			88.5		%		70-130	04-JUN-20
Iron (Fe)-Dissolved			95.2		%		70-130	04-JUN-20
Lead (Pb)-Dissolved			86.8		%		70-130	04-JUN-20
Lithium (Li)-Dissolved			99.9		%		70-130	04-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Molybdenum (Mo)-Dissolved			95.3		%		70-130	04-JUN-20
Nickel (Ni)-Dissolved			91.8		%		70-130	04-JUN-20
Potassium (K)-Dissolved			97.0		%		70-130	04-JUN-20
Selenium (Se)-Dissolved			129.4		%		70-130	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-4	MS	L2454962-6						
Silicon (Si)-Dissolved			90.7		%		70-130	04-JUN-20
Silver (Ag)-Dissolved			89.2		%		70-130	04-JUN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	04-JUN-20
Thallium (Tl)-Dissolved			84.7		%		70-130	04-JUN-20
Tin (Sn)-Dissolved			94.1		%		70-130	04-JUN-20
Titanium (Ti)-Dissolved			96.9		%		70-130	04-JUN-20
Uranium (U)-Dissolved			91.4		%		70-130	04-JUN-20
Vanadium (V)-Dissolved			102.1		%		70-130	04-JUN-20
Zinc (Zn)-Dissolved			90.6		%		70-130	04-JUN-20
Batch	R5108496							
WG3334633-2	LCS							
Aluminum (Al)-Dissolved			95.5		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			92.7		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			97.2		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			99.1		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	04-JUN-20
Boron (B)-Dissolved			86.5		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			107.1		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			97.3		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			98.3		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			97.6		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			90.0		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			97.3		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			95.6		%		80-120	04-JUN-20
Magnesium (Mg)-Dissolved			97.5		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			104.7		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			95.5		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			98.7		%		80-120	04-JUN-20
Potassium (K)-Dissolved			100.3		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			92.7		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			88.3		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			97.0		%		80-120	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-2	LCS							
Sodium (Na)-Dissolved			98.8		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			95.0		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			98.1		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			95.3		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			100.4		%		80-120	04-JUN-20
Uranium (U)-Dissolved			98.2		%		80-120	04-JUN-20
Vanadium (V)-Dissolved			98.2		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			97.2		%		80-120	04-JUN-20
WG3334633-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-1 MB		NP						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334621-3 DUP		L2454962-1						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	04-JUN-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Barium (Ba)-Total		0.0550	0.0538		mg/L	2.3	20	04-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20
Boron (B)-Total		0.014	0.014		mg/L	2.6	20	04-JUN-20
Cadmium (Cd)-Total		0.0000475	0.0000481		mg/L	1.3	20	04-JUN-20
Calcium (Ca)-Total		177	172		mg/L	2.8	20	04-JUN-20
Chromium (Cr)-Total		0.00022	0.00024		mg/L	7.0	20	04-JUN-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Copper (Cu)-Total		0.00256	0.00253		mg/L	1.2	20	04-JUN-20
Iron (Fe)-Total		0.014	0.014		mg/L	0.3	20	04-JUN-20
Lead (Pb)-Total		0.000326	0.000314		mg/L	3.7	20	04-JUN-20
Lithium (Li)-Total		0.0148	0.0145		mg/L	1.7	20	04-JUN-20
Magnesium (Mg)-Total		101	99.5		mg/L	1.7	20	04-JUN-20
Manganese (Mn)-Total		0.00138	0.00130		mg/L	5.9	20	04-JUN-20
Molybdenum (Mo)-Total		0.000789	0.000776		mg/L	1.6	20	04-JUN-20
Nickel (Ni)-Total		0.00092	0.00087		mg/L	6.1	20	04-JUN-20
Potassium (K)-Total		1.63	1.61		mg/L	1.2	20	04-JUN-20
Selenium (Se)-Total		0.0217	0.0223		mg/L	2.6	20	04-JUN-20
Silicon (Si)-Total		4.44	4.29		mg/L	3.4	20	04-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Sodium (Na)-Total		8.78	8.66		mg/L	1.3	20	04-JUN-20
Strontium (Sr)-Total		0.336	0.321		mg/L	4.5	20	04-JUN-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Tin (Sn)-Total		0.00018	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334621-3	DUP	L2454962-1						
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Uranium (U)-Total		0.00356	0.00347		mg/L	2.5	20	04-JUN-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-JUN-20
Zinc (Zn)-Total		0.0049	0.0047		mg/L	3.2	20	04-JUN-20
WG3334621-2	LCS							
Aluminum (Al)-Total			100.7		%		80-120	04-JUN-20
Antimony (Sb)-Total			104.8		%		80-120	04-JUN-20
Arsenic (As)-Total			102.1		%		80-120	04-JUN-20
Barium (Ba)-Total			101.1		%		80-120	04-JUN-20
Bismuth (Bi)-Total			102.4		%		80-120	04-JUN-20
Boron (B)-Total			85.7		%		80-120	04-JUN-20
Cadmium (Cd)-Total			103.8		%		80-120	04-JUN-20
Calcium (Ca)-Total			99.2		%		80-120	04-JUN-20
Chromium (Cr)-Total			102.3		%		80-120	04-JUN-20
Cobalt (Co)-Total			103.0		%		80-120	04-JUN-20
Copper (Cu)-Total			101.2		%		80-120	04-JUN-20
Iron (Fe)-Total			100.5		%		80-120	04-JUN-20
Lead (Pb)-Total			98.3		%		80-120	04-JUN-20
Lithium (Li)-Total			104.4		%		80-120	04-JUN-20
Magnesium (Mg)-Total			106.0		%		80-120	04-JUN-20
Manganese (Mn)-Total			102.6		%		80-120	04-JUN-20
Molybdenum (Mo)-Total			96.7		%		80-120	04-JUN-20
Nickel (Ni)-Total			102.3		%		80-120	04-JUN-20
Potassium (K)-Total			99.2		%		80-120	04-JUN-20
Selenium (Se)-Total			101.8		%		80-120	04-JUN-20
Silicon (Si)-Total			101.2		%		80-120	04-JUN-20
Silver (Ag)-Total			99.5		%		80-120	04-JUN-20
Sodium (Na)-Total			105.7		%		80-120	04-JUN-20
Strontium (Sr)-Total			108.5		%		80-120	04-JUN-20
Thallium (Tl)-Total			100.1		%		80-120	04-JUN-20
Tin (Sn)-Total			97.0		%		80-120	04-JUN-20
Titanium (Ti)-Total			100.1		%		80-120	04-JUN-20
Uranium (U)-Total			100.4		%		80-120	04-JUN-20
Vanadium (V)-Total			104.9		%		80-120	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334621-2	LCS							
Zinc (Zn)-Total			97.7		%		80-120	04-JUN-20
WG3334621-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	04-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	04-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	04-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-JUN-20
WG3334621-4	MS	L2454962-2						
Aluminum (Al)-Total			95.8		%		70-130	04-JUN-20
Antimony (Sb)-Total			95.2		%		70-130	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334621-4	MS	L2454962-2						
Arsenic (As)-Total			98.8		%		70-130	04-JUN-20
Barium (Ba)-Total			N/A	MS-B	%		-	04-JUN-20
Bismuth (Bi)-Total			84.3		%		70-130	04-JUN-20
Boron (B)-Total			91.0		%		70-130	04-JUN-20
Cadmium (Cd)-Total			97.5		%		70-130	04-JUN-20
Calcium (Ca)-Total			N/A	MS-B	%		-	04-JUN-20
Chromium (Cr)-Total			98.7		%		70-130	04-JUN-20
Cobalt (Co)-Total			95.2		%		70-130	04-JUN-20
Copper (Cu)-Total			89.8		%		70-130	04-JUN-20
Iron (Fe)-Total			95.9		%		70-130	04-JUN-20
Lead (Pb)-Total			87.1		%		70-130	04-JUN-20
Lithium (Li)-Total			100.5		%		70-130	04-JUN-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-JUN-20
Manganese (Mn)-Total			N/A	MS-B	%		-	04-JUN-20
Molybdenum (Mo)-Total			95.9		%		70-130	04-JUN-20
Nickel (Ni)-Total			93.0		%		70-130	04-JUN-20
Potassium (K)-Total			96.1		%		70-130	04-JUN-20
Selenium (Se)-Total			105.0		%		70-130	04-JUN-20
Silicon (Si)-Total			86.5		%		70-130	04-JUN-20
Silver (Ag)-Total			91.6		%		70-130	04-JUN-20
Sodium (Na)-Total			N/A	MS-B	%		-	04-JUN-20
Strontium (Sr)-Total			N/A	MS-B	%		-	04-JUN-20
Thallium (Tl)-Total			85.4		%		70-130	04-JUN-20
Tin (Sn)-Total			94.6		%		70-130	04-JUN-20
Titanium (Ti)-Total			98.6		%		70-130	04-JUN-20
Uranium (U)-Total			94.1		%		70-130	04-JUN-20
Vanadium (V)-Total			101.9		%		70-130	04-JUN-20
Zinc (Zn)-Total			86.7		%		70-130	04-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5104422							
WG3334439-2	LCS							
Ammonia as N			97.8		%		85-115	03-JUN-20
WG3334439-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	03-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch	R5103959							
WG3334223-11	DUP	L2454962-7						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-JUN-20
WG3334223-10	LCS							
Nitrite (as N)			100.6		%		90-110	02-JUN-20
WG3334223-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-JUN-20
WG3334223-12	MS	L2454962-7						
Nitrite (as N)			110.5		%		75-125	02-JUN-20
NO3-L-IC-N-CL								
Water								
Batch	R5103959							
WG3334223-11	DUP	L2454962-7						
Nitrate (as N)		<0.0050	0.0072	RPD-NA	mg/L	N/A	20	02-JUN-20
WG3334223-10	LCS							
Nitrate (as N)			104.8		%		90-110	02-JUN-20
WG3334223-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-JUN-20
WG3334223-12	MS	L2454962-7						
Nitrate (as N)			114.3		%		75-125	02-JUN-20
OH-CL								
Water								
Batch	R5103909							
WG3334218-19	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL								
Water								
Batch	R5103794							
WG3333928-3	CRM	CL-ORP						
ORP			230		mV		210-230	02-JUN-20
WG3333928-5	CRM	CL-ORP						
ORP			221		mV		210-230	02-JUN-20
WG3333928-6	DUP	L2454962-6						
ORP		419	430	J	mV	10.9	15	02-JUN-20
P-T-L-COL-CL								
Water								
Batch	R5104551							
WG3334473-3	DUP	L2454962-7						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-JUN-20
WG3334473-2	LCS							
Phosphorus (P)-Total			94.5		%		80-120	03-JUN-20
WG3334473-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5105196							
WG3334673-10	LCS							
Total Kjeldahl Nitrogen			82.7		%		75-125	03-JUN-20
WG3334673-14	LCS							
Total Kjeldahl Nitrogen			83.3		%		75-125	03-JUN-20
WG3334673-2	LCS							
Total Kjeldahl Nitrogen			85.3		%		75-125	03-JUN-20
WG3334673-6	LCS							
Total Kjeldahl Nitrogen			82.7		%		75-125	03-JUN-20
WG3334673-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-20
WG3334673-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-20
WG3334673-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-20
WG3334673-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-20
TSS-L-CL		Water						
Batch	R5105582							
WG3333306-12	LCS							
Total Suspended Solids			109.6		%		85-115	02-JUN-20
WG3333306-11	MB							
Total Suspended Solids			<1.0		mg/L		1	02-JUN-20
TURBIDITY-CL		Water						
Batch	R5103768							
WG3333915-2	LCS							
Turbidity			103.5		%		85-115	02-JUN-20
WG3333915-1	MB							
Turbidity			<0.10		NTU		0.1	02-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	31-MAY-20 13:14	02-JUN-20 15:00	0.25	50	hours	EHTR-FM
	2	31-MAY-20 14:02	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
	3	31-MAY-20 13:42	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
	4	31-MAY-20 13:40	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
	5	31-MAY-20 13:30	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
	6	31-MAY-20 13:42	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
	7	31-MAY-20 13:42	02-JUN-20 15:00	0.25	49	hours	EHTR-FM
pH							
	1	31-MAY-20 13:14	02-JUN-20 13:00	0.25	48	hours	EHTR-FM
	2	31-MAY-20 14:02	02-JUN-20 13:00	0.25	47	hours	EHTR-FM
	3	31-MAY-20 13:42	02-JUN-20 13:00	0.25	47	hours	EHTR-FM
	4	31-MAY-20 13:40	02-JUN-20 13:00	0.25	47	hours	EHTR-FM
	5	31-MAY-20 13:30	02-JUN-20 13:00	0.25	48	hours	EHTR-FM
	6	31-MAY-20 13:42	02-JUN-20 13:00	0.25	47	hours	EHTR-FM
	7	31-MAY-20 13:42	02-JUN-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2454962 were received on 02-JUN-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Leigh Stickney			Lab Contact	Justine Buma-a		Email 1:	Leigh.Stickney@teck.com	X	X	X	
Email	leigh.stickney@teck.com			Email	Justine.Bumaa@ALSGlobal.com		Email 2:	Jeremy.Enns@teck.com	X	X	X	
Address	P.O. BOX 5000			Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com			X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794		PO number	684125				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL.	PRESERV.	ANALYSIS REQUESTED							BOD/Colour	EPH	PAH	TSS/TURB	HG-T-CVAF-VA
										ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC					
GH_POTW06_WG_2020-04-06_NP	GH_POTW06	WG		2020/05/31	13:14	G	6			X	X		X	X	X	X					
GH_POTW09_WG_2020-04-06_NP	GH_POTW09	WG		2020/05/31	14:02	G	6			X	X		X	X	X	X					
GH_POTW10_WG_2020-04-06_NP	GH_POTW10	WG		2020/05/31	13:42	G	6			X	X		X	X	X	X					
GH_POTW15_WG_2020-04-06_NP	GH_POTW15	WG		2020/05/31	13:40	G	6			X	X		X	X	X	X					
GH_POTW17_WG_2020-04-06_NP	GH_POTW17	WG		2020/05/31	13:30	G	6			X	X		X	X	X	X					
GH_GWD2_WG_2020-04-06_NP	GH_GWD2	WG		2020/05/31	13:42	G	7			X	X	X	X	X	X	X					
GH_GWB2_WG_2020-04-06_NP	GH_GWB2	WG		2020/05/31	13:42	G	7			X	X	X	X	X	X	X					
						G															
						G															
						G															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

1 DAY RUSH

SERVICE REQUEST (rush - subject to availability)

Regular (default)	Sampler's Name	JF/SS	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge X			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 04-JUN-20
Report Date: 14-DEC-20 16:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2456356
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 1
Legal Site Desc:

Comments: 14-DEC-20: Bicarbonate, Carbonate and Hydroxide results added.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-1 GH_GA-MW-1_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 14:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	460		5.0	mg/L		12-JUN-20	R5117114
Carbonate (CO3)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Dissolved Organic Carbon	2.48		0.50	mg/L		11-JUN-20	R5116535
Hydroxide (OH)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Total Kjeldahl Nitrogen	0.230		0.050	mg/L		12-JUN-20	R5117863
Mercury (Hg)-Total	0.00121		0.00050	ug/L		08-JUN-20	R5111020
Total Organic Carbon	2.75		0.50	mg/L		11-JUN-20	R5116535
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-20	06-JUN-20	R5110277
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-20	10-JUN-20	R5115419
Dissolved Mercury Filtration Location	FIELD					10-JUN-20	R5114799
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-20	06-JUN-20	R5110277
Antimony (Sb)-Dissolved	0.00047		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Arsenic (As)-Dissolved	0.00048		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Barium (Ba)-Dissolved	0.0353		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Boron (B)-Dissolved	0.805		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cadmium (Cd)-Dissolved	0.0201		0.0050	ug/L	06-JUN-20	06-JUN-20	R5110277
Calcium (Ca)-Dissolved	56.8		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cobalt (Co)-Dissolved	0.26		0.10	ug/L	06-JUN-20	06-JUN-20	R5110277
Copper (Cu)-Dissolved	0.0375		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Iron (Fe)-Dissolved	0.015		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Lithium (Li)-Dissolved	0.184		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Magnesium (Mg)-Dissolved	29.8		0.10	mg/L	06-JUN-20	06-JUN-20	R5110277
Manganese (Mn)-Dissolved	0.108		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Molybdenum (Mo)-Dissolved	0.00544		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Nickel (Ni)-Dissolved	0.00298		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Potassium (K)-Dissolved	3.40		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Selenium (Se)-Dissolved	0.137		0.050	ug/L	06-JUN-20	06-JUN-20	R5110277
Silicon (Si)-Dissolved	3.86		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Sodium (Na)-Dissolved	160		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Strontium (Sr)-Dissolved	3.80		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Thallium (Tl)-Dissolved	0.000034		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Uranium (U)-Dissolved	0.00146		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Hardness							
Hardness (as CaCO3)	265		0.50	mg/L		09-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-JUN-20	R5116389

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-1 GH_GA-MW-1_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 14:10 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	377		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Carbonate (as CaCO3)	5.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Total (as CaCO3)	382		1.0	mg/L		12-JUN-20	R5117114
Ammonia, Total (as N)							
Ammonia as N	0.159		0.0050	mg/L		12-JUN-20	R5116847
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-JUN-20	R5109795
Chloride in Water by IC							
Chloride (Cl)	11.2	DLHC	2.5	mg/L		04-JUN-20	R5109795
Electrical Conductivity (EC)							
Conductivity (@ 25C)	953		2.0	uS/cm		12-JUN-20	R5117114
Fluoride in Water by IC							
Fluoride (F)	0.59	DLHC	0.10	mg/L		04-JUN-20	R5109795
Ion Balance Calculation							
Cation - Anion Balance	0.9			%		13-JUN-20	
Anion Sum	12.1			meq/L		13-JUN-20	
Cation Sum	12.3			meq/L		13-JUN-20	
Ion Balance Calculation							
Ion Balance	102		-100	%		13-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.105	DLHC	0.025	mg/L		04-JUN-20	R5109795
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		04-JUN-20	R5109795
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0307		0.0010	mg/L		04-JUN-20	R5108837
Oxidation redution potential by elect.							
ORP	446		-1000	mV		10-JUN-20	R5115479
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0307		0.0020	mg/L		11-JUN-20	R5116058
Sulfate in Water by IC							
Sulfate (SO4)	199	DLHC	1.5	mg/L		04-JUN-20	R5109795
Total Dissolved Solids							
Total Dissolved Solids	694	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids							
Total Suspended Solids	3.4		1.0	mg/L		10-JUN-20	R5116094
Turbidity							
Turbidity	1.52		0.10	NTU		06-JUN-20	R5110106
pH							
pH	8.29		0.10	pH		12-JUN-20	R5117114
L2456356-2 GH_RLP_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 14:10 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	208		5.0	mg/L		12-JUN-20	R5117114
Carbonate (CO3)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Dissolved Organic Carbon	1.36		0.50	mg/L		11-JUN-20	R5116535
Hydroxide (OH)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Total Kjeldahl Nitrogen	0.899		0.050	mg/L		12-JUN-20	R5117863
Mercury (Hg)-Total	0.00052		0.00050	ug/L		08-JUN-20	R5111020
Total Organic Carbon	1.74		0.50	mg/L		11-JUN-20	R5116535

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-2 GH_RLP_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 14:10							
Matrix: WS							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-20	06-JUN-20	R5110277
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-20	10-JUN-20	R5115419
Dissolved Mercury Filtration Location	FIELD					10-JUN-20	R5114799
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Aluminum (Al)-Dissolved	0.0097		0.0030	mg/L	06-JUN-20	06-JUN-20	R5110277
Antimony (Sb)-Dissolved	0.00729		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Arsenic (As)-Dissolved	0.00052		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Barium (Ba)-Dissolved	0.0906		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Boron (B)-Dissolved	0.019		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cadmium (Cd)-Dissolved	0.116		0.0050	ug/L	06-JUN-20	06-JUN-20	R5110277
Calcium (Ca)-Dissolved	100		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Chromium (Cr)-Dissolved	0.00017		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cobalt (Co)-Dissolved	1.54		0.10	ug/L	06-JUN-20	06-JUN-20	R5110277
Copper (Cu)-Dissolved	0.00062		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Lithium (Li)-Dissolved	0.0519		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Magnesium (Mg)-Dissolved	55.8		0.10	mg/L	06-JUN-20	06-JUN-20	R5110277
Manganese (Mn)-Dissolved	0.00207		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Molybdenum (Mo)-Dissolved	0.0333		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Nickel (Ni)-Dissolved	0.00736		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Potassium (K)-Dissolved	6.70		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Selenium (Se)-Dissolved	14.3		0.050	ug/L	06-JUN-20	06-JUN-20	R5110277
Silicon (Si)-Dissolved	2.73		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Sodium (Na)-Dissolved	10.5		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Strontium (Sr)-Dissolved	0.418		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Thallium (Tl)-Dissolved	0.000038		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Uranium (U)-Dissolved	0.0104		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Vanadium (V)-Dissolved	0.00215		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Hardness							
Hardness (as CaCO3)	480		0.50	mg/L		09-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		09-JUN-20	R5112796
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0273		0.0030	mg/L		09-JUN-20	R5112796
Antimony (Sb)-Total	0.00722		0.00010	mg/L		09-JUN-20	R5112796
Arsenic (As)-Total	0.00050		0.00010	mg/L		09-JUN-20	R5112796
Barium (Ba)-Total	0.0907		0.00010	mg/L		09-JUN-20	R5112796
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		09-JUN-20	R5112796
Boron (B)-Total	0.021		0.010	mg/L		09-JUN-20	R5112796
Cadmium (Cd)-Total	0.130		0.0050	ug/L		09-JUN-20	R5112796
Calcium (Ca)-Total	101		0.050	mg/L		09-JUN-20	R5112796

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-2 GH_RLP_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 14:10							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Chromium (Cr)-Total	0.00020		0.00010	mg/L		09-JUN-20	R5112796
Cobalt (Co)-Total	1.59		0.10	ug/L		09-JUN-20	R5112796
Copper (Cu)-Total	0.00091		0.00050	mg/L		09-JUN-20	R5112796
Iron (Fe)-Total	0.019		0.010	mg/L		09-JUN-20	R5112796
Lead (Pb)-Total	0.000066		0.000050	mg/L		09-JUN-20	R5112796
Lithium (Li)-Total	0.0529		0.0010	mg/L		09-JUN-20	R5112796
Magnesium (Mg)-Total	55.8		0.10	mg/L		09-JUN-20	R5112796
Manganese (Mn)-Total	0.0274		0.00010	mg/L		09-JUN-20	R5112796
Molybdenum (Mo)-Total	0.0340		0.000050	mg/L		09-JUN-20	R5112796
Nickel (Ni)-Total	0.00761		0.00050	mg/L		09-JUN-20	R5112796
Potassium (K)-Total	6.37		0.050	mg/L		09-JUN-20	R5112796
Selenium (Se)-Total	14.7		0.050	ug/L		09-JUN-20	R5112796
Silicon (Si)-Total	2.80		0.10	mg/L		09-JUN-20	R5112796
Silver (Ag)-Total	<0.000010		0.000010	mg/L		09-JUN-20	R5112796
Sodium (Na)-Total	10.7		0.050	mg/L		09-JUN-20	R5112796
Strontium (Sr)-Total	0.397		0.00020	mg/L		09-JUN-20	R5112796
Thallium (Tl)-Total	0.000035		0.000010	mg/L		09-JUN-20	R5112796
Tin (Sn)-Total	<0.00010		0.00010	mg/L		09-JUN-20	R5112796
Titanium (Ti)-Total	<0.010		0.010	mg/L		09-JUN-20	R5112796
Uranium (U)-Total	0.0114		0.000010	mg/L		09-JUN-20	R5112796
Vanadium (V)-Total	0.00231		0.00050	mg/L		09-JUN-20	R5112796
Zinc (Zn)-Total	0.0031		0.0030	mg/L		09-JUN-20	R5112796
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-JUN-20	R5116389
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	171		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Total (as CaCO3)	171		1.0	mg/L		12-JUN-20	R5117114
Ammonia, Total (as N)							
Ammonia as N	0.299		0.0050	mg/L		12-JUN-20	R5116847
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		04-JUN-20	R5109795
Chloride in Water by IC							
Chloride (Cl)	15.6		0.50	mg/L		04-JUN-20	R5109795
Electrical Conductivity (EC)							
Conductivity (@ 25C)	830		2.0	uS/cm		12-JUN-20	R5117114
Fluoride in Water by IC							
Fluoride (F)	0.418		0.020	mg/L		04-JUN-20	R5109795
Ion Balance Calculation							
Ion Balance	103		-100	%		13-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.3			%		13-JUN-20	
Anion Sum	9.99			meq/L		13-JUN-20	
Cation Sum	10.2			meq/L		13-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.85		0.0050	mg/L		04-JUN-20	R5109795
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	1.32		0.0010	mg/L		04-JUN-20	R5109795
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		04-JUN-20	R5108837

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-2 GH_RLP_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 14:10 Matrix: WS							
Oxidation redution potential by elect. ORP	427		-1000	mV		10-JUN-20	R5115479
Phosphorus (P)-Total Phosphorus (P)-Total	0.0046		0.0020	mg/L		11-JUN-20	R5116058
Sulfate in Water by IC Sulfate (SO4)	279		0.30	mg/L		04-JUN-20	R5109795
Total Dissolved Solids Total Dissolved Solids	666	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids Total Suspended Solids	10.3		1.0	mg/L		10-JUN-20	R5116094
Turbidity Turbidity	3.34		0.10	NTU		06-JUN-20	R5110106
pH pH	8.24		0.10	pH		12-JUN-20	R5117114
L2456356-3 GH_DRY_THICK_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 13:40 Matrix: WS							
Miscellaneous Parameters Bicarbonate (HCO3)	215		5.0	mg/L		12-JUN-20	R5117114
Carbonate (CO3)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Dissolved Organic Carbon	3.73		0.50	mg/L		11-JUN-20	R5116535
Hydroxide (OH)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Total Kjeldahl Nitrogen	10.9	DLHC	1.0	mg/L		12-JUN-20	R5117863
Mercury (Hg)-Total	<0.040	DLM	0.040	ug/L		08-JUN-20	R5111020
Total Organic Carbon	89.8	DLM	5.0	mg/L		11-JUN-20	R5116535
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-20	08-JUN-20	R5112637
Dissolved Metals Filtration Location	LAB					08-JUN-20	R5110818
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	11-JUN-20	R5115651
Dissolved Mercury Filtration Location	LAB					10-JUN-20	R5115218
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	LAB					08-JUN-20	R5110818
Aluminum (Al)-Dissolved	0.0215		0.0030	mg/L	08-JUN-20	08-JUN-20	R5112637
Antimony (Sb)-Dissolved	0.00961		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Arsenic (As)-Dissolved	0.00057		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Barium (Ba)-Dissolved	0.138		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-20	08-JUN-20	R5112637
Boron (B)-Dissolved	0.023		0.010	mg/L	08-JUN-20	08-JUN-20	R5112637
Cadmium (Cd)-Dissolved	0.188		0.0050	ug/L	08-JUN-20	08-JUN-20	R5112637
Calcium (Ca)-Dissolved	118		0.050	mg/L	08-JUN-20	08-JUN-20	R5112637
Chromium (Cr)-Dissolved	0.00062		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Cobalt (Co)-Dissolved	2.92		0.10	ug/L	08-JUN-20	08-JUN-20	R5112637
Copper (Cu)-Dissolved	0.00120		0.00020	mg/L	08-JUN-20	08-JUN-20	R5112637
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-20	08-JUN-20	R5112637
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-20	08-JUN-20	R5112637
Lithium (Li)-Dissolved	0.0597		0.0010	mg/L	08-JUN-20	08-JUN-20	R5112637
Magnesium (Mg)-Dissolved	60.7		0.10	mg/L	08-JUN-20	08-JUN-20	R5112637
Manganese (Mn)-Dissolved	0.0327		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Molybdenum (Mo)-Dissolved	0.0442		0.000050	mg/L	08-JUN-20	08-JUN-20	R5112637
Nickel (Ni)-Dissolved	0.00690		0.00050	mg/L	08-JUN-20	08-JUN-20	R5112637

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-3 GH_DRY_THICK_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 13:40							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	8.02		0.050	mg/L	08-JUN-20	08-JUN-20	R5112637
Selenium (Se)-Dissolved	21.5		0.050	ug/L	08-JUN-20	08-JUN-20	R5112637
Silicon (Si)-Dissolved	2.97		0.050	mg/L	08-JUN-20	08-JUN-20	R5112637
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-20	08-JUN-20	R5112637
Sodium (Na)-Dissolved	9.32		0.050	mg/L	08-JUN-20	08-JUN-20	R5112637
Strontium (Sr)-Dissolved	0.469		0.00020	mg/L	08-JUN-20	08-JUN-20	R5112637
Thallium (Tl)-Dissolved	0.000103		0.000010	mg/L	08-JUN-20	08-JUN-20	R5112637
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-20	08-JUN-20	R5112637
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-20	08-JUN-20	R5112637
Uranium (U)-Dissolved	0.0124		0.000010	mg/L	08-JUN-20	08-JUN-20	R5112637
Vanadium (V)-Dissolved	0.00724		0.00050	mg/L	08-JUN-20	08-JUN-20	R5112637
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-JUN-20	08-JUN-20	R5112637
Hardness							
Hardness (as CaCO3)	545		0.50	mg/L		09-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.066		0.020	ug/L		09-JUN-20	R5112796
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.357		0.0030	mg/L		09-JUN-20	R5112796
Antimony (Sb)-Total	0.00902		0.00010	mg/L		09-JUN-20	R5112796
Arsenic (As)-Total	0.00082		0.00010	mg/L		09-JUN-20	R5112796
Barium (Ba)-Total	0.224		0.00010	mg/L		09-JUN-20	R5112796
Bismuth (Bi)-Total	0.000082		0.000050	mg/L		09-JUN-20	R5112796
Boron (B)-Total	0.023		0.010	mg/L		09-JUN-20	R5112796
Cadmium (Cd)-Total	0.270		0.0050	ug/L		09-JUN-20	R5112796
Calcium (Ca)-Total	108		0.050	mg/L		09-JUN-20	R5112796
Chromium (Cr)-Total	0.00131		0.00010	mg/L		09-JUN-20	R5112796
Cobalt (Co)-Total	3.35		0.10	ug/L		09-JUN-20	R5112796
Copper (Cu)-Total	0.00533		0.00050	mg/L		09-JUN-20	R5112796
Iron (Fe)-Total	0.425		0.010	mg/L		09-JUN-20	R5112796
Lead (Pb)-Total	0.00178		0.000050	mg/L		09-JUN-20	R5112796
Lithium (Li)-Total	0.0623		0.0010	mg/L		09-JUN-20	R5112796
Magnesium (Mg)-Total	58.0		0.10	mg/L		09-JUN-20	R5112796
Manganese (Mn)-Total	0.0372		0.00010	mg/L		09-JUN-20	R5112796
Molybdenum (Mo)-Total	0.0415		0.000050	mg/L		09-JUN-20	R5112796
Nickel (Ni)-Total	0.00885		0.00050	mg/L		09-JUN-20	R5112796
Potassium (K)-Total	8.20		0.050	mg/L		09-JUN-20	R5112796
Selenium (Se)-Total	20.5		0.050	ug/L		09-JUN-20	R5112796
Silicon (Si)-Total	3.46		0.10	mg/L		09-JUN-20	R5112796
Silver (Ag)-Total	0.000053		0.000010	mg/L		09-JUN-20	R5112796
Sodium (Na)-Total	8.87		0.050	mg/L		09-JUN-20	R5112796
Strontium (Sr)-Total	0.415		0.00020	mg/L		09-JUN-20	R5112796
Thallium (Tl)-Total	0.000128		0.000010	mg/L		09-JUN-20	R5112796
Tin (Sn)-Total	<0.00010		0.00010	mg/L		09-JUN-20	R5112796
Titanium (Ti)-Total	<0.010		0.010	mg/L		09-JUN-20	R5112796
Uranium (U)-Total	0.0126		0.000010	mg/L		09-JUN-20	R5112796
Vanadium (V)-Total	0.00972		0.00050	mg/L		09-JUN-20	R5112796
Zinc (Zn)-Total	0.0083		0.0030	mg/L		09-JUN-20	R5112796
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-JUN-20	R5116389
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-3 GH_DRY_THICK_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 13:40 Matrix: WS							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	177		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Total (as CaCO3)	177		1.0	mg/L		12-JUN-20	R5117114
Ammonia, Total (as N)							
Ammonia as N	1.10	DLHC	0.25	mg/L		12-JUN-20	R5116847
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		04-JUN-20	R5109795
Chloride in Water by IC							
Chloride (Cl)	12.2		0.50	mg/L		04-JUN-20	R5109795
Electrical Conductivity (EC)							
Conductivity (@ 25C)	895		2.0	uS/cm		12-JUN-20	R5117114
Fluoride in Water by IC							
Fluoride (F)	0.528		0.020	mg/L		04-JUN-20	R5109795
Ion Balance Calculation							
Cation - Anion Balance	2.8			%		13-JUN-20	
Anion Sum	10.9			meq/L		13-JUN-20	
Cation Sum	11.6			meq/L		13-JUN-20	
Ion Balance Calculation							
Ion Balance	106		-100	%		13-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.24		0.0050	mg/L		04-JUN-20	R5109795
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	6.30		0.0010	mg/L		04-JUN-20	R5109795
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0028		0.0010	mg/L		04-JUN-20	R5108837
Oxidation redution potential by elect.							
ORP	442		-1000	mV		10-JUN-20	R5115479
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.143	DLHC	0.050	mg/L		11-JUN-20	R5116058
Sulfate in Water by IC							
Sulfate (SO4)	309		0.30	mg/L		04-JUN-20	R5109795
Total Dissolved Solids							
Total Dissolved Solids	704	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids							
Total Suspended Solids	782	DLHC	3.0	mg/L		10-JUN-20	R5116094
Turbidity							
Turbidity	698		0.10	NTU		06-JUN-20	R5110106
pH							
pH	8.10		0.10	pH		12-JUN-20	R5117114
L2456356-4 GH_TPS_WS_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 13:10 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	202		5.0	mg/L		12-JUN-20	R5117114
Carbonate (CO3)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Dissolved Organic Carbon	1.18		0.50	mg/L		11-JUN-20	R5116535
Hydroxide (OH)	<5.0		5.0	mg/L		12-JUN-20	R5117114
Total Kjeldahl Nitrogen	1.25		0.050	mg/L		12-JUN-20	R5117863
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		08-JUN-20	R5111020
Total Organic Carbon	1.57		0.50	mg/L		11-JUN-20	R5116535

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-4 GH_TPS_WS_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 13:10							
Matrix: WS							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-20	06-JUN-20	R5110277
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-20	10-JUN-20	R5115419
Dissolved Mercury Filtration Location	FIELD					10-JUN-20	R5114799
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110221
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-20	06-JUN-20	R5110277
Antimony (Sb)-Dissolved	0.00764		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Arsenic (As)-Dissolved	0.00044		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Barium (Ba)-Dissolved	0.0685		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	09-JUN-20	R5113156
Cadmium (Cd)-Dissolved	0.463		0.0050	ug/L	06-JUN-20	06-JUN-20	R5110277
Calcium (Ca)-Dissolved	100		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cobalt (Co)-Dissolved	2.88		0.10	ug/L	06-JUN-20	06-JUN-20	R5110277
Copper (Cu)-Dissolved	0.00060		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Lithium (Li)-Dissolved	0.0657		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Magnesium (Mg)-Dissolved	57.3		0.10	mg/L	06-JUN-20	06-JUN-20	R5110277
Manganese (Mn)-Dissolved	0.0252		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Molybdenum (Mo)-Dissolved	0.0431		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Nickel (Ni)-Dissolved	0.0163		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Potassium (K)-Dissolved	7.88		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Selenium (Se)-Dissolved	14.5		0.050	ug/L	06-JUN-20	06-JUN-20	R5110277
Silicon (Si)-Dissolved	1.70		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Sodium (Na)-Dissolved	8.53		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Strontium (Sr)-Dissolved	0.390		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Thallium (Tl)-Dissolved	0.000039		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Uranium (U)-Dissolved	0.0140		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Vanadium (V)-Dissolved	0.00061		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Zinc (Zn)-Dissolved	0.0045		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Hardness							
Hardness (as CaCO3)	486		0.50	mg/L		10-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115451
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0154		0.0030	mg/L		10-JUN-20	R5115451
Antimony (Sb)-Total	0.00767		0.00010	mg/L		10-JUN-20	R5115451
Arsenic (As)-Total	0.00047		0.00010	mg/L		10-JUN-20	R5115451
Barium (Ba)-Total	0.0637		0.00010	mg/L		10-JUN-20	R5115451
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115451
Boron (B)-Total	0.012		0.010	mg/L		10-JUN-20	R5115451
Cadmium (Cd)-Total	0.421		0.0050	ug/L		10-JUN-20	R5115451
Calcium (Ca)-Total	105		0.050	mg/L		10-JUN-20	R5115451

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-4 GH_TPS_WS_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 13:10							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115451
Cobalt (Co)-Total	2.88		0.10	ug/L		10-JUN-20	R5115451
Copper (Cu)-Total	0.00071		0.00050	mg/L		10-JUN-20	R5115451
Iron (Fe)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115451
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115451
Lithium (Li)-Total	0.0645		0.0010	mg/L		10-JUN-20	R5115451
Magnesium (Mg)-Total	58.8		0.10	mg/L		10-JUN-20	R5115451
Manganese (Mn)-Total	0.0351		0.00010	mg/L		10-JUN-20	R5115451
Molybdenum (Mo)-Total	0.0436		0.000050	mg/L		10-JUN-20	R5115451
Nickel (Ni)-Total	0.0156		0.00050	mg/L		10-JUN-20	R5115451
Potassium (K)-Total	6.89		0.050	mg/L		10-JUN-20	R5115451
Selenium (Se)-Total	14.1		0.050	ug/L		10-JUN-20	R5115451
Silicon (Si)-Total	1.72		0.10	mg/L		10-JUN-20	R5115451
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115451
Sodium (Na)-Total	8.23		0.050	mg/L		10-JUN-20	R5115451
Strontium (Sr)-Total	0.404		0.00020	mg/L		10-JUN-20	R5115451
Thallium (Tl)-Total	0.000041		0.000010	mg/L		10-JUN-20	R5115451
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115451
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115451
Uranium (U)-Total	0.0175		0.000010	mg/L		10-JUN-20	R5115451
Vanadium (V)-Total	0.00071		0.00050	mg/L		10-JUN-20	R5115451
Zinc (Zn)-Total	0.0056		0.0030	mg/L		10-JUN-20	R5115451
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-JUN-20	R5116389
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	166		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-20	R5117114
Alkalinity, Total (as CaCO3)	166		1.0	mg/L		12-JUN-20	R5117114
Ammonia, Total (as N)							
Ammonia as N	0.720	DLHC	0.050	mg/L		12-JUN-20	R5116847
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		04-JUN-20	R5109795
Chloride in Water by IC							
Chloride (Cl)	11.7		0.50	mg/L		04-JUN-20	R5109795
Electrical Conductivity (EC)							
Conductivity (@ 25C)	825		2.0	uS/cm		12-JUN-20	R5117114
Fluoride in Water by IC							
Fluoride (F)	0.304		0.020	mg/L		04-JUN-20	R5109795
Ion Balance Calculation							
Ion Balance	103		-100	%		13-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.2			%		13-JUN-20	
Anion Sum	10.0			meq/L		13-JUN-20	
Cation Sum	10.3			meq/L		13-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.51		0.0050	mg/L		04-JUN-20	R5109795
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.153		0.0010	mg/L		04-JUN-20	R5109795
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		04-JUN-20	R5108837

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-4 GH_TPS_WS_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 13:10 Matrix: WS							
Oxidation redution potential by elect. ORP	476		-1000	mV		10-JUN-20	R5115479
Phosphorus (P)-Total Phosphorus (P)-Total	0.0032		0.0020	mg/L		11-JUN-20	R5116058
Sulfate in Water by IC Sulfate (SO4)	297		0.30	mg/L		04-JUN-20	R5109795
Total Dissolved Solids Total Dissolved Solids	674	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids Total Suspended Solids	4.4		1.0	mg/L		10-JUN-20	R5116094
Turbidity Turbidity	1.76		0.10	NTU		06-JUN-20	R5110106
pH pH	8.29		0.10	pH		12-JUN-20	R5117114
L2456356-5 GH_PHS3_WS_2020-06-01_N Sampled By: MD BP on 03-JUN-20 @ 12:10 Matrix: WS							
Miscellaneous Parameters Bicarbonate (HCO3)	385		5.0	mg/L		04-JUN-20	R5108979
Carbonate (CO3)	<5.0		5.0	mg/L		04-JUN-20	R5108979
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-JUN-20	R5109343
Hydroxide (OH)	<5.0		5.0	mg/L		04-JUN-20	R5108979
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		05-JUN-20	R5110046
Mercury (Hg)-Total	0.00059		0.00050	ug/L		06-JUN-20	R5110286
Total Organic Carbon	<0.50		0.50	mg/L		04-JUN-20	R5109343
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-20	06-JUN-20	R5110277
Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110133
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-JUN-20	06-JUN-20	R5110081
Dissolved Mercury Filtration Location	FIELD					06-JUN-20	R5110176
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					06-JUN-20	R5110133
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-20	06-JUN-20	R5110277
Antimony (Sb)-Dissolved	0.00378		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Barium (Ba)-Dissolved	0.0161		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Boron (B)-Dissolved	0.011		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cadmium (Cd)-Dissolved	0.703		0.0050	ug/L	06-JUN-20	06-JUN-20	R5110277
Calcium (Ca)-Dissolved	271		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Cobalt (Co)-Dissolved	30.3		0.10	ug/L	06-JUN-20	06-JUN-20	R5110277
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Lithium (Li)-Dissolved	0.123		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Magnesium (Mg)-Dissolved	165		0.10	mg/L	06-JUN-20	06-JUN-20	R5110277
Manganese (Mn)-Dissolved	0.221		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Molybdenum (Mo)-Dissolved	0.0173		0.000050	mg/L	06-JUN-20	06-JUN-20	R5110277
Nickel (Ni)-Dissolved	0.164		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-5 GH_PHS3_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 12:10							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	6.61		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Selenium (Se)-Dissolved	21.5		0.050	ug/L	06-JUN-20	06-JUN-20	R5110277
Silicon (Si)-Dissolved	2.35		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Sodium (Na)-Dissolved	9.26		0.050	mg/L	06-JUN-20	06-JUN-20	R5110277
Strontium (Sr)-Dissolved	0.411		0.00020	mg/L	06-JUN-20	06-JUN-20	R5110277
Thallium (Tl)-Dissolved	0.000087		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-20	06-JUN-20	R5110277
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-20	06-JUN-20	R5110277
Uranium (U)-Dissolved	0.0116		0.000010	mg/L	06-JUN-20	06-JUN-20	R5110277
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-20	06-JUN-20	R5110277
Zinc (Zn)-Dissolved	0.0839		0.0010	mg/L	06-JUN-20	06-JUN-20	R5110277
Hardness							
Hardness (as CaCO3)	1350		0.50	mg/L		06-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		06-JUN-20	R5109760
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0442		0.0030	mg/L		06-JUN-20	R5109760
Antimony (Sb)-Total	0.00362		0.00010	mg/L		06-JUN-20	R5109760
Arsenic (As)-Total	0.00026		0.00010	mg/L		06-JUN-20	R5109760
Barium (Ba)-Total	0.0195		0.00010	mg/L		06-JUN-20	R5109760
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		06-JUN-20	R5109760
Boron (B)-Total	0.012		0.010	mg/L		06-JUN-20	R5109760
Cadmium (Cd)-Total	0.745		0.0050	ug/L		06-JUN-20	R5109760
Calcium (Ca)-Total	280		0.050	mg/L		06-JUN-20	R5109760
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		06-JUN-20	R5109760
Cobalt (Co)-Total	34.9		0.10	ug/L		06-JUN-20	R5109760
Copper (Cu)-Total	<0.00050		0.00050	mg/L		06-JUN-20	R5109760
Iron (Fe)-Total	0.024		0.010	mg/L		06-JUN-20	R5109760
Lead (Pb)-Total	0.000059		0.000050	mg/L		06-JUN-20	R5109760
Lithium (Li)-Total	0.132		0.0010	mg/L		06-JUN-20	R5109760
Magnesium (Mg)-Total	179		0.10	mg/L		06-JUN-20	R5109760
Manganese (Mn)-Total	0.283		0.00010	mg/L		06-JUN-20	R5109760
Molybdenum (Mo)-Total	0.0168		0.000050	mg/L		06-JUN-20	R5109760
Nickel (Ni)-Total	0.174		0.00050	mg/L		06-JUN-20	R5109760
Potassium (K)-Total	6.71		0.050	mg/L		06-JUN-20	R5109760
Selenium (Se)-Total	23.8		0.050	ug/L		06-JUN-20	R5109760
Silicon (Si)-Total	2.64		0.10	mg/L		06-JUN-20	R5109760
Silver (Ag)-Total	<0.000010		0.000010	mg/L		06-JUN-20	R5109760
Sodium (Na)-Total	10.6		0.050	mg/L		06-JUN-20	R5109760
Strontium (Sr)-Total	0.408		0.00020	mg/L		06-JUN-20	R5109760
Thallium (Tl)-Total	0.000093		0.000010	mg/L		06-JUN-20	R5109760
Tin (Sn)-Total	<0.00010		0.00010	mg/L		06-JUN-20	R5109760
Titanium (Ti)-Total	<0.010		0.010	mg/L		06-JUN-20	R5109760
Uranium (U)-Total	0.0133		0.000010	mg/L		06-JUN-20	R5109760
Vanadium (V)-Total	<0.00050		0.00050	mg/L		06-JUN-20	R5109760
Zinc (Zn)-Total	0.0866		0.0030	mg/L		06-JUN-20	R5109760
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	11.0		1.0	mg/L		04-JUN-20	R5109019
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456356-5 GH_PHS3_WS_2020-06-01_N							
Sampled By: MD BP on 03-JUN-20 @ 12:10							
Matrix: WS							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	316		1.0	mg/L		04-JUN-20	R5108979
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-JUN-20	R5108979
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-JUN-20	R5108979
Alkalinity, Total (as CaCO3)	316		1.0	mg/L		04-JUN-20	R5108979
Ammonia, Total (as N)							
Ammonia as N	0.465		0.0050	mg/L		05-JUN-20	R5109816
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-JUN-20	R5109795
Chloride in Water by IC							
Chloride (Cl)	4.7	DLHC	2.5	mg/L		04-JUN-20	R5109795
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1970		2.0	uS/cm		04-JUN-20	R5108979
Fluoride in Water by IC							
Fluoride (F)	0.26	DLHC	0.10	mg/L		04-JUN-20	R5109795
Ion Balance Calculation							
Cation - Anion Balance	0.4			%		12-JUN-20	
Anion Sum	27.5			meq/L		12-JUN-20	
Cation Sum	27.7			meq/L		12-JUN-20	
Ion Balance Calculation							
Ion Balance	101		-100	%		12-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	19.3	DLHC	0.025	mg/L		04-JUN-20	R5109795
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0675	DLHC	0.0050	mg/L		04-JUN-20	R5109795
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		04-JUN-20	R5108837
Oxidation redution potential by elect.							
ORP	318		-1000	mV		05-JUN-20	R5110031
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-JUN-20	R5106725
Sulfate in Water by IC							
Sulfate (SO4)	944	DLHC	1.5	mg/L		04-JUN-20	R5109795
Total Dissolved Solids							
Total Dissolved Solids	1790	DLHC	20	mg/L		04-JUN-20	R5110013
Total Suspended Solids							
Total Suspended Solids	3.1		1.0	mg/L		04-JUN-20	R5109957
Turbidity							
Turbidity	3.20		0.10	NTU		04-JUN-20	R5109889
pH							
pH	8.05		0.10	pH		04-JUN-20	R5108979

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2456356-3	GH_DRY_THICK_WS_2020-0	SFPL	LAB FILTER/PRESERVE DOC, DIS METALS - Sample was Filtered and Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2456356

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5109019							
WG3335974-20	LCS							
Acidity (as CaCO3)			106.6		%		85-115	04-JUN-20
Batch	R5116389							
WG3335974-19	MB							
Acidity (as CaCO3)			1.1		mg/L		2	04-JUN-20
Batch	R5116389							
WG3340782-2	LCS							
Acidity (as CaCO3)			104.7		%		85-115	11-JUN-20
Batch	R5116389							
WG3340782-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	11-JUN-20
ALK-MAN-CL		Water						
Batch	R5108979							
WG3335929-20	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	04-JUN-20
Batch	R5117114							
WG3335929-19	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-JUN-20
Batch	R5117114							
WG3341571-2	LCS							
Alkalinity, Total (as CaCO3)			102.3		%		85-115	12-JUN-20
Batch	R5117114							
WG3341571-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-JUN-20
BE-D-L-CCMS-VA		Water						
Batch	R5110277							
WG3336765-3	DUP	L2456356-5						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3336795-3	DUP	L2456356-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3336765-2	LCS							
Beryllium (Be)-Dissolved			104.7		%		80-120	06-JUN-20
WG3336795-2	LCS							
Beryllium (Be)-Dissolved			97.9		%		80-120	06-JUN-20
WG3336765-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-JUN-20
WG3336795-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-JUN-20
WG3336795-4	MS	L2456356-2						
Beryllium (Be)-Dissolved			96.3		%		70-130	06-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BE-D-L-CCMS-VA Water								
Batch	R5112637							
WG3337057-2	LCS							
Beryllium (Be)-Dissolved			99.2		%		80-120	08-JUN-20
WG3337057-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-JUN-20
BE-T-L-CCMS-VA Water								
Batch	R5109760							
WG3336766-3	DUP	L2456356-5						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3336766-2	LCS							
Beryllium (Be)-Total			99.6		%		80-120	06-JUN-20
WG3336766-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	06-JUN-20
Batch	R5112796							
WG3337024-2	LCS							
Beryllium (Be)-Total			100.5		%		80-120	09-JUN-20
WG3337024-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	09-JUN-20
Batch	R5115451							
WG3339149-2	LCS							
Beryllium (Be)-Total			94.7		%		80-120	10-JUN-20
WG3339149-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
BIC-CL Water								
Batch	R5108979							
WG3335929-19	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-JUN-20
Batch	R5117114							
WG3341571-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-JUN-20
BR-L-IC-N-CL Water								
Batch	R5109795							
WG3336273-14	LCS							
Bromide (Br)			102.1		%		85-115	04-JUN-20
WG3336273-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-JUN-20
C-DIS-ORG-LOW-CL Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5109343							
WG3336047-2	LCS							
Dissolved Organic Carbon			96.5		%		80-120	04-JUN-20
WG3336047-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUN-20
Batch	R5116535							
WG3340893-3	DUP	L2456356-1						
Dissolved Organic Carbon		2.48	2.51		mg/L	1.3	20	11-JUN-20
WG3340893-2	LCS							
Dissolved Organic Carbon			105.7		%		80-120	11-JUN-20
WG3340893-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-JUN-20
WG3340893-4	MS	L2456356-1						
Dissolved Organic Carbon			98.4		%		70-130	11-JUN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5109343							
WG3336047-2	LCS							
Total Organic Carbon			101.9		%		80-120	04-JUN-20
WG3336047-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-20
Batch	R5116535							
WG3340893-3	DUP	L2456356-1						
Total Organic Carbon		2.75	2.62		mg/L	4.5	20	11-JUN-20
WG3340893-2	LCS							
Total Organic Carbon			110.1		%		80-120	11-JUN-20
WG3340893-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	11-JUN-20
WG3340893-4	MS	L2456356-1						
Total Organic Carbon			96.8		%		70-130	11-JUN-20
CL-IC-N-CL								
	Water							
Batch	R5109795							
WG3336273-14	LCS							
Chloride (Cl)			102.1		%		90-110	04-JUN-20
WG3336273-13	MB							
Chloride (Cl)			<0.50		mg/L		0.5	04-JUN-20
CO3-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL								
Water								
Batch R5108979								
WG3335929-19 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	04-JUN-20
Batch R5117114								
WG3341571-1 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	12-JUN-20
EC-L-PCT-CL								
Water								
Batch R5108979								
WG3335929-20 LCS								
Conductivity (@ 25C)								
			99.0		%		90-110	04-JUN-20
WG3335929-19 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	04-JUN-20
Batch R5117114								
WG3341571-2 LCS								
Conductivity (@ 25C)								
			104.5		%		90-110	12-JUN-20
WG3341571-1 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	12-JUN-20
F-IC-N-CL								
Water								
Batch R5109795								
WG3336273-14 LCS								
Fluoride (F)								
			95.0		%		90-110	04-JUN-20
WG3336273-13 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	04-JUN-20
HG-D-CVAA-VA								
Water								
Batch R5110081								
WG3336801-3 DUP								
Mercury (Hg)-Dissolved								
		L2456356-5	<0.0000050					
			<0.0000050	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3336801-2 LCS								
Mercury (Hg)-Dissolved								
			101.4		%		80-120	06-JUN-20
WG3336801-1 MB								
Mercury (Hg)-Dissolved								
		NP	<0.0000050		mg/L		0.000005	06-JUN-20
Batch R5115419								
WG3339237-10 LCS								
Mercury (Hg)-Dissolved								
			98.5		%		80-120	10-JUN-20
WG3339237-9 MB								
Mercury (Hg)-Dissolved								
		NP	<0.0000050		mg/L		0.000005	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Batch R5115651								
WG3339357-6	LCS							
Mercury (Hg)-Dissolved			102.0		%		80-120	11-JUN-20
WG3339357-5	MB	LF						
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	11-JUN-20
HG-T-U-CVAF-VA								
Batch R5110286								
WG3336902-3	DUP	L2456356-5						
Mercury (Hg)-Total		0.00059	0.00058		ug/L	2.2	20	06-JUN-20
WG3336902-2	LCS							
Mercury (Hg)-Total			98.0		%		80-120	06-JUN-20
WG3336902-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	06-JUN-20
Batch R5111020								
WG3337708-2	LCS							
Mercury (Hg)-Total			85.2		%		80-120	08-JUN-20
WG3337708-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	08-JUN-20
MET-D-CCMS-VA								
Batch R5110277								
WG3336765-3	DUP	L2456356-5						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	06-JUN-20
Antimony (Sb)-Dissolved		0.00378	0.00387		mg/L	2.2	20	06-JUN-20
Arsenic (As)-Dissolved		0.00017	0.00019		mg/L	9.5	20	06-JUN-20
Barium (Ba)-Dissolved		0.0161	0.0158		mg/L	1.9	20	06-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Boron (B)-Dissolved		0.011	0.011		mg/L	2.8	20	06-JUN-20
Cadmium (Cd)-Dissolved		0.000703	0.000725		mg/L	3.0	20	06-JUN-20
Calcium (Ca)-Dissolved		271	274		mg/L	1.4	20	06-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Cobalt (Co)-Dissolved		0.0303	0.0306		mg/L	1.2	20	06-JUN-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Lithium (Li)-Dissolved		0.123	0.124		mg/L	1.1	20	06-JUN-20
Magnesium (Mg)-Dissolved		165	161		mg/L	2.5	20	06-JUN-20
Manganese (Mn)-Dissolved		0.221	0.224		mg/L	1.3	20	06-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336765-3	DUP	L2456356-5						
Molybdenum (Mo)-Dissolved		0.0173	0.0174		mg/L	0.3	20	06-JUN-20
Nickel (Ni)-Dissolved		0.164	0.168		mg/L	2.2	20	06-JUN-20
Potassium (K)-Dissolved		6.61	6.68		mg/L	1.0	20	06-JUN-20
Selenium (Se)-Dissolved		0.0215	0.0212		mg/L	1.4	20	06-JUN-20
Silicon (Si)-Dissolved		2.35	2.31		mg/L	2.0	20	06-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUN-20
Sodium (Na)-Dissolved		9.26	9.14		mg/L	1.3	20	06-JUN-20
Strontium (Sr)-Dissolved		0.411	0.401		mg/L	2.3	20	06-JUN-20
Thallium (Tl)-Dissolved		0.000087	0.000088		mg/L	1.1	20	06-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-JUN-20
Uranium (U)-Dissolved		0.0116	0.0116		mg/L	0.0	20	06-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUN-20
Zinc (Zn)-Dissolved		0.0839	0.0833		mg/L	0.7	20	06-JUN-20
WG3336795-3	DUP	L2456356-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	06-JUN-20
Antimony (Sb)-Dissolved		0.00047	0.00047		mg/L	0.2	20	06-JUN-20
Arsenic (As)-Dissolved		0.00048	0.00054		mg/L	12	20	06-JUN-20
Barium (Ba)-Dissolved		0.0353	0.0351		mg/L	0.5	20	06-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Boron (B)-Dissolved		0.805	0.832		mg/L	3.3	20	06-JUN-20
Cadmium (Cd)-Dissolved		0.0000201	0.0000203		mg/L	0.9	20	06-JUN-20
Calcium (Ca)-Dissolved		56.8	57.2		mg/L	0.7	20	06-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Cobalt (Co)-Dissolved		0.00026	0.00027		mg/L	3.5	20	06-JUN-20
Copper (Cu)-Dissolved		0.0375	0.0376		mg/L	0.1	20	06-JUN-20
Iron (Fe)-Dissolved		0.015	0.015		mg/L	2.6	20	06-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Lithium (Li)-Dissolved		0.184	0.188		mg/L	2.2	20	06-JUN-20
Magnesium (Mg)-Dissolved		29.8	29.9		mg/L	0.4	20	06-JUN-20
Manganese (Mn)-Dissolved		0.108	0.107		mg/L	0.6	20	06-JUN-20
Molybdenum (Mo)-Dissolved		0.00544	0.00557		mg/L	2.4	20	06-JUN-20
Nickel (Ni)-Dissolved		0.00298	0.00293		mg/L	1.7	20	06-JUN-20
Potassium (K)-Dissolved		3.40	3.42		mg/L	0.5	20	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336795-3	DUP	L2456356-1						
Selenium (Se)-Dissolved		0.000137	0.000118		mg/L	15	20	06-JUN-20
Silicon (Si)-Dissolved		3.86	3.84		mg/L	0.5	20	06-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUN-20
Sodium (Na)-Dissolved		160	163		mg/L	1.9	20	06-JUN-20
Strontium (Sr)-Dissolved		3.80	3.86		mg/L	1.6	20	06-JUN-20
Thallium (Tl)-Dissolved		0.000034	0.000033		mg/L	5.6	20	06-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-JUN-20
Uranium (U)-Dissolved		0.00146	0.00152		mg/L	4.2	20	06-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUN-20
Zinc (Zn)-Dissolved		0.0017	0.0017		mg/L	3.0	20	06-JUN-20
WG3336765-2	LCS							
Aluminum (Al)-Dissolved			106.3		%		80-120	06-JUN-20
Antimony (Sb)-Dissolved			103.6		%		80-120	06-JUN-20
Arsenic (As)-Dissolved			97.7		%		80-120	06-JUN-20
Barium (Ba)-Dissolved			102.5		%		80-120	06-JUN-20
Bismuth (Bi)-Dissolved			98.8		%		80-120	06-JUN-20
Boron (B)-Dissolved			97.4		%		80-120	06-JUN-20
Cadmium (Cd)-Dissolved			100.6		%		80-120	06-JUN-20
Calcium (Ca)-Dissolved			106.7		%		80-120	06-JUN-20
Chromium (Cr)-Dissolved			97.0		%		80-120	06-JUN-20
Cobalt (Co)-Dissolved			98.7		%		80-120	06-JUN-20
Copper (Cu)-Dissolved			98.8		%		80-120	06-JUN-20
Iron (Fe)-Dissolved			97.4		%		80-120	06-JUN-20
Lead (Pb)-Dissolved			99.8		%		80-120	06-JUN-20
Lithium (Li)-Dissolved			105.0		%		80-120	06-JUN-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	06-JUN-20
Manganese (Mn)-Dissolved			98.9		%		80-120	06-JUN-20
Molybdenum (Mo)-Dissolved			104.9		%		80-120	06-JUN-20
Nickel (Ni)-Dissolved			98.3		%		80-120	06-JUN-20
Potassium (K)-Dissolved			106.3		%		80-120	06-JUN-20
Selenium (Se)-Dissolved			101.0		%		80-120	06-JUN-20
Silicon (Si)-Dissolved			98.5		%		60-140	06-JUN-20
Silver (Ag)-Dissolved			105.6		%		80-120	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336765-2	LCS							
Sodium (Na)-Dissolved			100.6		%		80-120	06-JUN-20
Strontium (Sr)-Dissolved			107.8		%		80-120	06-JUN-20
Thallium (Tl)-Dissolved			101.3		%		80-120	06-JUN-20
Tin (Sn)-Dissolved			98.5		%		80-120	06-JUN-20
Titanium (Ti)-Dissolved			95.6		%		80-120	06-JUN-20
Uranium (U)-Dissolved			98.1		%		80-120	06-JUN-20
Vanadium (V)-Dissolved			100.1		%		80-120	06-JUN-20
Zinc (Zn)-Dissolved			101.4		%		80-120	06-JUN-20
WG3336795-2	LCS							
Aluminum (Al)-Dissolved			101.0		%		80-120	06-JUN-20
Antimony (Sb)-Dissolved			100.9		%		80-120	06-JUN-20
Arsenic (As)-Dissolved			96.7		%		80-120	06-JUN-20
Barium (Ba)-Dissolved			103.4		%		80-120	06-JUN-20
Bismuth (Bi)-Dissolved			99.3		%		80-120	06-JUN-20
Boron (B)-Dissolved			91.6		%		80-120	06-JUN-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	06-JUN-20
Calcium (Ca)-Dissolved			99.8		%		80-120	06-JUN-20
Chromium (Cr)-Dissolved			97.5		%		80-120	06-JUN-20
Cobalt (Co)-Dissolved			99.0		%		80-120	06-JUN-20
Copper (Cu)-Dissolved			98.8		%		80-120	06-JUN-20
Iron (Fe)-Dissolved			99.9		%		80-120	06-JUN-20
Lead (Pb)-Dissolved			99.1		%		80-120	06-JUN-20
Lithium (Li)-Dissolved			98.6		%		80-120	06-JUN-20
Magnesium (Mg)-Dissolved			96.8		%		80-120	06-JUN-20
Manganese (Mn)-Dissolved			102.7		%		80-120	06-JUN-20
Molybdenum (Mo)-Dissolved			103.6		%		80-120	06-JUN-20
Nickel (Ni)-Dissolved			98.1		%		80-120	06-JUN-20
Potassium (K)-Dissolved			104.6		%		80-120	06-JUN-20
Selenium (Se)-Dissolved			100.2		%		80-120	06-JUN-20
Silicon (Si)-Dissolved			100.9		%		60-140	06-JUN-20
Silver (Ag)-Dissolved			101.6		%		80-120	06-JUN-20
Sodium (Na)-Dissolved			99.8		%		80-120	06-JUN-20
Strontium (Sr)-Dissolved			106.6		%		80-120	06-JUN-20
Thallium (Tl)-Dissolved			98.4		%		80-120	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336795-2	LCS							
Tin (Sn)-Dissolved			99.99		%		80-120	06-JUN-20
Titanium (Ti)-Dissolved			94.5		%		80-120	06-JUN-20
Uranium (U)-Dissolved			96.3		%		80-120	06-JUN-20
Vanadium (V)-Dissolved			99.9		%		80-120	06-JUN-20
Zinc (Zn)-Dissolved			102.6		%		80-120	06-JUN-20
WG3336765-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336765-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
WG3336795-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUN-20
WG3336795-4	MS	L2456356-2						
Aluminum (Al)-Dissolved			97.5		%		70-130	06-JUN-20



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MET-D-CCMS-VA								
	Water							
Batch	R5110277							
WG3336795-4	MS	L2456356-2						
Antimony (Sb)-Dissolved			102.8		%		70-130	06-JUN-20
Arsenic (As)-Dissolved			98.8		%		70-130	06-JUN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Bismuth (Bi)-Dissolved			87.4		%		70-130	06-JUN-20
Boron (B)-Dissolved			88.4		%		70-130	06-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		70-130	06-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Chromium (Cr)-Dissolved			95.2		%		70-130	06-JUN-20
Cobalt (Co)-Dissolved			91.6		%		70-130	06-JUN-20
Copper (Cu)-Dissolved			91.8		%		70-130	06-JUN-20
Iron (Fe)-Dissolved			96.0		%		70-130	06-JUN-20
Lead (Pb)-Dissolved			90.3		%		70-130	06-JUN-20
Lithium (Li)-Dissolved			100.3		%		70-130	06-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Manganese (Mn)-Dissolved			92.6		%		70-130	06-JUN-20
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Nickel (Ni)-Dissolved			90.1		%		70-130	06-JUN-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Selenium (Se)-Dissolved			100.8		%		70-130	06-JUN-20
Silicon (Si)-Dissolved			91.3		%		70-130	06-JUN-20
Silver (Ag)-Dissolved			97.9		%		70-130	06-JUN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Thallium (Tl)-Dissolved			91.9		%		70-130	06-JUN-20
Tin (Sn)-Dissolved			98.1		%		70-130	06-JUN-20
Titanium (Ti)-Dissolved			95.6		%		70-130	06-JUN-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	06-JUN-20
Vanadium (V)-Dissolved			97.6		%		70-130	06-JUN-20
Zinc (Zn)-Dissolved			95.1		%		70-130	06-JUN-20
Batch	R5112637							
WG3337057-2	LCS							
Aluminum (Al)-Dissolved			98.7		%		80-120	08-JUN-20
Antimony (Sb)-Dissolved			97.2		%		80-120	08-JUN-20
Arsenic (As)-Dissolved			93.3		%		80-120	08-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5112637							
WG3337057-2	LCS							
Barium (Ba)-Dissolved			97.2		%		80-120	08-JUN-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	08-JUN-20
Boron (B)-Dissolved			86.8		%		80-120	08-JUN-20
Cadmium (Cd)-Dissolved			96.1		%		80-120	08-JUN-20
Calcium (Ca)-Dissolved			102.1		%		80-120	08-JUN-20
Chromium (Cr)-Dissolved			97.5		%		80-120	08-JUN-20
Cobalt (Co)-Dissolved			95.4		%		80-120	08-JUN-20
Copper (Cu)-Dissolved			93.8		%		80-120	08-JUN-20
Iron (Fe)-Dissolved			90.7		%		80-120	08-JUN-20
Lead (Pb)-Dissolved			99.1		%		80-120	08-JUN-20
Lithium (Li)-Dissolved			99.3		%		80-120	08-JUN-20
Magnesium (Mg)-Dissolved			98.3		%		80-120	08-JUN-20
Manganese (Mn)-Dissolved			99.9		%		80-120	08-JUN-20
Molybdenum (Mo)-Dissolved			101.4		%		80-120	08-JUN-20
Nickel (Ni)-Dissolved			96.5		%		80-120	08-JUN-20
Potassium (K)-Dissolved			98.2		%		80-120	08-JUN-20
Selenium (Se)-Dissolved			98.5		%		80-120	08-JUN-20
Silicon (Si)-Dissolved			96.2		%		60-140	08-JUN-20
Silver (Ag)-Dissolved			103.0		%		80-120	08-JUN-20
Sodium (Na)-Dissolved			97.6		%		80-120	08-JUN-20
Strontium (Sr)-Dissolved			105.6		%		80-120	08-JUN-20
Thallium (Tl)-Dissolved			97.7		%		80-120	08-JUN-20
Tin (Sn)-Dissolved			95.9		%		80-120	08-JUN-20
Titanium (Ti)-Dissolved			97.2		%		80-120	08-JUN-20
Uranium (U)-Dissolved			96.0		%		80-120	08-JUN-20
Vanadium (V)-Dissolved			96.7		%		80-120	08-JUN-20
Zinc (Zn)-Dissolved			94.1		%		80-120	08-JUN-20
WG3337057-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5112637							
WG3337057-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-3	DUP	L2456356-5						
Aluminum (Al)-Total		0.0442	0.0431		mg/L	2.6	20	06-JUN-20
Antimony (Sb)-Total		0.00362	0.00363		mg/L	0.1	20	06-JUN-20
Arsenic (As)-Total		0.00026	0.00025		mg/L	2.9	20	06-JUN-20
Barium (Ba)-Total		0.0195	0.0193		mg/L	1.3	20	06-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Boron (B)-Total		0.012	0.012		mg/L	0.3	20	06-JUN-20
Cadmium (Cd)-Total		0.000745	0.000748		mg/L	0.4	20	06-JUN-20



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MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-3	DUP	L2456356-5						
Calcium (Ca)-Total		280	283		mg/L	1.2	20	06-JUN-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Cobalt (Co)-Total		0.0349	0.0346		mg/L	0.8	20	06-JUN-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUN-20
Iron (Fe)-Total		0.024	0.024		mg/L	2.1	20	06-JUN-20
Lead (Pb)-Total		0.000059	<0.000050	RPD-NA	mg/L	N/A	20	06-JUN-20
Lithium (Li)-Total		0.132	0.133		mg/L	0.9	20	06-JUN-20
Magnesium (Mg)-Total		179	177		mg/L	1.1	20	06-JUN-20
Manganese (Mn)-Total		0.283	0.278		mg/L	1.9	20	06-JUN-20
Molybdenum (Mo)-Total		0.0168	0.0171		mg/L	1.6	20	06-JUN-20
Nickel (Ni)-Total		0.174	0.171		mg/L	1.7	20	06-JUN-20
Potassium (K)-Total		6.71	6.76		mg/L	0.8	20	06-JUN-20
Selenium (Se)-Total		0.0238	0.0231		mg/L	2.7	20	06-JUN-20
Silicon (Si)-Total		2.64	2.62		mg/L	0.9	20	06-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUN-20
Sodium (Na)-Total		10.6	10.4		mg/L	2.4	20	06-JUN-20
Strontium (Sr)-Total		0.408	0.411		mg/L	0.7	20	06-JUN-20
Thallium (Tl)-Total		0.000093	0.000089		mg/L	4.2	20	06-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUN-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-JUN-20
Uranium (U)-Total		0.0133	0.0131		mg/L	1.5	20	06-JUN-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUN-20
Zinc (Zn)-Total		0.0866	0.0848		mg/L	2.1	20	06-JUN-20
WG3336766-2	LCS							
Aluminum (Al)-Total			95.4		%		80-120	06-JUN-20
Antimony (Sb)-Total			102.9		%		80-120	06-JUN-20
Arsenic (As)-Total			101.0		%		80-120	06-JUN-20
Barium (Ba)-Total			106.2		%		80-120	06-JUN-20
Bismuth (Bi)-Total			104.9		%		80-120	06-JUN-20
Boron (B)-Total			90.9		%		80-120	06-JUN-20
Cadmium (Cd)-Total			97.6		%		80-120	06-JUN-20
Calcium (Ca)-Total			101.2		%		80-120	06-JUN-20
Chromium (Cr)-Total			102.5		%		80-120	06-JUN-20
Cobalt (Co)-Total			100.8		%		80-120	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5109760							
WG3336766-2	LCS							
Copper (Cu)-Total			101.1		%		80-120	06-JUN-20
Iron (Fe)-Total			97.0		%		80-120	06-JUN-20
Lead (Pb)-Total			98.5		%		80-120	06-JUN-20
Lithium (Li)-Total			110.9		%		80-120	06-JUN-20
Magnesium (Mg)-Total			103.3		%		80-120	06-JUN-20
Manganese (Mn)-Total			100.6		%		80-120	06-JUN-20
Molybdenum (Mo)-Total			95.5		%		80-120	06-JUN-20
Nickel (Ni)-Total			102.7		%		80-120	06-JUN-20
Potassium (K)-Total			101.5		%		80-120	06-JUN-20
Selenium (Se)-Total			104.1		%		80-120	06-JUN-20
Silicon (Si)-Total			101.5		%		80-120	06-JUN-20
Silver (Ag)-Total			96.2		%		80-120	06-JUN-20
Sodium (Na)-Total			109.4		%		80-120	06-JUN-20
Strontium (Sr)-Total			105.0		%		80-120	06-JUN-20
Thallium (Tl)-Total			100.6		%		80-120	06-JUN-20
Tin (Sn)-Total			96.1		%		80-120	06-JUN-20
Titanium (Ti)-Total			99.6		%		80-120	06-JUN-20
Uranium (U)-Total			95.6		%		80-120	06-JUN-20
Vanadium (V)-Total			102.7		%		80-120	06-JUN-20
Zinc (Zn)-Total			102.4		%		80-120	06-JUN-20
WG3336766-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	06-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	06-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	06-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109760							
WG3336766-1	MB							
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	06-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	06-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	06-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	06-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	06-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	06-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-JUN-20
Batch	R5112796							
WG3337024-2	LCS							
Aluminum (Al)-Total			107.8		%		80-120	09-JUN-20
Antimony (Sb)-Total			104.2		%		80-120	09-JUN-20
Arsenic (As)-Total			96.8		%		80-120	09-JUN-20
Barium (Ba)-Total			101.8		%		80-120	09-JUN-20
Bismuth (Bi)-Total			99.8		%		80-120	09-JUN-20
Boron (B)-Total			92.7		%		80-120	09-JUN-20
Cadmium (Cd)-Total			99.6		%		80-120	09-JUN-20
Calcium (Ca)-Total			100.3		%		80-120	09-JUN-20
Chromium (Cr)-Total			100.5		%		80-120	09-JUN-20
Cobalt (Co)-Total			98.3		%		80-120	09-JUN-20
Copper (Cu)-Total			98.8		%		80-120	09-JUN-20
Iron (Fe)-Total			106.1		%		80-120	09-JUN-20
Lead (Pb)-Total			99.4		%		80-120	09-JUN-20
Lithium (Li)-Total			98.5		%		80-120	09-JUN-20
Magnesium (Mg)-Total			103.3		%		80-120	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5112796							
WG3337024-2 LCS								
Manganese (Mn)-Total			103.7		%		80-120	09-JUN-20
Molybdenum (Mo)-Total			98.9		%		80-120	09-JUN-20
Nickel (Ni)-Total			98.9		%		80-120	09-JUN-20
Potassium (K)-Total			102.5		%		80-120	09-JUN-20
Selenium (Se)-Total			99.5		%		80-120	09-JUN-20
Silicon (Si)-Total			101.2		%		80-120	09-JUN-20
Silver (Ag)-Total			101.8		%		80-120	09-JUN-20
Sodium (Na)-Total			106.0		%		80-120	09-JUN-20
Strontium (Sr)-Total			99.6		%		80-120	09-JUN-20
Thallium (Tl)-Total			100.8		%		80-120	09-JUN-20
Tin (Sn)-Total			100.9		%		80-120	09-JUN-20
Titanium (Ti)-Total			99.0		%		80-120	09-JUN-20
Uranium (U)-Total			99.1		%		80-120	09-JUN-20
Vanadium (V)-Total			100.7		%		80-120	09-JUN-20
Zinc (Zn)-Total			100.1		%		80-120	09-JUN-20
WG3337024-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JUN-20
Manganese (Mn)-Total			0.00020	B	mg/L		0.0001	09-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5112796							
WG3337024-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	09-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JUN-20
Batch	R5115451							
WG3339149-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	10-JUN-20
Antimony (Sb)-Total			115.5		%		80-120	10-JUN-20
Arsenic (As)-Total			98.8		%		80-120	10-JUN-20
Barium (Ba)-Total			98.8		%		80-120	10-JUN-20
Bismuth (Bi)-Total			107.4		%		80-120	10-JUN-20
Boron (B)-Total			98.6		%		80-120	10-JUN-20
Cadmium (Cd)-Total			99.6		%		80-120	10-JUN-20
Calcium (Ca)-Total			103.8		%		80-120	10-JUN-20
Chromium (Cr)-Total			100.9		%		80-120	10-JUN-20
Cobalt (Co)-Total			100.1		%		80-120	10-JUN-20
Copper (Cu)-Total			98.7		%		80-120	10-JUN-20
Iron (Fe)-Total			93.5		%		80-120	10-JUN-20
Lead (Pb)-Total			97.5		%		80-120	10-JUN-20
Lithium (Li)-Total			95.3		%		80-120	10-JUN-20
Magnesium (Mg)-Total			103.2		%		80-120	10-JUN-20
Manganese (Mn)-Total			100.8		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			98.8		%		80-120	10-JUN-20
Nickel (Ni)-Total			100.3		%		80-120	10-JUN-20
Potassium (K)-Total			91.3		%		80-120	10-JUN-20
Selenium (Se)-Total			104.9		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115451							
WG3339149-2	LCS							
Silicon (Si)-Total			102.7		%		80-120	10-JUN-20
Silver (Ag)-Total			102.5		%		80-120	10-JUN-20
Sodium (Na)-Total			112.6		%		80-120	10-JUN-20
Strontium (Sr)-Total			108.4		%		80-120	10-JUN-20
Thallium (Tl)-Total			108.1		%		80-120	10-JUN-20
Tin (Sn)-Total			99.9		%		80-120	10-JUN-20
Titanium (Ti)-Total			101.6		%		80-120	10-JUN-20
Uranium (U)-Total			102.5		%		80-120	10-JUN-20
Vanadium (V)-Total			102.1		%		80-120	10-JUN-20
Zinc (Zn)-Total			99.6		%		80-120	10-JUN-20
WG3339149-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			0.0217	B	mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			0.138	B	mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			0.00198	B	mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			0.000126	B	mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			0.00102	B	mg/L		0.0005	10-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch R5115451								
WG3339149-1 MB								
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUN-20
NH3-L-F-CL		Water						
Batch R5109816								
WG3336368-18 LCS								
Ammonia as N			99.8		%		85-115	05-JUN-20
WG3336368-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-20
Batch R5116847								
WG3341273-18 LCS								
Ammonia as N			98.6		%		85-115	12-JUN-20
WG3341273-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	12-JUN-20
NO2-L-IC-N-CL		Water						
Batch R5109795								
WG3336273-14 LCS								
Nitrite (as N)			99.6		%		90-110	04-JUN-20
WG3336273-13 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-JUN-20
NO3-L-IC-N-CL		Water						
Batch R5109795								
WG3336273-14 LCS								
Nitrate (as N)			103.0		%		90-110	04-JUN-20
WG3336273-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	04-JUN-20
OH-CL		Water						
Batch R5108979								
WG3335929-19 MB								
Hydroxide (OH)			<5.0		mg/L		5	04-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5108837							
WG3335588-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-JUN-20
SO4-IC-N-CL	Water							
Batch	R5109795							
WG3336273-14 LCS								
Sulfate (SO4)			103.5		%		90-110	04-JUN-20
WG3336273-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5110013							
WG3335047-20 LCS								
Total Dissolved Solids			100.9		%		85-115	04-JUN-20
WG3335047-19 MB								
Total Dissolved Solids			<10		mg/L		10	04-JUN-20
Batch	R5116226							
WG3338466-5 LCS								
Total Dissolved Solids			101.3		%		85-115	10-JUN-20
WG3338466-4 MB								
Total Dissolved Solids			<10		mg/L		10	10-JUN-20
TKN-L-F-CL	Water							
Batch	R5110046							
WG3336636-10 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	05-JUN-20
WG3336636-14 LCS								
Total Kjeldahl Nitrogen			83.5		%		75-125	05-JUN-20
WG3336636-2 LCS								
Total Kjeldahl Nitrogen			87.6		%		75-125	05-JUN-20
WG3336636-6 LCS								
Total Kjeldahl Nitrogen			87.9		%		75-125	05-JUN-20
WG3336636-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20
WG3336636-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5117863							
WG3342477-2	LCS							
Total Kjeldahl Nitrogen			90.7		%		75-125	12-JUN-20
WG3342477-6	LCS							
Total Kjeldahl Nitrogen			90.2		%		75-125	12-JUN-20
WG3342477-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-20
WG3342477-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-20
TSS-L-CL								
Water								
Batch	R5109957							
WG3334661-4	LCS							
Total Suspended Solids			96.0		%		85-115	04-JUN-20
WG3334661-3	MB							
Total Suspended Solids			<1.0		mg/L		1	04-JUN-20
Batch	R5116094							
WG3339626-2	LCS							
Total Suspended Solids			93.7		%		85-115	10-JUN-20
WG3339626-1	MB							
Total Suspended Solids			<1.0		mg/L		1	10-JUN-20
TURBIDITY-CL								
Water								
Batch	R5109889							
WG3335521-17	LCS							
Turbidity			103.0		%		85-115	04-JUN-20
WG3335521-16	MB							
Turbidity			<0.10		NTU		0.1	04-JUN-20
Batch	R5110106							
WG3336745-6	DUP	L2456356-1						
Turbidity		1.52	1.62		NTU	6.4	15	06-JUN-20
WG3336745-11	LCS							
Turbidity			102.0		%		85-115	06-JUN-20
WG3336745-5	LCS							
Turbidity			100.5		%		85-115	06-JUN-20
WG3336745-10	MB							
Turbidity			<0.10		NTU		0.1	06-JUN-20
WG3336745-4	MB							
Turbidity			<0.10		NTU		0.1	06-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	03-JUN-20 14:10	10-JUN-20 08:00	0.25	162	hours	EHTR-FM
	2	03-JUN-20 14:10	10-JUN-20 08:00	0.25	162	hours	EHTR-FM
	3	03-JUN-20 13:40	10-JUN-20 08:00	0.25	162	hours	EHTR-FM
	4	03-JUN-20 13:10	10-JUN-20 08:00	0.25	163	hours	EHTR-FM
	5	03-JUN-20 12:10	05-JUN-20 10:00	0.25	46	hours	EHTR-FM
pH							
	1	03-JUN-20 14:10	12-JUN-20 13:00	0.25	215	hours	EHTR-FM
	2	03-JUN-20 14:10	12-JUN-20 13:00	0.25	215	hours	EHTR-FM
	3	03-JUN-20 13:40	12-JUN-20 13:00	0.25	215	hours	EHTR-FM
	4	03-JUN-20 13:10	12-JUN-20 13:00	0.25	216	hours	EHTR-FM
	5	03-JUN-20 12:10	04-JUN-20 14:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2456356 were received on 04-JUN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				RUSH:							
PROJECT/CLIENT INFO					LABORATORY			OTHER INFO					
Facility Name / Job#	Greenhills Operation				Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns				Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	Jeremy.Enns@teck.com				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000				Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford		Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	DL-Equis-GHO-Field@teck.co	X	X	X
Phone Number	250-865-3048				Phone Number	403 407 1794			PO number	684125			

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	Y	Y	N	Y	N	N	N	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
								PRESERV.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	
GH_GA-MW-1_WG_2020-04-06_NP	GH_GA-MW-1	WG		June 3 2020	14:10	G	6	1	1	1	1	1	1	1		
GH_RLP_WS_2020-06-01_N	GH_RLP	WS		June 3 2020	14:10	G	7	1	1	1	1	1	1	1		
GH_DRY_THICK_WS_2020-06-01_N	GH_DRY_THICK	WS		June 3 2020	13:40	G	7	1	1	1	1	1	1	1		
GH_TPS_WS_2020-06-01_N	GH_TPS	WS		June 3 2020	13:10	G	7	1	1	1	1	1	1	1		
GH_PHS3_WS_2020-06-01_N	GH_PHS3	WS		June 3 2020	12:10	G	7	1	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
1 Day TAT			<i>[Signature]</i>	6/4/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	MD BP	Mobile #
Regular (default) X			
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

[Handwritten mark]



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 05-JUN-20
Report Date: 18-DEC-20 13:57 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2457143
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.
22-JUNE-20: Samples -1 to -4 were analyzed for Turbidity passed hold time due to sample over capacity.

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-1 GH_GA-MW-4_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 17:30							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	223		5.0	mg/L		14-JUN-20	R5117752
Carbonate (CO3)	8.3		5.0	mg/L		14-JUN-20	R5117752
Dissolved Organic Carbon	0.83		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.374		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	0.91		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0857		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.011		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	0.0071		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	54.2		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	0.00017		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0164		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	20.0		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00148		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	1.01		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	5.14		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	2.42		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	6.86		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.184		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.00148		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	218		0.50	mg/L		10-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-1 GH_GA-MW-4_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	183		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	13.8		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	196		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	3.73		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	436		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	0.130		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Cation - Anion Balance	-3.3			%		15-JUN-20	
Anion Sum	5.00			meq/L		15-JUN-20	
Cation Sum	4.67			meq/L		15-JUN-20	
Ion Balance Calculation							
Ion Balance	93.5		-100	%		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.60		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0016		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	457		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	40.7		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids							
Total Dissolved Solids	266	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		10-JUN-20	R5116094
Turbidity							
Turbidity	<0.10		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.47		0.10	pH		14-JUN-20	R5117752
L2457143-2 GH_GWB1_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Dissolved Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-2 GH_GWB1_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 17:30							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-JUN-20	R5116143
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.00035	RRV	0.00010	mg/L	11-JUN-20	11-JUN-20	R5116209
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	0.492	RRV	0.050	mg/L	11-JUN-20	11-JUN-20	R5116209
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00026	RRV	0.00020	mg/L	11-JUN-20	11-JUN-20	R5116209
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.00040	RRV	0.00010	mg/L	11-JUN-20	11-JUN-20	R5116209
Molybdenum (Mo)-Dissolved	0.000699	RRV	0.000050	mg/L	11-JUN-20	11-JUN-20	R5116209
Nickel (Ni)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.00051	RRV	0.00020	mg/L	11-JUN-20	11-JUN-20	R5116209
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	0.0228	RRV	0.0010	mg/L	11-JUN-20	11-JUN-20	R5116209
Hardness							
Hardness (as CaCO3)	1.23		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115395
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Arsenic (As)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Barium (Ba)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Boron (B)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		10-JUN-20	R5115395
Calcium (Ca)-Total	<0.050		0.050	mg/L		10-JUN-20	R5115395

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-2 GH_GWB1_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 17:30							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Cobalt (Co)-Total	<0.10		0.10	ug/L		10-JUN-20	R5115395
Copper (Cu)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Iron (Fe)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Lithium (Li)-Total	<0.0010		0.0010	mg/L		10-JUN-20	R5115395
Magnesium (Mg)-Total	<0.10		0.10	mg/L		10-JUN-20	R5115395
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Potassium (K)-Total	<0.050		0.050	mg/L		10-JUN-20	R5115395
Selenium (Se)-Total	<0.050		0.050	ug/L		10-JUN-20	R5115395
Silicon (Si)-Total	<0.10		0.10	mg/L		10-JUN-20	R5115395
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Sodium (Na)-Total	<0.050		0.050	mg/L		10-JUN-20	R5115395
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		10-JUN-20	R5115395
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Uranium (U)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		11-JUN-20	R5116389
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		15-JUN-20	
Anion Sum	<0.10			meq/L		15-JUN-20	
Cation Sum	<0.10			meq/L		15-JUN-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-20	R5110047

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-2 GH_GWB1_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Oxidation redution potential by elect. ORP	364		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		10-JUN-20	R5116226
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		10-JUN-20	R5116094
Turbidity Turbidity	<0.10		0.10	NTU		07-JUN-20	R5110404
pH pH	5.44		0.10	pH		14-JUN-20	R5117752
L2457143-3 GH_GWD1_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	227		5.0	mg/L		14-JUN-20	R5117752
Carbonate (CO3)	8.9		5.0	mg/L		14-JUN-20	R5117752
Dissolved Organic Carbon	0.74		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.413		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	0.00063		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	1.00		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0866		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.011		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	0.0071		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	52.6		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0157		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	20.1		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00144		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-3 GH_GWD1_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 17:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	1.01		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	5.01		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	2.40		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	6.83		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.190		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.00145		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	214		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115395
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Antimony (Sb)-Total	0.00014		0.00010	mg/L		10-JUN-20	R5115395
Arsenic (As)-Total	0.00014		0.00010	mg/L		10-JUN-20	R5115395
Barium (Ba)-Total	0.0905		0.00010	mg/L		10-JUN-20	R5115395
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Boron (B)-Total	0.012		0.010	mg/L		10-JUN-20	R5115395
Cadmium (Cd)-Total	0.0077		0.0050	ug/L		10-JUN-20	R5115395
Calcium (Ca)-Total	62.3		0.050	mg/L		10-JUN-20	R5115395
Chromium (Cr)-Total	0.00016		0.00010	mg/L		10-JUN-20	R5115395
Cobalt (Co)-Total	<0.10		0.10	ug/L		10-JUN-20	R5115395
Copper (Cu)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Iron (Fe)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Lithium (Li)-Total	0.0159		0.0010	mg/L		10-JUN-20	R5115395
Magnesium (Mg)-Total	21.5		0.10	mg/L		10-JUN-20	R5115395
Manganese (Mn)-Total	0.00013		0.00010	mg/L		10-JUN-20	R5115395
Molybdenum (Mo)-Total	0.00149		0.000050	mg/L		10-JUN-20	R5115395
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Potassium (K)-Total	1.07		0.050	mg/L		10-JUN-20	R5115395
Selenium (Se)-Total	4.84		0.050	ug/L		10-JUN-20	R5115395
Silicon (Si)-Total	2.46		0.10	mg/L		10-JUN-20	R5115395
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Sodium (Na)-Total	7.85		0.050	mg/L		10-JUN-20	R5115395
Strontium (Sr)-Total	0.212		0.00020	mg/L		10-JUN-20	R5115395
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Uranium (U)-Total	0.00161		0.000010	mg/L		10-JUN-20	R5115395
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-3 GH_GWD1_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	186		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	14.8		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	201		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	0.0449		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	3.68		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	432		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	0.135		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Ion Balance	90.8		-100	%		15-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-4.8			%		15-JUN-20	
Anion Sum	5.07			meq/L		15-JUN-20	
Cation Sum	4.60			meq/L		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.55		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0016		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	487		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	40.4		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids							
Total Dissolved Solids	261	DLHC	20	mg/L		10-JUN-20	R5116226
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		10-JUN-20	R5116094
Turbidity							
Turbidity	0.21		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.48		0.10	pH		14-JUN-20	R5117752
L2457143-4 GH_TRIPGW_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Dissolved Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		12-JUN-20	R5116417
Total Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-4 GH_TRIPGW_WG_2020-04-06_NP							
Sampled By: MD BP on 03-JUN-20 @ 17:30							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-JUN-20	R5115902
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	11-JUN-20	11-JUN-20	R5116209
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-JUN-20	11-JUN-20	R5116209
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	11-JUN-20	11-JUN-20	R5116209
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		11-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.3		1.0	mg/L		11-JUN-20	R5116389
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-4 GH_TRIPGW_WG_2020-04-06_NP Sampled By: MD BP on 03-JUN-20 @ 17:30 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	<0.50		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC) Conductivity (@ 25C)	<2.0		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC Fluoride (F)	<0.020		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation Ion Balance	0.0		-100	%		15-JUN-20	
Ion Balance Calculation Cation - Anion Balance	0.0			%		15-JUN-20	
Anion Sum	<0.10			meq/L		15-JUN-20	
Cation Sum	<0.10			meq/L		15-JUN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	<0.0050		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect. ORP	422		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		10-JUN-20	R5116226
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		10-JUN-20	R5116094
Turbidity Turbidity	<0.10		0.10	NTU		07-JUN-20	R5110404
pH pH	5.41		0.10	pH		14-JUN-20	R5117752
L2457143-5 GH_MW-RLP-1D_WG_2020-04-06_NP Sampled By: MD BP on 04-JUN-20 @ 14:15 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	255		5.0	mg/L		14-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Dissolved Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	<0.50		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-5 GH_MW-RLP-1D_WG_2020-04-06_NP							
Sampled By: MD BP on 04-JUN-20 @ 14:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00134		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0427		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.015		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	56.1		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	0.513		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0067		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	28.4		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.0881		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00342		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	1.20		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	4.92		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	3.24		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.180		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.00103		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	257		0.50	mg/L		10-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	209		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	209		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	0.0456		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	429		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	1.77		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Ion Balance	104		-100	%		15-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-5 GH_MW-RLP-1D_WG_2020-04-06_NP Sampled By: MD BP on 04-JUN-20 @ 14:15 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		15-JUN-20	
Anion Sum	5.14			meq/L		15-JUN-20	
Cation Sum	5.35			meq/L		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	405		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0133		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	41.8		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids							
Total Dissolved Solids	366	DLHC	20	mg/L		11-JUN-20	R5116899
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		11-JUN-20	R5116846
Turbidity							
Turbidity	18.5		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.18		0.10	pH		14-JUN-20	R5117752
L2457143-6 GH_RC1_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 13:45 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	272		5.0	mg/L		14-JUN-20	R5117752
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-JUN-20	R5116844
Carbonate (CO3)	13.3		5.0	mg/L		14-JUN-20	R5117752
Colour, True	9.0		5.0	CU		06-JUN-20	R5110222
Dissolved Organic Carbon	3.64		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.173		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	0.00053		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	3.85		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0652		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-6 GH_RC1_WS_2020-06-01_N							
Sampled By: MD BP on 04-JUN-20 @ 13:45							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	68.4		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0018		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	26.6		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.00053		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00103		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	0.979		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	0.220		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	6.30		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	14.2		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.0979		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.000320		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	280		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115395
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0085		0.0030	mg/L		10-JUN-20	R5115395
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Arsenic (As)-Total	0.00020		0.00010	mg/L		10-JUN-20	R5115395
Barium (Ba)-Total	0.0656		0.00010	mg/L		10-JUN-20	R5115395
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Boron (B)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		10-JUN-20	R5115395
Calcium (Ca)-Total	74.8		0.050	mg/L		10-JUN-20	R5115395
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Cobalt (Co)-Total	<0.10		0.10	ug/L		10-JUN-20	R5115395
Copper (Cu)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Iron (Fe)-Total	0.012		0.010	mg/L		10-JUN-20	R5115395
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Lithium (Li)-Total	0.0017		0.0010	mg/L		10-JUN-20	R5115395
Magnesium (Mg)-Total	27.5		0.10	mg/L		10-JUN-20	R5115395
Manganese (Mn)-Total	0.00200		0.00010	mg/L		10-JUN-20	R5115395
Molybdenum (Mo)-Total	0.00102		0.000050	mg/L		10-JUN-20	R5115395
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Potassium (K)-Total	0.957		0.050	mg/L		10-JUN-20	R5115395
Selenium (Se)-Total	0.206		0.050	ug/L		10-JUN-20	R5115395
Silicon (Si)-Total	6.35		0.10	mg/L		10-JUN-20	R5115395
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-6 GH_RC1_WS_2020-06-01_N							
Sampled By: MD BP on 04-JUN-20 @ 13:45							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	15.5		0.050	mg/L		10-JUN-20	R5115395
Strontium (Sr)-Total	0.110		0.00020	mg/L		10-JUN-20	R5115395
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Uranium (U)-Total	0.000350		0.000010	mg/L		10-JUN-20	R5115395
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115395
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	223		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	22.2		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	246		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	0.0079		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	24.9		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	556		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	0.099		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Cation - Anion Balance	-2.2			%		15-JUN-20	
Anion Sum	6.53			meq/L		15-JUN-20	
Cation Sum	6.24			meq/L		15-JUN-20	
Ion Balance Calculation							
Ion Balance	95.7		-100	%		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0376		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	503		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0044		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	43.7		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids							
Total Dissolved Solids	344	DLHC	20	mg/L		11-JUN-20	R5116899
Total Suspended Solids							
Total Suspended Solids	12.0		1.0	mg/L		11-JUN-20	R5116846
Turbidity							
Turbidity	0.49		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.54		0.10	pH		14-JUN-20	R5117752

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-6 GH_RC1_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 13:45 Matrix: WS							
L2457143-7 GH_FC1_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 13:30 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	273		5.0	mg/L		14-JUN-20	R5117752
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-JUN-20	R5116844
Carbonate (CO3)	9.2		5.0	mg/L		14-JUN-20	R5117752
Colour, True	17.1		5.0	CU		06-JUN-20	R5110222
Dissolved Organic Carbon	4.80		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.272		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	0.00191		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	6.50		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0735		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	70.5		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	0.019		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0026		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	25.4		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.0123		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.000844		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	0.906		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	0.170		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	6.21		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	5.10		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.124		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.000235		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-7 GH_FC1_WS_2020-06-01_N							
Sampled By: MD BP on 04-JUN-20 @ 13:30							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	280		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115395
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.231		0.0030	mg/L		10-JUN-20	R5115395
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Arsenic (As)-Total	0.00031		0.00010	mg/L		10-JUN-20	R5115395
Barium (Ba)-Total	0.0819		0.00010	mg/L		10-JUN-20	R5115395
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Boron (B)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Cadmium (Cd)-Total	0.0206		0.0050	ug/L		10-JUN-20	R5115395
Calcium (Ca)-Total	75.9		0.050	mg/L		10-JUN-20	R5115395
Chromium (Cr)-Total	0.00029		0.00010	mg/L		10-JUN-20	R5115395
Cobalt (Co)-Total	0.17		0.10	ug/L		10-JUN-20	R5115395
Copper (Cu)-Total	0.00072		0.00050	mg/L		10-JUN-20	R5115395
Iron (Fe)-Total	0.348		0.010	mg/L		10-JUN-20	R5115395
Lead (Pb)-Total	0.000198		0.000050	mg/L		10-JUN-20	R5115395
Lithium (Li)-Total	0.0027		0.0010	mg/L		10-JUN-20	R5115395
Magnesium (Mg)-Total	25.7		0.10	mg/L		10-JUN-20	R5115395
Manganese (Mn)-Total	0.0601		0.00010	mg/L		10-JUN-20	R5115395
Molybdenum (Mo)-Total	0.000884		0.000050	mg/L		10-JUN-20	R5115395
Nickel (Ni)-Total	0.00072		0.00050	mg/L		10-JUN-20	R5115395
Potassium (K)-Total	0.923		0.050	mg/L		10-JUN-20	R5115395
Selenium (Se)-Total	0.209		0.050	ug/L		10-JUN-20	R5115395
Silicon (Si)-Total	6.60		0.10	mg/L		10-JUN-20	R5115395
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115395
Sodium (Na)-Total	5.46		0.050	mg/L		10-JUN-20	R5115395
Strontium (Sr)-Total	0.142		0.00020	mg/L		10-JUN-20	R5115395
Thallium (Tl)-Total	0.000010		0.000010	mg/L		10-JUN-20	R5115395
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115395
Uranium (U)-Total	0.000274		0.000010	mg/L		10-JUN-20	R5115395
Vanadium (V)-Total	0.00069		0.00050	mg/L		10-JUN-20	R5115395
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115395
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	224		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	15.4		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	239		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	0.0061		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.069		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	17.2		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-7 GH_FC1_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 13:30 Matrix: WS							
Electrical Conductivity (EC) Conductivity (@ 25C)	515		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC Fluoride (F)	0.087		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation Cation - Anion Balance	-2.2			%		15-JUN-20	
Anion Sum	6.11			meq/L		15-JUN-20	
Cation Sum	5.85			meq/L		15-JUN-20	
Ion Balance Calculation Ion Balance	95.7		-100	%		15-JUN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.0103		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect. ORP	315		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total Phosphorus (P)-Total	0.0202		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC Sulfate (SO4)	40.5		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids Total Dissolved Solids	393	DLHC	20	mg/L		11-JUN-20	R5116899
Total Suspended Solids Total Suspended Solids	3.5		1.0	mg/L		11-JUN-20	R5116846
Turbidity Turbidity	2.64		0.10	NTU		07-JUN-20	R5110404
pH pH	8.44		0.10	pH		14-JUN-20	R5117752
L2457143-8 GH_SITE-F_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 14:50 Matrix: WS							
Miscellaneous Parameters Bicarbonate (HCO3)	233		5.0	mg/L		14-JUN-20	R5117752
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-JUN-20	R5116844
Carbonate (CO3)	8.8		5.0	mg/L		14-JUN-20	R5117752
Colour, True	19.9		5.0	CU		06-JUN-20	R5110222
Dissolved Organic Carbon	7.63		0.50	mg/L		13-JUN-20	R5117274
Hydroxide (OH)	<5.0		5.0	mg/L		14-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.236		0.050	mg/L		15-JUN-20	R5117927
Mercury (Hg)-Total	0.00643		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	8.45		0.50	mg/L		13-JUN-20	R5117274
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-8 GH_SITE-F_WS_2020-06-01_N							
Sampled By: MD BP on 04-JUN-20 @ 14:50							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	0.0056		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	0.00031		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00033		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.137		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.069		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	0.0723		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	73.6		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	0.51		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00212		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	0.036		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0443		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	22.0		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.0298		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00169		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	0.00363		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	3.52		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	2.09		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	3.41		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	15.7		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.769		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.000906		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	0.0296		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	275		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.025		0.020	ug/L		10-JUN-20	R5115395
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.558		0.0030	mg/L		10-JUN-20	R5115395
Antimony (Sb)-Total	0.00039		0.00010	mg/L		10-JUN-20	R5115395
Arsenic (As)-Total	0.00060		0.00010	mg/L		10-JUN-20	R5115395
Barium (Ba)-Total	0.160		0.00010	mg/L		10-JUN-20	R5115395
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115395
Boron (B)-Total	0.072		0.010	mg/L		10-JUN-20	R5115395
Cadmium (Cd)-Total	0.0984		0.0050	ug/L		10-JUN-20	R5115395
Calcium (Ca)-Total	80.5		0.050	mg/L		10-JUN-20	R5115395
Chromium (Cr)-Total	0.00089		0.00010	mg/L		10-JUN-20	R5115395
Cobalt (Co)-Total	0.74		0.10	ug/L		10-JUN-20	R5115395
Copper (Cu)-Total	0.00231		0.00050	mg/L		10-JUN-20	R5115395
Iron (Fe)-Total	0.522		0.010	mg/L		10-JUN-20	R5115395
Lead (Pb)-Total	0.000331		0.000050	mg/L		10-JUN-20	R5115395
Lithium (Li)-Total	0.0456		0.0010	mg/L		10-JUN-20	R5115395
Magnesium (Mg)-Total	23.4		0.10	mg/L		10-JUN-20	R5115395
Manganese (Mn)-Total	0.0351		0.00010	mg/L		10-JUN-20	R5115395

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-8 GH_SITE-F_WS_2020-06-01_N							
Sampled By: MD BP on 04-JUN-20 @ 14:50							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Molybdenum (Mo)-Total	0.00163		0.000050	mg/L		10-JUN-20	R5115395
Nickel (Ni)-Total	0.00467		0.00050	mg/L		10-JUN-20	R5115395
Potassium (K)-Total	4.13		0.050	mg/L		10-JUN-20	R5115395
Selenium (Se)-Total	1.90		0.050	ug/L		10-JUN-20	R5115395
Silicon (Si)-Total	4.36		0.10	mg/L		10-JUN-20	R5115395
Silver (Ag)-Total	0.000026		0.000010	mg/L		10-JUN-20	R5115395
Sodium (Na)-Total	17.3		0.050	mg/L		10-JUN-20	R5115395
Strontium (Sr)-Total	0.854		0.00020	mg/L		10-JUN-20	R5115395
Thallium (Tl)-Total	0.000036		0.000010	mg/L		10-JUN-20	R5115395
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115395
Titanium (Ti)-Total	0.012		0.010	mg/L		10-JUN-20	R5115395
Uranium (U)-Total	0.00103		0.000010	mg/L		10-JUN-20	R5115395
Vanadium (V)-Total	0.00220		0.00050	mg/L		10-JUN-20	R5115395
Zinc (Zn)-Total	0.0407		0.0030	mg/L		10-JUN-20	R5115395
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	191		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Carbonate (as CaCO3)	14.6		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117752
Alkalinity, Total (as CaCO3)	206		1.0	mg/L		14-JUN-20	R5117752
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		13-JUN-20	R5117217
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.646		0.050	mg/L		06-JUN-20	R5116060
Chloride in Water by IC							
Chloride (Cl)	49.3		0.50	mg/L		06-JUN-20	R5116060
Electrical Conductivity (EC)							
Conductivity (@ 25C)	583		2.0	uS/cm		14-JUN-20	R5117752
Fluoride in Water by IC							
Fluoride (F)	0.166		0.020	mg/L		06-JUN-20	R5116060
Ion Balance Calculation							
Ion Balance	96.0		-100	%		17-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.1			%		17-JUN-20	
Anion Sum	6.52			meq/L		17-JUN-20	
Cation Sum	6.26			meq/L		17-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		06-JUN-20	R5116060
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		06-JUN-20	R5116060
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	471		-1000	mV		15-JUN-20	R5117891
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0235		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	48.7		0.30	mg/L		06-JUN-20	R5116060
Total Dissolved Solids							
Total Dissolved Solids	437	HTD	20	mg/L		16-JUN-20	R5116899

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-8 GH_SITE-F_WS_2020-06-01_N Sampled By: MD BP on 04-JUN-20 @ 14:50 Matrix: WS							
Total Suspended Solids							
Total Suspended Solids	2.2		1.0	mg/L		11-JUN-20	R5116846
Turbidity							
Turbidity	24.1		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.46		0.10	pH		14-JUN-20	R5117752
L2457143-9 GH_ER-MC-IN_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 09:15 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	175		5.0	mg/L		06-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Dissolved Organic Carbon	2.44		0.50	mg/L		05-JUN-20	R5110210
Hydroxide (OH)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.160		0.050	mg/L		08-JUN-20	R5110933
Mercury (Hg)-Total	0.00371		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	2.22		0.50	mg/L		05-JUN-20	R5110210
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	09-JUN-20	R5113156
Dissolved Metals Filtration Location	LAB					09-JUN-20	R5112619
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	10-JUN-20	R5113656
Dissolved Mercury Filtration Location	LAB					09-JUN-20	R5113105
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					10-JUN-20	R5115443
Aluminum (Al)-Dissolved	0.0075		0.0030	mg/L	09-JUN-20	09-JUN-20	R5113156
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	09-JUN-20	R5113156
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	09-JUN-20	09-JUN-20	R5113156
Barium (Ba)-Dissolved	0.0357		0.00010	mg/L	09-JUN-20	09-JUN-20	R5113156
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113156
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	09-JUN-20	R5113156
Cadmium (Cd)-Dissolved	0.0098		0.0050	ug/L	09-JUN-20	09-JUN-20	R5113156
Calcium (Ca)-Dissolved	43.1		0.050	mg/L	09-JUN-20	09-JUN-20	R5113156
Chromium (Cr)-Dissolved	0.00017		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115475
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	09-JUN-20	R5113156
Copper (Cu)-Dissolved	0.00027		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115475
Iron (Fe)-Dissolved	0.012		0.010	mg/L	09-JUN-20	09-JUN-20	R5113156
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113156
Lithium (Li)-Dissolved	0.0012		0.0010	mg/L	09-JUN-20	09-JUN-20	R5113156
Magnesium (Mg)-Dissolved	9.79		0.10	mg/L	09-JUN-20	09-JUN-20	R5113156
Manganese (Mn)-Dissolved	0.00053		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115475
Molybdenum (Mo)-Dissolved	0.000843		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113156
Nickel (Ni)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	09-JUN-20	R5113156
Potassium (K)-Dissolved	0.382		0.050	mg/L	09-JUN-20	09-JUN-20	R5113156
Selenium (Se)-Dissolved	0.663		0.050	ug/L	09-JUN-20	09-JUN-20	R5113156
Silicon (Si)-Dissolved	1.90		0.050	mg/L	09-JUN-20	09-JUN-20	R5113156
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	09-JUN-20	R5113156
Sodium (Na)-Dissolved	0.648		0.050	mg/L	09-JUN-20	09-JUN-20	R5113156
Strontium (Sr)-Dissolved	0.193		0.00020	mg/L	09-JUN-20	09-JUN-20	R5113156
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	09-JUN-20	R5113156
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	09-JUN-20	R5113156

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-9 GH_ER-MC-IN_WS_2020-06-04_NP							
Sampled By: MD BP on 04-JUN-20 @ 09:15							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	09-JUN-20	R5113156
Uranium (U)-Dissolved	0.000673		0.000010	mg/L	09-JUN-20	09-JUN-20	R5113156
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	09-JUN-20	R5113156
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	09-JUN-20	R5113156
Hardness							
Hardness (as CaCO3)	148		0.50	mg/L		10-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.068		0.020	ug/L		10-JUN-20	R5115408
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.904		0.0030	mg/L		10-JUN-20	R5115408
Antimony (Sb)-Total	0.00011		0.00010	mg/L		10-JUN-20	R5115408
Arsenic (As)-Total	0.00071		0.00010	mg/L		10-JUN-20	R5115408
Barium (Ba)-Total	0.0494		0.00010	mg/L		10-JUN-20	R5115408
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115408
Boron (B)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115408
Cadmium (Cd)-Total	0.135		0.0050	ug/L		10-JUN-20	R5115408
Calcium (Ca)-Total	49.3		0.050	mg/L		10-JUN-20	R5115408
Chromium (Cr)-Total	0.00216		0.00010	mg/L		10-JUN-20	R5115408
Cobalt (Co)-Total	0.42		0.10	ug/L		10-JUN-20	R5115408
Copper (Cu)-Total	0.00474		0.00050	mg/L		10-JUN-20	R5115408
Iron (Fe)-Total	1.18		0.010	mg/L		10-JUN-20	R5115408
Lead (Pb)-Total	0.000699		0.000050	mg/L		10-JUN-20	R5115408
Lithium (Li)-Total	0.0026		0.0010	mg/L		10-JUN-20	R5115408
Magnesium (Mg)-Total	10.6		0.10	mg/L		10-JUN-20	R5115408
Manganese (Mn)-Total	0.0635		0.00010	mg/L		10-JUN-20	R5115408
Molybdenum (Mo)-Total	0.000982		0.000050	mg/L		10-JUN-20	R5115408
Nickel (Ni)-Total	0.00232		0.00050	mg/L		10-JUN-20	R5115408
Potassium (K)-Total	0.823		0.050	mg/L		10-JUN-20	R5115408
Selenium (Se)-Total	0.669		0.050	ug/L		10-JUN-20	R5115408
Silicon (Si)-Total	3.44		0.10	mg/L		10-JUN-20	R5115408
Silver (Ag)-Total	0.000022		0.000010	mg/L		10-JUN-20	R5115408
Sodium (Na)-Total	0.648		0.050	mg/L		10-JUN-20	R5115408
Strontium (Sr)-Total	0.199		0.00020	mg/L		10-JUN-20	R5115408
Thallium (Tl)-Total	0.000041		0.000010	mg/L		10-JUN-20	R5115408
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115408
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115408
Uranium (U)-Total	0.000765		0.000010	mg/L		10-JUN-20	R5115408
Vanadium (V)-Total	0.00406		0.00050	mg/L		10-JUN-20	R5115408
Zinc (Zn)-Total	0.0111		0.0030	mg/L		10-JUN-20	R5115408
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<2.0		2.0	mg/L		06-JUN-20	R5110184
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	144		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Total (as CaCO3)	144		1.0	mg/L		06-JUN-20	R5110190
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		06-JUN-20	R5110244
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		05-JUN-20	R5110105

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-9 GH_ER-MC-IN_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 09:15 Matrix: WS							
Chloride in Water by IC Chloride (Cl)	<0.50		0.50	mg/L		05-JUN-20	R5110105
Electrical Conductivity (EC) Conductivity (@ 25C)	245		2.0	uS/cm		06-JUN-20	R5110190
Fluoride in Water by IC Fluoride (F)	0.119		0.020	mg/L		05-JUN-20	R5110105
Ion Balance Calculation Cation - Anion Balance	-2.2			%		10-JUN-20	
Anion Sum	3.13			meq/L		10-JUN-20	
Cation Sum	3.00			meq/L		10-JUN-20	
Ion Balance Calculation Ion Balance	95.7		-100	%		10-JUN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.0915		0.0050	mg/L		05-JUN-20	R5110105
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		05-JUN-20	R5110105
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0045		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect. ORP	484		-1000	mV		06-JUN-20	R5110101
Phosphorus (P)-Total Phosphorus (P)-Total	0.0802		0.0020	mg/L		06-JUN-20	R5110203
Sulfate in Water by IC Sulfate (SO4)	11.9		0.30	mg/L		05-JUN-20	R5110105
Total Dissolved Solids Total Dissolved Solids	165		20	mg/L		05-JUN-20	R5110228
Total Suspended Solids Total Suspended Solids	51.1		1.0	mg/L		05-JUN-20	R5110224
Turbidity Turbidity	71.3		0.10	NTU		06-JUN-20	R5110106
pH pH	8.11		0.10	pH		06-JUN-20	R5110190
L2457143-10 GH_ER-MC-OUT_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 11:00 Matrix: WS							
Miscellaneous Parameters Bicarbonate (HCO3)	229		5.0	mg/L		06-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Dissolved Organic Carbon	2.81		0.50	mg/L		05-JUN-20	R5110210
Hydroxide (OH)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Total Kjeldahl Nitrogen	0.154		0.050	mg/L		08-JUN-20	R5110933
Mercury (Hg)-Total	0.00086		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	3.31		0.50	mg/L		05-JUN-20	R5110210
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-10 GH_ER-MC-OUT_WS_2020-06-04_NP							
Sampled By: MD BP on 04-JUN-20 @ 11:00							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	0.00027		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0517		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.016		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	0.0158		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	49.7		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00036		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	<0.0010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.0115		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	16.5		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.00078		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.00169		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	0.00325		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	0.965		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	1.68		0.050	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	2.54		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	4.83		0.050	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.137		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.00119		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	192		0.50	mg/L		10-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115408
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0116		0.0030	mg/L		10-JUN-20	R5115408
Antimony (Sb)-Total	0.00028		0.00010	mg/L		10-JUN-20	R5115408
Arsenic (As)-Total	0.00016		0.00010	mg/L		10-JUN-20	R5115408
Barium (Ba)-Total	0.0524		0.00010	mg/L		10-JUN-20	R5115408
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115408
Boron (B)-Total	0.016		0.010	mg/L		10-JUN-20	R5115408
Cadmium (Cd)-Total	0.0253		0.0050	ug/L		10-JUN-20	R5115408
Calcium (Ca)-Total	51.0		0.050	mg/L		10-JUN-20	R5115408
Chromium (Cr)-Total	0.00018		0.00010	mg/L		10-JUN-20	R5115408
Cobalt (Co)-Total	<0.10		0.10	ug/L		10-JUN-20	R5115408
Copper (Cu)-Total	0.00092		0.00050	mg/L		10-JUN-20	R5115408
Iron (Fe)-Total	0.012		0.010	mg/L		10-JUN-20	R5115408
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115408
Lithium (Li)-Total	0.0117		0.0010	mg/L		10-JUN-20	R5115408
Magnesium (Mg)-Total	16.5		0.10	mg/L		10-JUN-20	R5115408
Manganese (Mn)-Total	0.00130		0.00010	mg/L		10-JUN-20	R5115408

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-10 GH_ER-MC-OUT_WS_2020-06-04_NP							
Sampled By: MD BP on 04-JUN-20 @ 11:00							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Molybdenum (Mo)-Total	0.00174		0.000050	mg/L		10-JUN-20	R5115408
Nickel (Ni)-Total	0.00325		0.00050	mg/L		10-JUN-20	R5115408
Potassium (K)-Total	0.945		0.050	mg/L		10-JUN-20	R5115408
Selenium (Se)-Total	1.45		0.050	ug/L		10-JUN-20	R5115408
Silicon (Si)-Total	2.65		0.10	mg/L		10-JUN-20	R5115408
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115408
Sodium (Na)-Total	4.85		0.050	mg/L		10-JUN-20	R5115408
Strontium (Sr)-Total	0.147		0.00020	mg/L		10-JUN-20	R5115408
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115408
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115408
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115408
Uranium (U)-Total	0.00121		0.000010	mg/L		10-JUN-20	R5115408
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115408
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		10-JUN-20	R5115408
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.4		2.0	mg/L		06-JUN-20	R5110184
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	188		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Total (as CaCO3)	188		1.0	mg/L		06-JUN-20	R5110190
Ammonia, Total (as N)							
Ammonia as N	0.0120		0.0050	mg/L		06-JUN-20	R5110244
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		05-JUN-20	R5110105
Chloride in Water by IC							
Chloride (Cl)	0.52		0.50	mg/L		05-JUN-20	R5110105
Electrical Conductivity (EC)							
Conductivity (@ 25C)	352		2.0	uS/cm		06-JUN-20	R5110190
Fluoride in Water by IC							
Fluoride (F)	0.151		0.020	mg/L		05-JUN-20	R5110105
Ion Balance Calculation							
Ion Balance	95.1		-100	%		10-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.5			%		10-JUN-20	
Anion Sum	4.29			meq/L		10-JUN-20	
Cation Sum	4.08			meq/L		10-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.195		0.0050	mg/L		05-JUN-20	R5110105
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		05-JUN-20	R5110105
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0030		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	477		-1000	mV		06-JUN-20	R5110101
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0045		0.0020	mg/L		06-JUN-20	R5110203
Sulfate in Water by IC							
Sulfate (SO4)	23.9		0.30	mg/L		05-JUN-20	R5110105
Total Dissolved Solids							
Total Dissolved Solids	211		20	mg/L		05-JUN-20	R5110228

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-10 GH_ER-MC-OUT_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 11:00 Matrix: WS							
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		05-JUN-20	R5110224
Turbidity							
Turbidity	0.61		0.10	NTU		06-JUN-20	R5110106
pH							
pH	7.89		0.10	pH		06-JUN-20	R5110190
L2457143-11 GH_LC2_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 10:30 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	362		5.0	mg/L		06-JUN-20	R5117752
Carbonate (CO3)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Dissolved Organic Carbon	3.70		0.50	mg/L		05-JUN-20	R5110210
Hydroxide (OH)	<5.0		5.0	mg/L		06-JUN-20	R5117752
Total Kjeldahl Nitrogen	<0.25	TKNI	0.25	mg/L		08-JUN-20	R5110933
Mercury (Hg)-Total	0.00058		0.00050	ug/L		10-JUN-20	R5115420
Total Organic Carbon	3.74		0.50	mg/L		05-JUN-20	R5110210
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	09-JUN-20	10-JUN-20	R5115408
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JUN-20	09-JUN-20	R5113164
Dissolved Mercury Filtration Location	FIELD					09-JUN-20	R5112360
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5112079
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115408
Antimony (Sb)-Dissolved	0.00228		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Arsenic (As)-Dissolved	0.00043		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Barium (Ba)-Dissolved	0.0446		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Boron (B)-Dissolved	0.032		0.020	mg/L	09-JUN-20	10-JUN-20	R5115408
Cadmium (Cd)-Dissolved	0.015		0.010	ug/L	09-JUN-20	10-JUN-20	R5115408
Calcium (Ca)-Dissolved	273		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Cobalt (Co)-Dissolved	0.48		0.20	ug/L	09-JUN-20	10-JUN-20	R5115408
Copper (Cu)-Dissolved	0.00091		0.00040	mg/L	09-JUN-20	10-JUN-20	R5115408
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	09-JUN-20	10-JUN-20	R5115408
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Lithium (Li)-Dissolved	0.238		0.0020	mg/L	09-JUN-20	10-JUN-20	R5115408
Magnesium (Mg)-Dissolved	184		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Manganese (Mn)-Dissolved	0.00075		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408
Molybdenum (Mo)-Dissolved	0.0147		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115408
Nickel (Ni)-Dissolved	0.0814		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Potassium (K)-Dissolved	6.83		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Selenium (Se)-Dissolved	361		0.10	ug/L	09-JUN-20	10-JUN-20	R5115408
Silicon (Si)-Dissolved	2.58		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	09-JUN-20	10-JUN-20	R5115408
Sodium (Na)-Dissolved	45.8		0.10	mg/L	09-JUN-20	10-JUN-20	R5115408
Strontium (Sr)-Dissolved	0.965		0.00040	mg/L	09-JUN-20	10-JUN-20	R5115408
Thallium (Tl)-Dissolved	0.000042		0.000020	mg/L	09-JUN-20	10-JUN-20	R5115408
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	09-JUN-20	10-JUN-20	R5115408

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-11 GH_LC2_WS_2020-06-04_NP							
Sampled By: MD BP on 04-JUN-20 @ 10:30							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115408
Uranium (U)-Dissolved	0.0140		0.000020	mg/L	09-JUN-20	10-JUN-20	R5115408
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	09-JUN-20	10-JUN-20	R5115408
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	09-JUN-20	10-JUN-20	R5115408
Hardness							
Hardness (as CaCO3)	1440		0.50	mg/L		10-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.040	DLA	0.040	ug/L		10-JUN-20	R5115408
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0060	DLA	0.0060	mg/L		10-JUN-20	R5115408
Antimony (Sb)-Total	0.00235		0.00020	mg/L		10-JUN-20	R5115408
Arsenic (As)-Total	0.00049		0.00020	mg/L		10-JUN-20	R5115408
Barium (Ba)-Total	0.0457		0.00020	mg/L		10-JUN-20	R5115408
Bismuth (Bi)-Total	<0.00010	DLA	0.00010	mg/L		10-JUN-20	R5115408
Boron (B)-Total	0.032		0.020	mg/L		10-JUN-20	R5115408
Cadmium (Cd)-Total	<0.030	DLM	0.030	ug/L		10-JUN-20	R5115408
Calcium (Ca)-Total	286		0.10	mg/L		10-JUN-20	R5115408
Chromium (Cr)-Total	<0.00020	DLA	0.00020	mg/L		10-JUN-20	R5115408
Cobalt (Co)-Total	0.50		0.20	ug/L		10-JUN-20	R5115408
Copper (Cu)-Total	0.0010		0.0010	mg/L		10-JUN-20	R5115408
Iron (Fe)-Total	<0.020	DLA	0.020	mg/L		10-JUN-20	R5115408
Lead (Pb)-Total	<0.00010	DLA	0.00010	mg/L		10-JUN-20	R5115408
Lithium (Li)-Total	0.246		0.0020	mg/L		10-JUN-20	R5115408
Magnesium (Mg)-Total	184		0.10	mg/L		10-JUN-20	R5115408
Manganese (Mn)-Total	0.00080		0.00020	mg/L		10-JUN-20	R5115408
Molybdenum (Mo)-Total	0.0153		0.00010	mg/L		10-JUN-20	R5115408
Nickel (Ni)-Total	0.0820		0.0010	mg/L		10-JUN-20	R5115408
Potassium (K)-Total	6.85		0.10	mg/L		10-JUN-20	R5115408
Selenium (Se)-Total	353		0.10	ug/L		10-JUN-20	R5115408
Silicon (Si)-Total	2.69		0.20	mg/L		10-JUN-20	R5115408
Silver (Ag)-Total	<0.000020	DLA	0.000020	mg/L		10-JUN-20	R5115408
Sodium (Na)-Total	46.4		0.10	mg/L		10-JUN-20	R5115408
Strontium (Sr)-Total	1.03		0.00040	mg/L		10-JUN-20	R5115408
Thallium (Tl)-Total	0.000042		0.000020	mg/L		10-JUN-20	R5115408
Tin (Sn)-Total	<0.00020	DLA	0.00020	mg/L		10-JUN-20	R5115408
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115408
Uranium (U)-Total	0.0139		0.000020	mg/L		10-JUN-20	R5115408
Vanadium (V)-Total	<0.0010	DLA	0.0010	mg/L		10-JUN-20	R5115408
Zinc (Zn)-Total	<0.0060	DLA	0.0060	mg/L		10-JUN-20	R5115408
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.0		2.0	mg/L		06-JUN-20	R5110184
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	297		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-20	R5110190
Alkalinity, Total (as CaCO3)	297		1.0	mg/L		06-JUN-20	R5110190
Ammonia, Total (as N)							
Ammonia as N	0.0172		0.0050	mg/L		06-JUN-20	R5110244
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.50	DLHC	0.50	mg/L		05-JUN-20	R5110105

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457143-11 GH_LC2_WS_2020-06-04_NP Sampled By: MD BP on 04-JUN-20 @ 10:30 Matrix: WS							
Chloride in Water by IC Chloride (Cl)	5.4	DLHC	5.0	mg/L		05-JUN-20	R5110105
Electrical Conductivity (EC) Conductivity (@ 25C)	2340		2.0	uS/cm		06-JUN-20	R5110190
Fluoride in Water by IC Fluoride (F)	<0.20	DLHC	0.20	mg/L		05-JUN-20	R5110105
Ion Balance Calculation Ion Balance	100		-100	%		10-JUN-20	
Ion Balance Calculation Cation - Anion Balance	0.2			%		10-JUN-20	
Anion Sum	30.8			meq/L		10-JUN-20	
Cation Sum	30.9			meq/L		10-JUN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	71.4	DLHC	0.050	mg/L		05-JUN-20	R5110105
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.010	DLHC	0.010	mg/L		05-JUN-20	R5110105
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect. ORP	422		-1000	mV		06-JUN-20	R5110101
Phosphorus (P)-Total Phosphorus (P)-Total	0.0021		0.0020	mg/L		06-JUN-20	R5110203
Sulfate in Water by IC Sulfate (SO4)	942	DLHC	3.0	mg/L		05-JUN-20	R5110105
Total Dissolved Solids Total Dissolved Solids	2330		20	mg/L		05-JUN-20	R5110228
Total Suspended Solids Total Suspended Solids	2.3		1.0	mg/L		05-JUN-20	R5110224
Turbidity Turbidity	0.14		0.10	NTU		06-JUN-20	R5110106
pH pH	8.21		0.10	pH		06-JUN-20	R5110190
L2457143-12 GH_ER-MC-IN_WS_2020-06-03_NP Sampled By: MD BP on 03-JUN-20 @ 16:00 Matrix: WS							
Miscellaneous Parameters Total Suspended Solids	81.1		1.0	mg/L		05-JUN-20	R5110224
Turbidity	95.0		0.10	NTU		06-JUN-20	R5110106
L2457143-13 GH_ER-MC-OUT_WS_2020-06-03_NP Sampled By: MD BP on 03-JUN-20 @ 16:40 Matrix: WS							
Miscellaneous Parameters Total Suspended Solids	48.2		1.0	mg/L		05-JUN-20	R5110224
Turbidity	77.6		0.10	NTU		06-JUN-20	R5110106

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	-4 T-NUT SUBSAMPLED/PRESERVED AT THE LAB - Sample was Preserved at the laboratory
SFPL	-4 D-NUT SUBSAMPLED/FILTERED/PRESERVED AT THE LAB - Sample was Filtered and Preserved at the laboratory

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2457143-9	GH_ER-MC-IN_WS_2020-06-	SFPL	DOC,D-HG AND D-MET LAB FILTER/PRESERVE - Sample was Filtered and Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O ₂ electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
COLOUR-TRUE-CL	Water	Colour (True) by Spectrometer	APHA 2120 Color
<p>True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.</p>			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="margin-left: 20px;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL		ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA	

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5110184							
WG3336757-2	LCS							
Acidity (as CaCO3)			106.1		%		85-115	06-JUN-20
WG3336757-1	MB							
Acidity (as CaCO3)			<2.0		mg/L		4	06-JUN-20
Batch	R5116389							
WG3340782-2	LCS							
Acidity (as CaCO3)			104.7		%		85-115	11-JUN-20
WG3340782-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	11-JUN-20
Batch	R5117783							
WG3342340-5	LCS							
Acidity (as CaCO3)			104.3		%		85-115	14-JUN-20
WG3342340-4	MB							
Acidity (as CaCO3)			1.2		mg/L		2	14-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5110190							
WG3336760-2	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	06-JUN-20
WG3336760-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-JUN-20
Batch	R5117752							
WG3342317-5	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	14-JUN-20
WG3342317-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5113156							
WG3338515-3	DUP	L2457143-9						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	09-JUN-20
WG3338515-2	LCS							
Beryllium (Be)-Dissolved			105.0		%		80-120	09-JUN-20
WG3338515-1	MB	LF						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-JUN-20
Batch	R5115408							
WG3338345-3	DUP	L2457143-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	10-JUN-20
WG3338345-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BE-D-L-CCMS-VA								
	Water							
Batch	R5115408							
WG3338345-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-20
WG3338345-4	MS	L2457143-2						
Beryllium (Be)-Dissolved			102.1		%		70-130	10-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5115395							
WG3339359-2	LCS							
Beryllium (Be)-Total			97.4		%		80-120	10-JUN-20
WG3339359-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
Batch	R5115408							
WG3338500-2	LCS							
Beryllium (Be)-Total			100.8		%		80-120	10-JUN-20
WG3338500-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
BIC-CL								
	Water							
Batch	R5117752							
WG3342317-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-JUN-20
BOD-BC-CL								
	Water							
Batch	R5116844							
WG3341265-5	LCS							
Biochemical Oxygen Demand			102.8		%		85-115	06-JUN-20
WG3341265-8	LCS							
Biochemical Oxygen Demand			91.3		%		85-115	06-JUN-20
WG3341265-4	MB							
Biochemical Oxygen Demand			<2.0		mg/L		2	06-JUN-20
WG3341265-7	MB							
Biochemical Oxygen Demand			<2.0		mg/L		2	06-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5116060							
WG3340293-19	DUP	L2457143-2						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Bromide (Br)			106.1		%		85-115	06-JUN-20
WG3340293-18	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Water								
Batch	R5116060							
WG3340293-18	LCS							
Bromide (Br)			109.6		%		85-115	06-JUN-20
WG3340293-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-JUN-20
WG3340293-17	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-JUN-20
WG3340293-20	MS	L2457143-2						
Bromide (Br)			112.8		%		75-125	06-JUN-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5110210							
WG3336830-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
Batch	R5117274							
WG3341774-2	LCS							
Dissolved Organic Carbon			102.6		%		80-120	13-JUN-20
WG3341774-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-JUN-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5110210							
WG3336830-10	LCS							
Total Organic Carbon			96.5		%		80-120	05-JUN-20
WG3336830-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
Batch	R5117274							
WG3341774-2	LCS							
Total Organic Carbon			105.6		%		80-120	13-JUN-20
WG3341774-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	13-JUN-20
CL-IC-N-CL								
Water								
Batch	R5110105							
WG3336735-10	LCS							
Chloride (Cl)			101.2		%		90-110	03-JUN-20
WG3336735-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	03-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Batch R5116060								
WG3340293-19	DUP	L2457143-2						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Chloride (Cl)			104.5		%		90-110	06-JUN-20
WG3340293-18	LCS							
Chloride (Cl)			104.5		%		90-110	06-JUN-20
WG3340293-13	MB							
Chloride (Cl)			<0.50		mg/L		0.5	06-JUN-20
WG3340293-17	MB							
Chloride (Cl)			<0.50		mg/L		0.5	06-JUN-20
WG3340293-20	MS	L2457143-2						
Chloride (Cl)			108.1		%		75-125	06-JUN-20
CO3-CL								
Batch R5117752								
WG3342317-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-JUN-20
COLOUR-TRUE-CL								
Batch R5110222								
WG3336837-8	LCS							
Colour, True			109.1		%		85-115	06-JUN-20
WG3336837-7	MB							
Colour, True			<5.0		CU		5	06-JUN-20
EC-L-PCT-CL								
Batch R5110190								
WG3336760-2	LCS							
Conductivity (@ 25C)			102.0		%		90-110	06-JUN-20
WG3336760-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-JUN-20
Batch R5117752								
WG3342317-5	LCS							
Conductivity (@ 25C)			98.5		%		90-110	14-JUN-20
WG3342317-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-JUN-20
F-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5110105							
WG3336735-10	LCS							
Fluoride (F)			103.7		%		90-110	03-JUN-20
WG3336735-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	03-JUN-20
Batch	R5116060							
WG3340293-19	DUP	L2457143-2						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Fluoride (F)			105.7		%		90-110	06-JUN-20
WG3340293-18	LCS							
Fluoride (F)			101.7		%		90-110	06-JUN-20
WG3340293-13	MB							
Fluoride (F)			<0.020		mg/L		0.02	06-JUN-20
WG3340293-17	MB							
Fluoride (F)			<0.020		mg/L		0.02	06-JUN-20
WG3340293-20	MS	L2457143-2						
Fluoride (F)			102.3		%		75-125	06-JUN-20
HG-D-CVAA-VA								
Water								
Batch	R5113164							
WG3338460-19	DUP	L2457143-8						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	09-JUN-20
WG3338460-23	DUP	L2457143-11						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	09-JUN-20
WG3338460-18	LCS							
Mercury (Hg)-Dissolved			102.5		%		80-120	09-JUN-20
WG3338460-22	LCS							
Mercury (Hg)-Dissolved			103.4		%		80-120	09-JUN-20
WG3338460-17	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	09-JUN-20
WG3338460-21	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	09-JUN-20
WG3338460-20	MS	L2457143-10						
Mercury (Hg)-Dissolved			96.0		%		70-130	09-JUN-20
Batch	R5113656							
WG3338655-2	LCS							
Mercury (Hg)-Dissolved			100.2		%		80-120	10-JUN-20
WG3338655-1	MB	LF						
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA		Water						
Batch	R5116417							
WG3340795-2	LCS							
Mercury (Hg)-Total			100.3		%		80-120	12-JUN-20
WG3340795-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	12-JUN-20
HG-T-U-CVAF-VA		Water						
Batch	R5115420							
WG3339538-3	DUP	L2457143-5						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	10-JUN-20
WG3339538-2	LCS							
Mercury (Hg)-Total			94.4		%		80-120	10-JUN-20
WG3339538-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	10-JUN-20
WG3339538-4	MS	L2457143-11						
Mercury (Hg)-Total			89.7		%		70-130	10-JUN-20
MET-D-CCMS-VA		Water						
Batch	R5113156							
WG3338515-3	DUP	L2457143-9						
Aluminum (Al)-Dissolved		0.0075	0.0104	J	mg/L	0.0029	0.006	09-JUN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-20
Arsenic (As)-Dissolved		0.00015	0.00014		mg/L	4.5	20	09-JUN-20
Barium (Ba)-Dissolved		0.0357	0.0366		mg/L	2.5	20	09-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUN-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-JUN-20
Cadmium (Cd)-Dissolved		0.0000098	0.0000094		mg/L	3.7	20	09-JUN-20
Calcium (Ca)-Dissolved		43.1	43.8		mg/L	1.6	20	09-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-20
Iron (Fe)-Dissolved		0.012	0.018	J	mg/L	0.006	0.02	09-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUN-20
Lithium (Li)-Dissolved		0.0012	0.0013		mg/L	6.6	20	09-JUN-20
Magnesium (Mg)-Dissolved		9.79	9.63		mg/L	1.7	20	09-JUN-20
Molybdenum (Mo)-Dissolved		0.000843	0.000877		mg/L	4.0	20	09-JUN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-JUN-20
Potassium (K)-Dissolved		0.382	0.403		mg/L	5.3	20	09-JUN-20
Selenium (Se)-Dissolved		0.000663	0.000681		mg/L	2.6	20	09-JUN-20
Silicon (Si)-Dissolved		1.90	1.91		mg/L	0.8	20	09-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5113156							
WG3338515-3	DUP	L2457143-9						
Sodium (Na)-Dissolved		0.648	0.645		mg/L	0.5	20	09-JUN-20
Strontium (Sr)-Dissolved		0.193	0.193		mg/L	0.2	20	09-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-JUN-20
Uranium (U)-Dissolved		0.000673	0.000689		mg/L	2.4	20	09-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-JUN-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-JUN-20
WG3338515-2	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	09-JUN-20
Antimony (Sb)-Dissolved			100.2		%		80-120	09-JUN-20
Arsenic (As)-Dissolved			98.7		%		80-120	09-JUN-20
Barium (Ba)-Dissolved			96.9		%		80-120	09-JUN-20
Bismuth (Bi)-Dissolved			102.9		%		80-120	09-JUN-20
Boron (B)-Dissolved			96.3		%		80-120	09-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	09-JUN-20
Calcium (Ca)-Dissolved			104.0		%		80-120	09-JUN-20
Cobalt (Co)-Dissolved			97.3		%		80-120	09-JUN-20
Iron (Fe)-Dissolved			98.4		%		80-120	09-JUN-20
Lead (Pb)-Dissolved			102.9		%		80-120	09-JUN-20
Lithium (Li)-Dissolved			102.5		%		80-120	09-JUN-20
Magnesium (Mg)-Dissolved			102.2		%		80-120	09-JUN-20
Molybdenum (Mo)-Dissolved			102.0		%		80-120	09-JUN-20
Nickel (Ni)-Dissolved			99.1		%		80-120	09-JUN-20
Potassium (K)-Dissolved			100.6		%		80-120	09-JUN-20
Selenium (Se)-Dissolved			103.9		%		80-120	09-JUN-20
Silicon (Si)-Dissolved			110.0		%		60-140	09-JUN-20
Silver (Ag)-Dissolved			103.1		%		80-120	09-JUN-20
Sodium (Na)-Dissolved			101.1		%		80-120	09-JUN-20
Strontium (Sr)-Dissolved			105.0		%		80-120	09-JUN-20
Thallium (Tl)-Dissolved			98.6		%		80-120	09-JUN-20
Tin (Sn)-Dissolved			99.1		%		80-120	09-JUN-20
Titanium (Ti)-Dissolved			103.3		%		80-120	09-JUN-20
Uranium (U)-Dissolved			105.8		%		80-120	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch	R5113156							
WG3338515-2	LCS							
Vanadium (V)-Dissolved			101.9		%		80-120	09-JUN-20
Zinc (Zn)-Dissolved			105.0		%		80-120	09-JUN-20
WG3338515-1	MB	LF						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
Batch	R5115408							
WG3338345-3	DUP	L2457143-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JUN-20
Antimony (Sb)-Dissolved		0.00013	0.00012		mg/L	3.8	20	10-JUN-20
Arsenic (As)-Dissolved		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115408							
WG3338345-3	DUP	L2457143-1						
Barium (Ba)-Dissolved		0.0857	0.0846		mg/L	1.2	20	10-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Boron (B)-Dissolved		0.011	0.011		mg/L	0.3	20	10-JUN-20
Cadmium (Cd)-Dissolved		0.0000071	0.0000066		mg/L	6.9	20	10-JUN-20
Calcium (Ca)-Dissolved		54.2	55.2		mg/L	1.9	20	10-JUN-20
Chromium (Cr)-Dissolved		0.00017	0.00017		mg/L	4.1	20	10-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Lithium (Li)-Dissolved		0.0164	0.0162		mg/L	0.7	20	10-JUN-20
Magnesium (Mg)-Dissolved		20.0	19.9		mg/L	0.4	20	10-JUN-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Molybdenum (Mo)-Dissolved		0.00148	0.00146		mg/L	1.5	20	10-JUN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUN-20
Potassium (K)-Dissolved		1.01	1.03		mg/L	1.7	20	10-JUN-20
Selenium (Se)-Dissolved		0.00514	0.00540		mg/L	4.8	20	10-JUN-20
Silicon (Si)-Dissolved		2.42	2.47		mg/L	1.7	20	10-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Sodium (Na)-Dissolved		6.86	6.79		mg/L	0.9	20	10-JUN-20
Strontium (Sr)-Dissolved		0.184	0.185		mg/L	0.7	20	10-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Uranium (U)-Dissolved		0.00148	0.00148		mg/L	0.4	20	10-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUN-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUN-20
WG3338345-2	LCS							
Aluminum (Al)-Dissolved			100.9		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			96.0		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			95.1		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			101.1		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			98.3		%		80-120	10-JUN-20
Boron (B)-Dissolved			96.0		%		80-120	10-JUN-20

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MET-D-CCMS-VA								
	Water							
Batch	R5115408							
WG3338345-2	LCS							
Cadmium (Cd)-Dissolved			96.4		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			97.7		%		80-120	10-JUN-20
Chromium (Cr)-Dissolved			95.7		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			98.5		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			95.3		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			98.3		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			100.7		%		80-120	10-JUN-20
Lithium (Li)-Dissolved			94.8		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			100.5		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			97.6		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	10-JUN-20
Nickel (Ni)-Dissolved			96.3		%		80-120	10-JUN-20
Potassium (K)-Dissolved			101.0		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			95.6		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			100.3		%		60-140	10-JUN-20
Silver (Ag)-Dissolved			99.5		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			98.9		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			96.9		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			101.8		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			96.1		%		80-120	10-JUN-20
Titanium (Ti)-Dissolved			96.6		%		80-120	10-JUN-20
Uranium (U)-Dissolved			98.5		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			98.3		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			94.6		%		80-120	10-JUN-20
WG3338345-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115408							
WG3338345-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
WG3338345-4	MS	L2457143-2						
Aluminum (Al)-Dissolved			99.1		%		70-130	10-JUN-20
Antimony (Sb)-Dissolved			97.3		%		70-130	10-JUN-20
Arsenic (As)-Dissolved			98.1		%		70-130	10-JUN-20
Bismuth (Bi)-Dissolved			95.2		%		70-130	10-JUN-20
Boron (B)-Dissolved			99.7		%		70-130	10-JUN-20
Cadmium (Cd)-Dissolved			103.1		%		70-130	10-JUN-20
Chromium (Cr)-Dissolved			96.3		%		70-130	10-JUN-20
Cobalt (Co)-Dissolved			99.3		%		70-130	10-JUN-20
Iron (Fe)-Dissolved			94.9		%		70-130	10-JUN-20
Lead (Pb)-Dissolved			100.7		%		70-130	10-JUN-20
Lithium (Li)-Dissolved			98.0		%		70-130	10-JUN-20
Magnesium (Mg)-Dissolved			97.2		%		70-130	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115408							
WG3338345-4 MS		L2457143-2						
Nickel (Ni)-Dissolved			99.9		%		70-130	10-JUN-20
Potassium (K)-Dissolved			100.8		%		70-130	10-JUN-20
Selenium (Se)-Dissolved			108.2		%		70-130	10-JUN-20
Silicon (Si)-Dissolved			95.4		%		70-130	10-JUN-20
Silver (Ag)-Dissolved			98.5		%		70-130	10-JUN-20
Sodium (Na)-Dissolved			100.9		%		70-130	10-JUN-20
Thallium (Tl)-Dissolved			100.6		%		70-130	10-JUN-20
Tin (Sn)-Dissolved			95.2		%		70-130	10-JUN-20
Titanium (Ti)-Dissolved			95.4		%		70-130	10-JUN-20
Uranium (U)-Dissolved			98.7		%		70-130	10-JUN-20
Vanadium (V)-Dissolved			97.6		%		70-130	10-JUN-20
Batch	R5115475							
WG3339587-3 DUP		L2457143-9						
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Arsenic (As)-Dissolved		0.00015	0.00016		mg/L	2.0	20	10-JUN-20
Barium (Ba)-Dissolved		0.0357	0.0355		mg/L	2.9	20	10-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Cadmium (Cd)-Dissolved		0.0000098	0.0000082		mg/L	16	20	10-JUN-20
Calcium (Ca)-Dissolved		43.1	39.5		mg/L	0.5	20	10-JUN-20
Chromium (Cr)-Dissolved		0.00017	0.00020		mg/L	15	20	10-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Copper (Cu)-Dissolved		0.00027	0.00025		mg/L	7.3	20	10-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Lithium (Li)-Dissolved		0.0012	0.0013		mg/L	2.6	20	10-JUN-20
Magnesium (Mg)-Dissolved		9.79	9.23		mg/L	0.5	20	10-JUN-20
Manganese (Mn)-Dissolved		0.00053	0.00071	J	mg/L	0.00018	0.0002	10-JUN-20
Molybdenum (Mo)-Dissolved		0.000843	0.000870		mg/L	2.9	20	10-JUN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUN-20
Potassium (K)-Dissolved		0.382	0.388		mg/L	3.4	20	10-JUN-20
Selenium (Se)-Dissolved		0.000663	0.000721		mg/L	9.9	20	10-JUN-20
Silicon (Si)-Dissolved		1.90	2.01		mg/L	2.5	20	10-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Sodium (Na)-Dissolved		0.648	0.633		mg/L	1.5	20	10-JUN-20



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MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3339587-3	DUP	L2457143-9						
Strontium (Sr)-Dissolved		0.193	0.175		mg/L	0.5	20	10-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Uranium (U)-Dissolved		0.000673	0.000635		mg/L	2.9	20	10-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUN-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUN-20
WG3339587-2	LCS							
Aluminum (Al)-Dissolved			110.5		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			101.4		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			102.4		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			104.3		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			98.2		%		80-120	10-JUN-20
Boron (B)-Dissolved			96.6		%		80-120	10-JUN-20
Cadmium (Cd)-Dissolved			103.5		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			102.4		%		80-120	10-JUN-20
Chromium (Cr)-Dissolved			104.1		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			103.4		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			104.2		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			104.7		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			99.3		%		80-120	10-JUN-20
Lithium (Li)-Dissolved			102.0		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			104.7		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			106.0		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	10-JUN-20
Nickel (Ni)-Dissolved			102.5		%		80-120	10-JUN-20
Potassium (K)-Dissolved			109.6		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			106.6		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			105.0		%		60-140	10-JUN-20
Silver (Ag)-Dissolved			98.9		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			108.7		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			99.0		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			101.0		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			101.9		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3339587-2	LCS							
Titanium (Ti)-Dissolved			101.1		%		80-120	10-JUN-20
Uranium (U)-Dissolved			97.0		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			104.7		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			108.0		%		80-120	10-JUN-20
WG3339587-1	MB	LF						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3339587-1	MB	LF						
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Batch	R5116209							
WG3340414-3	DUP	L2457143-2						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	11-JUN-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUN-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUN-20
Barium (Ba)-Dissolved		0.00035	0.00034		mg/L	0.6	20	11-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUN-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUN-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	11-JUN-20
Calcium (Ca)-Dissolved		0.492	0.512		mg/L	4.1	20	11-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUN-20
Copper (Cu)-Dissolved		0.00026	0.00027		mg/L	1.2	20	11-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUN-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-JUN-20
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	11-JUN-20
Manganese (Mn)-Dissolved		0.00040	0.00040		mg/L	0.6	20	11-JUN-20
Molybdenum (Mo)-Dissolved		0.000699	0.000695		mg/L	0.5	20	11-JUN-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-JUN-20
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUN-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUN-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUN-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUN-20
Strontium (Sr)-Dissolved		0.00051	0.00050		mg/L	1.5	20	11-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUN-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-JUN-20
Zinc (Zn)-Dissolved		0.0228	0.0228		mg/L	0.2	20	11-JUN-20
WG3340179-2	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3340179-2	LCS							
Aluminum (Al)-Dissolved			99.9		%		80-120	11-JUN-20
Antimony (Sb)-Dissolved			104.9		%		80-120	11-JUN-20
Arsenic (As)-Dissolved			95.5		%		80-120	11-JUN-20
Barium (Ba)-Dissolved			98.8		%		80-120	11-JUN-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	11-JUN-20
Boron (B)-Dissolved			105.5		%		80-120	11-JUN-20
Cadmium (Cd)-Dissolved			97.0		%		80-120	11-JUN-20
Calcium (Ca)-Dissolved			105.4		%		80-120	11-JUN-20
Chromium (Cr)-Dissolved			97.6		%		80-120	11-JUN-20
Cobalt (Co)-Dissolved			96.9		%		80-120	11-JUN-20
Copper (Cu)-Dissolved			95.5		%		80-120	11-JUN-20
Iron (Fe)-Dissolved			97.7		%		80-120	11-JUN-20
Lead (Pb)-Dissolved			102.2		%		80-120	11-JUN-20
Lithium (Li)-Dissolved			108.8		%		80-120	11-JUN-20
Magnesium (Mg)-Dissolved			101.7		%		80-120	11-JUN-20
Manganese (Mn)-Dissolved			98.0		%		80-120	11-JUN-20
Molybdenum (Mo)-Dissolved			102.7		%		80-120	11-JUN-20
Nickel (Ni)-Dissolved			95.1		%		80-120	11-JUN-20
Potassium (K)-Dissolved			97.4		%		80-120	11-JUN-20
Selenium (Se)-Dissolved			98.5		%		80-120	11-JUN-20
Silicon (Si)-Dissolved			104.3		%		60-140	11-JUN-20
Silver (Ag)-Dissolved			103.3		%		80-120	11-JUN-20
Sodium (Na)-Dissolved			100.5		%		80-120	11-JUN-20
Strontium (Sr)-Dissolved			100.8		%		80-120	11-JUN-20
Thallium (Tl)-Dissolved			101.4		%		80-120	11-JUN-20
Tin (Sn)-Dissolved			99.0		%		80-120	11-JUN-20
Titanium (Ti)-Dissolved			97.6		%		80-120	11-JUN-20
Uranium (U)-Dissolved			104.0		%		80-120	11-JUN-20
Vanadium (V)-Dissolved			99.6		%		80-120	11-JUN-20
Zinc (Zn)-Dissolved			95.1		%		80-120	11-JUN-20
WG3340414-2	LCS							
Aluminum (Al)-Dissolved			97.1		%		80-120	11-JUN-20
Antimony (Sb)-Dissolved			106.6		%		80-120	11-JUN-20
Arsenic (As)-Dissolved			94.7		%		80-120	11-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3340414-2	LCS							
Barium (Ba)-Dissolved			101.2		%		80-120	11-JUN-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	11-JUN-20
Boron (B)-Dissolved			101.0		%		80-120	11-JUN-20
Cadmium (Cd)-Dissolved			100.4		%		80-120	11-JUN-20
Calcium (Ca)-Dissolved			101.8		%		80-120	11-JUN-20
Chromium (Cr)-Dissolved			99.0		%		80-120	11-JUN-20
Cobalt (Co)-Dissolved			95.7		%		80-120	11-JUN-20
Copper (Cu)-Dissolved			94.0		%		80-120	11-JUN-20
Iron (Fe)-Dissolved			97.1		%		80-120	11-JUN-20
Lead (Pb)-Dissolved			104.1		%		80-120	11-JUN-20
Lithium (Li)-Dissolved			104.4		%		80-120	11-JUN-20
Magnesium (Mg)-Dissolved			99.2		%		80-120	11-JUN-20
Manganese (Mn)-Dissolved			97.8		%		80-120	11-JUN-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	11-JUN-20
Nickel (Ni)-Dissolved			95.6		%		80-120	11-JUN-20
Potassium (K)-Dissolved			96.8		%		80-120	11-JUN-20
Selenium (Se)-Dissolved			97.3		%		80-120	11-JUN-20
Silicon (Si)-Dissolved			101.5		%		60-140	11-JUN-20
Silver (Ag)-Dissolved			104.4		%		80-120	11-JUN-20
Sodium (Na)-Dissolved			96.3		%		80-120	11-JUN-20
Strontium (Sr)-Dissolved			101.3		%		80-120	11-JUN-20
Thallium (Tl)-Dissolved			102.5		%		80-120	11-JUN-20
Tin (Sn)-Dissolved			102.9		%		80-120	11-JUN-20
Titanium (Ti)-Dissolved			91.0		%		80-120	11-JUN-20
Uranium (U)-Dissolved			102.7		%		80-120	11-JUN-20
Vanadium (V)-Dissolved			97.9		%		80-120	11-JUN-20
Zinc (Zn)-Dissolved			94.5		%		80-120	11-JUN-20
WG3340179-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3340179-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
WG3340414-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-JUN-20
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3340414-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-JUN-20
WG3340179-4	MS	L2457143-4						
Aluminum (Al)-Dissolved			91.3		%		70-130	11-JUN-20
Antimony (Sb)-Dissolved			99.97		%		70-130	11-JUN-20
Arsenic (As)-Dissolved			95.5		%		70-130	11-JUN-20
Barium (Ba)-Dissolved			96.4		%		70-130	11-JUN-20
Bismuth (Bi)-Dissolved			96.5		%		70-130	11-JUN-20
Boron (B)-Dissolved			101.8		%		70-130	11-JUN-20
Cadmium (Cd)-Dissolved			97.9		%		70-130	11-JUN-20
Calcium (Ca)-Dissolved			98.5		%		70-130	11-JUN-20
Chromium (Cr)-Dissolved			95.2		%		70-130	11-JUN-20
Cobalt (Co)-Dissolved			94.6		%		70-130	11-JUN-20
Copper (Cu)-Dissolved			94.8		%		70-130	11-JUN-20
Iron (Fe)-Dissolved			93.1		%		70-130	11-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3340179-4	MS	L2457143-4						
Lead (Pb)-Dissolved			98.1		%		70-130	11-JUN-20
Lithium (Li)-Dissolved			98.6		%		70-130	11-JUN-20
Magnesium (Mg)-Dissolved			93.9		%		70-130	11-JUN-20
Manganese (Mn)-Dissolved			94.0		%		70-130	11-JUN-20
Molybdenum (Mo)-Dissolved			95.7		%		70-130	11-JUN-20
Nickel (Ni)-Dissolved			93.4		%		70-130	11-JUN-20
Potassium (K)-Dissolved			93.8		%		70-130	11-JUN-20
Selenium (Se)-Dissolved			106.2		%		70-130	11-JUN-20
Silicon (Si)-Dissolved			94.9		%		70-130	11-JUN-20
Silver (Ag)-Dissolved			101.5		%		70-130	11-JUN-20
Sodium (Na)-Dissolved			97.0		%		70-130	11-JUN-20
Strontium (Sr)-Dissolved			95.6		%		70-130	11-JUN-20
Thallium (Tl)-Dissolved			98.5		%		70-130	11-JUN-20
Tin (Sn)-Dissolved			94.9		%		70-130	11-JUN-20
Titanium (Ti)-Dissolved			94.8		%		70-130	11-JUN-20
Uranium (U)-Dissolved			98.3		%		70-130	11-JUN-20
Vanadium (V)-Dissolved			95.3		%		70-130	11-JUN-20
Zinc (Zn)-Dissolved			99.6		%		70-130	11-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5115395							
WG3339359-2	LCS							
Aluminum (Al)-Total			107.8		%		80-120	10-JUN-20
Antimony (Sb)-Total			107.4		%		80-120	10-JUN-20
Arsenic (As)-Total			103.9		%		80-120	10-JUN-20
Barium (Ba)-Total			118.1		%		80-120	10-JUN-20
Bismuth (Bi)-Total			119.2		%		80-120	10-JUN-20
Boron (B)-Total			97.4		%		80-120	10-JUN-20
Cadmium (Cd)-Total			102.4		%		80-120	10-JUN-20
Calcium (Ca)-Total			102.8		%		80-120	10-JUN-20
Chromium (Cr)-Total			121.5	MES	%		80-120	10-JUN-20
Cobalt (Co)-Total			103.5		%		80-120	10-JUN-20
Copper (Cu)-Total			118.2		%		80-120	10-JUN-20
Lead (Pb)-Total			109.8		%		80-120	10-JUN-20
Lithium (Li)-Total			98.3		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115395							
WG3339359-2 LCS								
Magnesium (Mg)-Total			105.6		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			99.4		%		80-120	10-JUN-20
Nickel (Ni)-Total			109.4		%		80-120	10-JUN-20
Potassium (K)-Total			105.9		%		80-120	10-JUN-20
Selenium (Se)-Total			99.7		%		80-120	10-JUN-20
Silicon (Si)-Total			106.4		%		80-120	10-JUN-20
Silver (Ag)-Total			100.3		%		80-120	10-JUN-20
Sodium (Na)-Total			112.5		%		80-120	10-JUN-20
Strontium (Sr)-Total			107.3		%		80-120	10-JUN-20
Thallium (Tl)-Total			105.6		%		80-120	10-JUN-20
Tin (Sn)-Total			101.6		%		80-120	10-JUN-20
Titanium (Ti)-Total			101.4		%		80-120	10-JUN-20
Uranium (U)-Total			107.9		%		80-120	10-JUN-20
Vanadium (V)-Total			104.2		%		80-120	10-JUN-20
Zinc (Zn)-Total			112.0		%		80-120	10-JUN-20
WG3339359-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115395							
WG3339359-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUN-20
Batch	R5115408							
WG3338500-2	LCS							
Aluminum (Al)-Total			103.1		%		80-120	10-JUN-20
Antimony (Sb)-Total			101.2		%		80-120	10-JUN-20
Arsenic (As)-Total			99.6		%		80-120	10-JUN-20
Barium (Ba)-Total			104.5		%		80-120	10-JUN-20
Bismuth (Bi)-Total			102.1		%		80-120	10-JUN-20
Boron (B)-Total			90.0		%		80-120	10-JUN-20
Cadmium (Cd)-Total			101.1		%		80-120	10-JUN-20
Calcium (Ca)-Total			97.8		%		80-120	10-JUN-20
Chromium (Cr)-Total			99.2		%		80-120	10-JUN-20
Cobalt (Co)-Total			98.6		%		80-120	10-JUN-20
Copper (Cu)-Total			96.9		%		80-120	10-JUN-20
Iron (Fe)-Total			97.8		%		80-120	10-JUN-20
Lead (Pb)-Total			100.8		%		80-120	10-JUN-20
Lithium (Li)-Total			96.2		%		80-120	10-JUN-20
Magnesium (Mg)-Total			98.7		%		80-120	10-JUN-20
Manganese (Mn)-Total			99.4		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			100.7		%		80-120	10-JUN-20
Nickel (Ni)-Total			99.0		%		80-120	10-JUN-20
Potassium (K)-Total			103.7		%		80-120	10-JUN-20
Selenium (Se)-Total			104.6		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115408							
WG3338500-2 LCS								
Silicon (Si)-Total			104.4		%		80-120	10-JUN-20
Silver (Ag)-Total			101.8		%		80-120	10-JUN-20
Sodium (Na)-Total			101.9		%		80-120	10-JUN-20
Strontium (Sr)-Total			99.5		%		80-120	10-JUN-20
Thallium (Tl)-Total			103.4		%		80-120	10-JUN-20
Tin (Sn)-Total			98.6		%		80-120	10-JUN-20
Titanium (Ti)-Total			93.8		%		80-120	10-JUN-20
Uranium (U)-Total			97.1		%		80-120	10-JUN-20
Vanadium (V)-Total			100.5		%		80-120	10-JUN-20
Zinc (Zn)-Total			100.6		%		80-120	10-JUN-20
WG3338500-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5115408							
WG3338500-1	MB							
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUN-20
Batch	R5116169							
WG3339359-2	LCS							
Iron (Fe)-Total			101.1		%		80-120	11-JUN-20
Manganese (Mn)-Total			103.5		%		80-120	11-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5110244							
WG3336853-3	DUP	L2457143-10						
Ammonia as N		0.0120	0.0127		mg/L	5.7	20	06-JUN-20
WG3336853-2	LCS							
Ammonia as N			101.6		%		85-115	06-JUN-20
WG3336853-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-JUN-20
WG3336853-4	MS	L2457143-10						
Ammonia as N			115.3		%		75-125	06-JUN-20
Batch	R5117217							
WG3341714-34	LCS							
Ammonia as N			95.6		%		85-115	13-JUN-20
WG3341714-33	MB							
Ammonia as N			<0.0050		mg/L		0.005	13-JUN-20
NO2-L-IC-N-CL								
	Water							
Batch	R5116060							
WG3340293-19	DUP	L2457143-2						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Nitrite (as N)			107.9		%		90-110	06-JUN-20
WG3340293-18	LCS							
Nitrite (as N)			108.7		%		90-110	06-JUN-20
WG3340293-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch R5116060								
WG3340293-17	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-JUN-20
WG3340293-20	MS	L2457143-2						
Nitrite (as N)			112.7		%		75-125	06-JUN-20
NO3-L-IC-N-CL								
Water								
Batch R5116060								
WG3340293-19	DUP	L2457143-2						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Nitrate (as N)			104.5		%		90-110	06-JUN-20
WG3340293-18	LCS							
Nitrate (as N)			104.4		%		90-110	06-JUN-20
WG3340293-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-JUN-20
WG3340293-17	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-JUN-20
WG3340293-20	MS	L2457143-2						
Nitrate (as N)			107.6		%		75-125	06-JUN-20
OH-CL								
Water								
Batch R5117752								
WG3342317-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-JUN-20
ORP-CL								
Water								
Batch R5110101								
WG3336742-1	CRM	CL-ORP						
ORP			227		mV		210-230	06-JUN-20
Batch R5117891								
WG3342457-3	CRM	CL-ORP						
ORP			225		mV		210-230	15-JUN-20
WG3342457-5	CRM	CL-ORP						
ORP			221		mV		210-230	15-JUN-20
WG3342457-4	DUP	L2457143-1						
ORP		457	459	J	mV	1.8	15	15-JUN-20
WG3342457-6	DUP	L2457143-8						
ORP		471	464	J	mV	6.8	15	15-JUN-20
P-T-L-COL-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5110203							
WG3336809-14	LCS							
Phosphorus (P)-Total			98.9		%		80-120	06-JUN-20
WG3336809-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-JUN-20
Batch	R5116540							
WG3340973-11	DUP	L2457143-8						
Phosphorus (P)-Total		0.0235	0.0226		mg/L	4.0	20	12-JUN-20
WG3340973-10	LCS							
Phosphorus (P)-Total			99.2		%		80-120	12-JUN-20
WG3340973-6	LCS							
Phosphorus (P)-Total			98.8		%		80-120	12-JUN-20
WG3340973-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-JUN-20
WG3340973-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-JUN-20
WG3340973-12	MS	L2457143-8						
Phosphorus (P)-Total			93.9		%		70-130	12-JUN-20
PH-CL								
Water								
Batch	R5110190							
WG3336760-2	LCS							
pH			6.97		pH		6.9-7.1	06-JUN-20
Batch	R5117752							
WG3342317-5	LCS							
pH			6.99		pH		6.9-7.1	14-JUN-20
PO4-DO-L-COL-CL								
Water								
Batch	R5110047							
WG3336396-30	LCS							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	05-JUN-20
WG3336396-34	LCS							
Orthophosphate-Dissolved (as P)			105.3		%		80-120	05-JUN-20
WG3336396-29	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-20
WG3336396-33	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-20
SO4-IC-N-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R5110105							
WG3336735-10	LCS							
Sulfate (SO4)			103.4		%		90-110	03-JUN-20
WG3336735-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	03-JUN-20
Batch	R5116060							
WG3340293-19	DUP	L2457143-2						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	06-JUN-20
WG3340293-14	LCS							
Sulfate (SO4)			105.3		%		90-110	06-JUN-20
WG3340293-18	LCS							
Sulfate (SO4)			104.6		%		90-110	06-JUN-20
WG3340293-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	06-JUN-20
WG3340293-17	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	06-JUN-20
WG3340293-20	MS	L2457143-2						
Sulfate (SO4)			108.1		%		75-125	06-JUN-20
SOLIDS-TDS-CL								
Water								
Batch	R5110228							
WG3336419-2	LCS							
Total Dissolved Solids			102.7		%		85-115	05-JUN-20
WG3336419-1	MB							
Total Dissolved Solids			<10		mg/L		10	05-JUN-20
Batch	R5116226							
WG3338466-23	LCS							
Total Dissolved Solids			97.4		%		85-115	10-JUN-20
WG3338466-22	MB							
Total Dissolved Solids			<10		mg/L		10	10-JUN-20
Batch	R5116899							
WG3339819-5	LCS							
Total Dissolved Solids			101.7		%		85-115	11-JUN-20
WG3339819-4	MB							
Total Dissolved Solids			<10		mg/L		10	11-JUN-20
TKN-L-F-CL								
Water								
Batch	R5110933							
WG3337632-12	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	08-JUN-20
WG3337632-2	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch R5110933								
WG3337632-2	LCS							
Total Kjeldahl Nitrogen			90.1		%		75-125	08-JUN-20
WG3337632-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-JUN-20
WG3337632-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-JUN-20
Batch R5117927								
WG3342541-11	LCS							
Total Kjeldahl Nitrogen			84.4		%		75-125	15-JUN-20
WG3342541-15	LCS							
Total Kjeldahl Nitrogen			84.0		%		75-125	15-JUN-20
WG3342541-19	LCS							
Total Kjeldahl Nitrogen			84.8		%		75-125	15-JUN-20
WG3342541-2	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	15-JUN-20
WG3342541-23	LCS							
Total Kjeldahl Nitrogen			85.3		%		75-125	15-JUN-20
WG3342541-28	LCS							
Total Kjeldahl Nitrogen			86.3		%		75-125	15-JUN-20
WG3342541-5	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	15-JUN-20
WG3342541-9	LCS							
Total Kjeldahl Nitrogen			85.3		%		75-125	15-JUN-20
WG3342541-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-22	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-26	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
WG3342541-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20



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TKN-L-F-CL								
Water								
Batch R5117927								
WG3342541-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-20
TSS-L-CL								
Water								
Batch R5110224								
WG3336420-6 DUP								
Total Suspended Solids		L2457143-13 48.2	45.2		mg/L	6.4	20	05-JUN-20
WG3336420-5 LCS								
Total Suspended Solids			88.7		%		85-115	05-JUN-20
WG3336420-4 MB								
Total Suspended Solids			<1.0		mg/L		1	05-JUN-20
Batch R5116094								
WG3339626-12 LCS								
Total Suspended Solids			99.8		%		85-115	10-JUN-20
WG3339626-14 LCS								
Total Suspended Solids			97.6		%		85-115	10-JUN-20
WG3339626-11 MB								
Total Suspended Solids			<1.0		mg/L		1	10-JUN-20
WG3339626-13 MB								
Total Suspended Solids			<1.0		mg/L		1	10-JUN-20
Batch R5116846								
WG3339820-4 LCS								
Total Suspended Solids			111.6		%		85-115	11-JUN-20
WG3339820-3 MB								
Total Suspended Solids			<1.0		mg/L		1	11-JUN-20
TURBIDITY-CL								
Water								
Batch R5110106								
WG3336745-2 LCS								
Turbidity			102.0		%		85-115	06-JUN-20
WG3336745-1 MB								
Turbidity			<0.10		NTU		0.1	06-JUN-20
Batch R5110404								
WG3337029-3 DUP								
Turbidity		L2457143-1 <0.10	<0.10	RPD-NA	NTU	N/A	15	07-JUN-20
WG3337029-2 LCS								
Turbidity			103.5		%		85-115	07-JUN-20
WG3337029-5 LCS								
Turbidity			103.0		%		85-115	07-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5110404							
WG3337029-1	MB							
Turbidity			<0.10		NTU		0.1	07-JUN-20
WG3337029-4	MB							
Turbidity			<0.10		NTU		0.1	07-JUN-20

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Workorder: L2457143

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2457143

Report Date: 18-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	03-JUN-20 17:30	15-JUN-20 08:30	0.25	279	hours	EHTR-FM
	2	03-JUN-20 17:30	15-JUN-20 08:30	0.25	279	hours	EHTR-FM
	3	03-JUN-20 17:30	15-JUN-20 08:30	0.25	279	hours	EHTR-FM
	4	03-JUN-20 17:30	15-JUN-20 08:30	0.25	279	hours	EHTR-FM
	5	04-JUN-20 14:15	15-JUN-20 08:30	0.25	258	hours	EHTR-FM
	6	04-JUN-20 13:45	15-JUN-20 08:30	0.25	259	hours	EHTR-FM
	7	04-JUN-20 13:30	15-JUN-20 08:30	0.25	259	hours	EHTR-FM
	8	04-JUN-20 14:50	15-JUN-20 08:30	0.25	258	hours	EHTR-FM
	9	04-JUN-20 09:15	06-JUN-20 08:00	0.25	47	hours	EHTR-FM
	10	04-JUN-20 11:00	06-JUN-20 08:00	0.25	45	hours	EHTR-FM
	11	04-JUN-20 10:30	06-JUN-20 08:00	0.25	46	hours	EHTR-FM
Total Dissolved Solids							
	8	04-JUN-20 14:50	16-JUN-20 18:40	7	12	days	EHT
Turbidity							
	1	03-JUN-20 17:30	07-JUN-20 07:30	3	4	days	EHT
	2	03-JUN-20 17:30	07-JUN-20 07:30	3	4	days	EHT
	3	03-JUN-20 17:30	07-JUN-20 07:30	3	4	days	EHT
	4	03-JUN-20 17:30	07-JUN-20 07:30	3	4	days	EHT
pH							
	1	03-JUN-20 17:30	14-JUN-20 11:00	0.25	258	hours	EHTR-FM
	2	03-JUN-20 17:30	14-JUN-20 11:00	0.25	258	hours	EHTR-FM
	3	03-JUN-20 17:30	14-JUN-20 11:00	0.25	258	hours	EHTR-FM
	4	03-JUN-20 17:30	14-JUN-20 11:00	0.25	258	hours	EHTR-FM
	5	04-JUN-20 14:15	14-JUN-20 11:00	0.25	237	hours	EHTR-FM
	6	04-JUN-20 13:45	14-JUN-20 11:00	0.25	237	hours	EHTR-FM
	7	04-JUN-20 13:30	14-JUN-20 11:00	0.25	238	hours	EHTR-FM
	8	04-JUN-20 14:50	14-JUN-20 11:00	0.25	236	hours	EHTR-FM
	9	04-JUN-20 09:15	06-JUN-20 11:52	0.25	51	hours	EHTR-FM
	10	04-JUN-20 11:00	06-JUN-20 11:52	0.25	49	hours	EHTR-FM
	11	04-JUN-20 10:30	06-JUN-20 11:52	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2457143 were received on 05-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X
Email	Jeremy.Enns@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125		

SAMPLE DETAILS Filtered: F: Field, L: Lab, PL: Field & Lab, N: None



L2457143-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED										
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	TSS/Turb			
1 GH_GA-MW-4_WG_2020-04-06_NP	GH_GA-MW-4	WG		June 3 2020	17:30	G	6	1	1	1	1	1	1	1				
2 GH_GWB1_WG_2020-04-06_NP	GH_GWB1	WG		June 3 2020	17:30	G	7	1	1	1	1	1	1	1				
3 GH_GWD1_WG_2020-04-06_NP	GH_GWD1	WG		June 3 2020	17:30	G	7	1	1	1	1	1	1	1				
4 GH_TRIPGW_WG_2020-04-06_NP	GH_TRIPGW	WG		June 3 2020	17:30	G	6	1	1	1	1	1	1	1				
5 GH_MW-RLP-ID_WG_2020-04-06_NP	GH_MW-RLP-ID	WG		June 4 2020	14:15	G	6	1	1	1	1	1	1	1				
6 GH_RC1_WS_2020-06-01_N	GH_RC1	WS		June 4 2020	13:45	G	7	1	1	1	1	1	1	1				
7 GH_FC1_WS_2020-06-01_N	GH_FC1	WS		June 4 2020	13:30	G	7	1	1	1	1	1	1	1				
8 GH_SITE-F_WS_2020-06-01_N	GH_SITE-F	WS		June 4 2020	14:50	G	7	1	1	1	1	1	1	1				
9 GH_ER-MC-IN_WS_2020-06-04_NP	GH_ER-MC-IN	WS		June 4 2020	9:15	G	7	1	1	1	1	1	1	1				
10 GH_ER-MC-OUT_WS_2020-06-04_NP	GH_ER-MC-OUT	WS		June 4 2020	11:00	G	7	1	1	1	1	1	1	1				
11 GH_LC2_WS_2020-06-04_NP	GH_LC2	WS		June 4 2020	10:30	G	7	1	1	1	1	1	1	1				
12 GH_ER-MC-IN_WS_2020-06-03_NP	GH_ER-MC-IN	WS		June 3 2020	16:00	G	1											1
13 GH_ER-MC-OUT_WS_2020-06-03_NP	GH_ER-MC-OUT	WS		June 3 2020	16:40	G	1											1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved metals, dissolved mercury and DOC not filtered and not preserved for sample set GH_ER-MC-IN_WS_2020-06-04_NP.			6/5	0850

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	MD BP	Mobile #
Regular (default) <input checked="" type="checkbox"/>			
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge <input checked="" type="checkbox"/>			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature		Date/Time

10-2



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 06-JUN-20
Report Date: 09-FEB-21 13:43 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2457220
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.
23-JUNE-20: Sample -3 (GH_MW-TD_WG) and -4 (GH_WTDS_WS) was analyzed passed hold time for Nitrite and Nitrate due to sample over capacity.

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-1 GH_GA-MW-3_WG_2020-04-06_NP							
Sampled By: MD BP on 05-JUN-20 @ 15:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	234		5.0	mg/L		13-JUN-20	R5117282
Carbonate (CO3)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Dissolved Organic Carbon	1.47		0.50	mg/L		14-JUN-20	R5117590
Hydroxide (OH)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Total Kjeldahl Nitrogen	28.7	DLHC	5.0	mg/L		16-JUN-20	R5120338
Mercury (Hg)-Total	0.00059		0.00050	ug/L		11-JUN-20	R5116144
Total Organic Carbon	1.46		0.50	mg/L		14-JUN-20	R5117590
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JUN-20	10-JUN-20	R5115901
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	12-JUN-20	R5116417
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5116102
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-JUN-20	10-JUN-20	R5115901
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Arsenic (As)-Dissolved	0.00042		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Barium (Ba)-Dissolved	0.0618		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Boron (B)-Dissolved	0.114		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cadmium (Cd)-Dissolved	0.0081		0.0050	ug/L	10-JUN-20	10-JUN-20	R5115901
Calcium (Ca)-Dissolved	110		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-JUN-20	10-JUN-20	R5115901
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Iron (Fe)-Dissolved	0.187		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Lithium (Li)-Dissolved	0.0560		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Magnesium (Mg)-Dissolved	61.9		0.10	mg/L	10-JUN-20	10-JUN-20	R5115901
Manganese (Mn)-Dissolved	0.0322		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Molybdenum (Mo)-Dissolved	0.000458		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Nickel (Ni)-Dissolved	0.00064		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Potassium (K)-Dissolved	2.02		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Selenium (Se)-Dissolved	46.2		0.050	ug/L	10-JUN-20	10-JUN-20	R5115901
Silicon (Si)-Dissolved	4.16		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Sodium (Na)-Dissolved	20.2		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Strontium (Sr)-Dissolved	1.56		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Uranium (U)-Dissolved	0.00102		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Hardness							
Hardness (as CaCO3)	530		0.50	mg/L		11-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-1 GH_GA-MW-3_WG_2020-04-06_NP Sampled By: MD BP on 05-JUN-20 @ 15:00 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	192		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Total (as CaCO3)	192		1.0	mg/L		13-JUN-20	R5117282
Ammonia, Total (as N)							
Ammonia as N	0.302		0.0050	mg/L		15-JUN-20	R5117878
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-JUN-20	R5117153
Chloride in Water by IC							
Chloride (Cl)	8.80		0.50	mg/L		08-JUN-20	R5117153
Electrical Conductivity (EC)							
Conductivity (@ 25C)	906		2.0	uS/cm		13-JUN-20	R5117282
Fluoride in Water by IC							
Fluoride (F)	0.258		0.020	mg/L		08-JUN-20	R5117153
Ion Balance Calculation							
Cation - Anion Balance	4.5			%		15-JUN-20	
Anion Sum	10.5			meq/L		15-JUN-20	
Cation Sum	11.5			meq/L		15-JUN-20	
Ion Balance Calculation							
Ion Balance	109		-100	%		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.81		0.0050	mg/L		08-JUN-20	R5117153
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0131		0.0010	mg/L		08-JUN-20	R5117153
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0031		0.0010	mg/L		07-JUN-20	R5110640
Oxidation redution potential by elect.							
ORP	306		-1000	mV		15-JUN-20	R5118039
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0120		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	300		0.30	mg/L		08-JUN-20	R5117153
Total Dissolved Solids							
Total Dissolved Solids	692	DLHC	20	mg/L		12-JUN-20	R5117227
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		12-JUN-20	R5117185
Turbidity							
Turbidity	11.2		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.22		0.10	pH		13-JUN-20	R5117282
L2457220-2 GH_GWD3_WG_2020-04-06_NP Sampled By: MD BP on 05-JUN-20 @ 14:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	219		5.0	mg/L		13-JUN-20	R5117282
Carbonate (CO3)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Dissolved Organic Carbon	1.29		0.50	mg/L		14-JUN-20	R5117590
Hydroxide (OH)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Total Kjeldahl Nitrogen	0.114		0.050	mg/L		16-JUN-20	R5120338
Mercury (Hg)-Total	0.00069		0.00050	ug/L		11-JUN-20	R5116144
Total Organic Carbon	1.56		0.50	mg/L		14-JUN-20	R5117590

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-2 GH_GWD3_WG_2020-04-06_NP							
Sampled By: MD BP on 05-JUN-20 @ 14:10							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JUN-20	10-JUN-20	R5115901
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	12-JUN-20	R5116417
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5116102
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Aluminum (Al)-Dissolved	0.0066		0.0030	mg/L	10-JUN-20	10-JUN-20	R5115901
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Barium (Ba)-Dissolved	0.0775		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Boron (B)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cadmium (Cd)-Dissolved	0.0152		0.0050	ug/L	10-JUN-20	10-JUN-20	R5115901
Calcium (Ca)-Dissolved	53.8		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-JUN-20	10-JUN-20	R5115901
Copper (Cu)-Dissolved	0.00036		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Iron (Fe)-Dissolved	0.018		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Lithium (Li)-Dissolved	0.0078		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Magnesium (Mg)-Dissolved	19.3		0.10	mg/L	10-JUN-20	10-JUN-20	R5115901
Manganese (Mn)-Dissolved	0.00539		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Molybdenum (Mo)-Dissolved	0.00139		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Nickel (Ni)-Dissolved	0.00068		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Potassium (K)-Dissolved	0.714		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Selenium (Se)-Dissolved	4.67		0.050	ug/L	10-JUN-20	10-JUN-20	R5115901
Silicon (Si)-Dissolved	2.34		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Sodium (Na)-Dissolved	2.38		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Strontium (Sr)-Dissolved	0.193		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Uranium (U)-Dissolved	0.000778		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Hardness							
Hardness (as CaCO3)	214		0.50	mg/L		11-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	179		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Carbonate (as CaCO3)	5.2		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Total (as CaCO3)	185		1.0	mg/L		13-JUN-20	R5117282
Ammonia, Total (as N)							
Ammonia as N	0.0229		0.0050	mg/L		15-JUN-20	R5117878
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-JUN-20	R5117153

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-2 GH_GWD3_WG_2020-04-06_NP Sampled By: MD BP on 05-JUN-20 @ 14:10 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	0.95		0.50	mg/L		08-JUN-20	R5117153
Electrical Conductivity (EC) Conductivity (@ 25C)	392		2.0	uS/cm		13-JUN-20	R5117282
Fluoride in Water by IC Fluoride (F)	0.125		0.020	mg/L		08-JUN-20	R5117153
Ion Balance Calculation Ion Balance	96.3		-100	%		15-JUN-20	
Ion Balance Calculation Cation - Anion Balance	-1.9			%		15-JUN-20	
Anion Sum	4.57			meq/L		15-JUN-20	
Cation Sum	4.40			meq/L		15-JUN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.792		0.0050	mg/L		08-JUN-20	R5117153
Nitrite in Water by IC (Low Level) Nitrite (as N)	0.0018		0.0010	mg/L		08-JUN-20	R5117153
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		07-JUN-20	R5110640
Oxidation redution potential by elect. ORP	491		-1000	mV		15-JUN-20	R5118039
Phosphorus (P)-Total Phosphorus (P)-Total	0.0046		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC Sulfate (SO4)	38.0		0.30	mg/L		08-JUN-20	R5117153
Total Dissolved Solids Total Dissolved Solids	209	DLHC	20	mg/L		12-JUN-20	R5117227
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		12-JUN-20	R5117185
Turbidity Turbidity	0.35		0.10	NTU		07-JUN-20	R5110404
pH pH	8.36		0.10	pH		13-JUN-20	R5117282
L2457220-3 GH_MW-TD_WG_2020-04-06_NP Sampled By: MD BP on 04-JUN-20 @ 16:30 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	325		5.0	mg/L		17-JUN-20	R5117282
Carbonate (CO3)	<5.0		5.0	mg/L		17-JUN-20	R5117282
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-JUN-20	R5117590
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5117282
Total Kjeldahl Nitrogen	0.14	DLM	0.10	mg/L		16-JUN-20	R5120338
Mercury (Hg)-Total	0.00367		0.00050	ug/L		11-JUN-20	R5116144
Total Organic Carbon	<0.50		0.50	mg/L		14-JUN-20	R5117590
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JUN-20	10-JUN-20	R5115901
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	12-JUN-20	R5116417
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5116102
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-3 GH_MW-TD_WG_2020-04-06_NP							
Sampled By: MD BP on 04-JUN-20 @ 16:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-JUN-20	10-JUN-20	R5115901
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Barium (Ba)-Dissolved	0.0236		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Boron (B)-Dissolved	0.336		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cadmium (Cd)-Dissolved	0.135		0.0050	ug/L	10-JUN-20	10-JUN-20	R5115901
Calcium (Ca)-Dissolved	85.5		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cobalt (Co)-Dissolved	0.45		0.10	ug/L	10-JUN-20	10-JUN-20	R5115901
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Iron (Fe)-Dissolved	0.619		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Lithium (Li)-Dissolved	0.0382		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Magnesium (Mg)-Dissolved	35.9		0.10	mg/L	10-JUN-20	10-JUN-20	R5115901
Manganese (Mn)-Dissolved	0.782		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Molybdenum (Mo)-Dissolved	0.00305		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Nickel (Ni)-Dissolved	0.00101		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Potassium (K)-Dissolved	2.36		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Selenium (Se)-Dissolved	0.389		0.050	ug/L	10-JUN-20	10-JUN-20	R5115901
Silicon (Si)-Dissolved	6.19		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Sodium (Na)-Dissolved	28.0		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Strontium (Sr)-Dissolved	1.10		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Thallium (Tl)-Dissolved	0.000071		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Uranium (U)-Dissolved	0.00107		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Hardness							
Hardness (as CaCO3)	361		0.50	mg/L		11-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	330		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Total (as CaCO3)	330		1.0	mg/L		17-JUN-20	R5117282
Ammonia, Total (as N)							
Ammonia as N	0.128		0.0050	mg/L		15-JUN-20	R5117878
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-JUN-20	R5117153
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		08-JUN-20	R5117153
Electrical Conductivity (EC)							
Conductivity (@ 25C)	581		2.0	uS/cm		13-JUN-20	R5117282
Fluoride in Water by IC							
Fluoride (F)	0.203		0.020	mg/L		08-JUN-20	R5117153
Ion Balance Calculation							
Cation - Anion Balance	1.3			%		17-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-3 GH_MW-TD_WG_2020-04-06_NP Sampled By: MD BP on 04-JUN-20 @ 16:30 Matrix: WG							
Ion Balance Calculation							
Anion Sum	8.35			meq/L		17-JUN-20	
Cation Sum	8.57			meq/L		17-JUN-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		18-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		08-JUN-20	R5117153
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-JUN-20	R5117153
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-20	R5110640
Oxidation redution potential by elect.							
ORP	388		-1000	mV		15-JUN-20	R5118039
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	83.6		0.30	mg/L		08-JUN-20	R5117153
Total Dissolved Solids							
Total Dissolved Solids	449	DLHC	20	mg/L		11-JUN-20	R5116899
Total Suspended Solids							
Total Suspended Solids	1.4		1.0	mg/L		11-JUN-20	R5116846
Turbidity							
Turbidity	9.75		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.25		0.10	pH		13-JUN-20	R5117282
L2457220-4 GH_WTDS_WS_2020-06-01_NP Sampled By: MD BP on 04-JUN-20 @ 17:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	284		5.0	mg/L		17-JUN-20	R5117282
Carbonate (CO3)	<5.0		5.0	mg/L		17-JUN-20	R5117282
Dissolved Organic Carbon	1.23		0.50	mg/L		14-JUN-20	R5117590
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5117282
Total Kjeldahl Nitrogen	0.355		0.050	mg/L		16-JUN-20	R5120338
Mercury (Hg)-Total	0.00135		0.00050	ug/L		11-JUN-20	R5116144
Total Organic Carbon	1.22		0.50	mg/L		14-JUN-20	R5117590
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-20	10-JUN-20	R5115475
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5113116
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	12-JUN-20	R5116417
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5116102
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					09-JUN-20	R5113116
Aluminum (Al)-Dissolved	0.0035		0.0030	mg/L	09-JUN-20	10-JUN-20	R5115475
Antimony (Sb)-Dissolved	0.00017		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Barium (Ba)-Dissolved	0.0326		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115475
Boron (B)-Dissolved	0.051		0.010	mg/L	09-JUN-20	10-JUN-20	R5115475
Cadmium (Cd)-Dissolved	0.453		0.0050	ug/L	09-JUN-20	10-JUN-20	R5115475

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-4 GH_WTDS_WS_2020-06-01_NP							
Sampled By: MD BP on 04-JUN-20 @ 17:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Calcium (Ca)-Dissolved	147		0.050	mg/L	09-JUN-20	10-JUN-20	R5115475
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Cobalt (Co)-Dissolved	1.53		0.10	ug/L	09-JUN-20	10-JUN-20	R5115475
Copper (Cu)-Dissolved	0.00061		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115475
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115475
Lead (Pb)-Dissolved	0.000128		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115475
Lithium (Li)-Dissolved	0.0453		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115475
Magnesium (Mg)-Dissolved	50.8		0.10	mg/L	09-JUN-20	10-JUN-20	R5115475
Manganese (Mn)-Dissolved	0.00059		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Molybdenum (Mo)-Dissolved	0.00338		0.000050	mg/L	09-JUN-20	10-JUN-20	R5115475
Nickel (Ni)-Dissolved	0.0101		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115475
Potassium (K)-Dissolved	2.64		0.050	mg/L	09-JUN-20	10-JUN-20	R5115475
Selenium (Se)-Dissolved	14.2		0.050	ug/L	09-JUN-20	10-JUN-20	R5115475
Silicon (Si)-Dissolved	3.47		0.050	mg/L	09-JUN-20	10-JUN-20	R5115475
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115475
Sodium (Na)-Dissolved	16.2		0.050	mg/L	09-JUN-20	10-JUN-20	R5115475
Strontium (Sr)-Dissolved	0.838		0.00020	mg/L	09-JUN-20	10-JUN-20	R5115475
Thallium (Tl)-Dissolved	0.000029		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115475
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-20	10-JUN-20	R5115475
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-20	10-JUN-20	R5115475
Uranium (U)-Dissolved	0.00371		0.000010	mg/L	09-JUN-20	10-JUN-20	R5115475
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-20	10-JUN-20	R5115475
Zinc (Zn)-Dissolved	0.0186		0.0010	mg/L	09-JUN-20	10-JUN-20	R5115475
Hardness							
Hardness (as CaCO3)	576		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115539
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0053		0.0030	mg/L		10-JUN-20	R5115539
Antimony (Sb)-Total	0.00019		0.00010	mg/L		10-JUN-20	R5115539
Arsenic (As)-Total	0.00011		0.00010	mg/L		10-JUN-20	R5115539
Barium (Ba)-Total	0.0307		0.00010	mg/L		10-JUN-20	R5115539
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115539
Boron (B)-Total	0.050		0.010	mg/L		10-JUN-20	R5115539
Cadmium (Cd)-Total	0.439		0.0050	ug/L		10-JUN-20	R5115539
Calcium (Ca)-Total	146		0.050	mg/L		10-JUN-20	R5115539
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115539
Cobalt (Co)-Total	1.56		0.10	ug/L		10-JUN-20	R5115539
Copper (Cu)-Total	0.00074		0.00050	mg/L		10-JUN-20	R5115539
Iron (Fe)-Total	0.013		0.010	mg/L		10-JUN-20	R5115539
Lead (Pb)-Total	0.000138		0.000050	mg/L		10-JUN-20	R5115539
Lithium (Li)-Total	0.0445		0.0010	mg/L		10-JUN-20	R5115539
Magnesium (Mg)-Total	48.9		0.10	mg/L		10-JUN-20	R5115539
Manganese (Mn)-Total	0.00051		0.00010	mg/L		10-JUN-20	R5115539
Molybdenum (Mo)-Total	0.00368		0.000050	mg/L		10-JUN-20	R5115539
Nickel (Ni)-Total	0.00991		0.00050	mg/L		10-JUN-20	R5115539
Potassium (K)-Total	2.41		0.050	mg/L		10-JUN-20	R5115539
Selenium (Se)-Total	13.6		0.050	ug/L		10-JUN-20	R5115539
Silicon (Si)-Total	3.49		0.10	mg/L		10-JUN-20	R5115539
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115539
Sodium (Na)-Total	15.5		0.050	mg/L		10-JUN-20	R5115539

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-4 GH_WTDS_WS_2020-06-01_NP							
Sampled By: MD BP on 04-JUN-20 @ 17:50							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Strontium (Sr)-Total	0.912		0.00020	mg/L		10-JUN-20	R5115539
Thallium (Tl)-Total	0.000033		0.000010	mg/L		10-JUN-20	R5115539
Tin (Sn)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115539
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115539
Uranium (U)-Total	0.00374		0.000010	mg/L		10-JUN-20	R5115539
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JUN-20	R5115539
Zinc (Zn)-Total	0.0186		0.0030	mg/L		10-JUN-20	R5115539
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.1		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	322		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5117282
Alkalinity, Total (as CaCO3)	322		1.0	mg/L		17-JUN-20	R5117282
Ammonia, Total (as N)							
Ammonia as N	0.0177		0.0050	mg/L		15-JUN-20	R5117878
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.057		0.050	mg/L		08-JUN-20	R5117153
Chloride in Water by IC							
Chloride (Cl)	14.0		0.50	mg/L		08-JUN-20	R5117153
Electrical Conductivity (EC)							
Conductivity (@ 25C)	797		2.0	uS/cm		13-JUN-20	R5117282
Fluoride in Water by IC							
Fluoride (F)	0.113		0.020	mg/L		08-JUN-20	R5117153
Ion Balance Calculation							
Ion Balance	111		-100	%		18-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	5.0			%		17-JUN-20	
Anion Sum	11.1			meq/L		17-JUN-20	
Cation Sum	12.3			meq/L		17-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.66		0.0050	mg/L		08-JUN-20	R5117153
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-JUN-20	R5117153
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-20	R5110640
Oxidation reduction potential by elect.							
ORP	462		-1000	mV		15-JUN-20	R5118039
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	200		0.30	mg/L		08-JUN-20	R5117153
Total Dissolved Solids							
Total Dissolved Solids	722	DLHC	20	mg/L		11-JUN-20	R5116899
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		11-JUN-20	R5116846
Turbidity							
Turbidity	0.19		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.14		0.10	pH		13-JUN-20	R5117282

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-5 GH_ER-MC-IN_WS_2020-06-05_NP Sampled By: MD BP on 05-JUN-20 @ 13:10 Matrix: WG Miscellaneous Parameters							
Total Suspended Solids	31.7		1.0	mg/L		12-JUN-20	R5117185
Turbidity	40.5		0.10	NTU		07-JUN-20	R5110404
L2457220-6 GH_MW-ERSC-1_WG_2020-04-06_NP Sampled By: MD BP on 05-JUN-20 @ 14:10 Matrix: WG Miscellaneous Parameters							
Bicarbonate (HCO3)	216		5.0	mg/L		13-JUN-20	R5117282
Carbonate (CO3)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Dissolved Organic Carbon	1.35		0.50	mg/L		14-JUN-20	R5117590
Hydroxide (OH)	<5.0		5.0	mg/L		13-JUN-20	R5117282
Total Kjeldahl Nitrogen	0.253		0.050	mg/L		16-JUN-20	R5120338
Mercury (Hg)-Total	0.00055		0.00050	ug/L		11-JUN-20	R5116144
Total Organic Carbon	1.32		0.50	mg/L		14-JUN-20	R5117590
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JUN-20	10-JUN-20	R5115901
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	12-JUN-20	R5116417
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5116102
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5115431
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-JUN-20	10-JUN-20	R5115901
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Barium (Ba)-Dissolved	0.0788		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Boron (B)-Dissolved	0.013		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cadmium (Cd)-Dissolved	0.0126		0.0050	ug/L	10-JUN-20	10-JUN-20	R5115901
Calcium (Ca)-Dissolved	52.2		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-JUN-20	10-JUN-20	R5115901
Copper (Cu)-Dissolved	0.00026		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Iron (Fe)-Dissolved	0.019		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Lithium (Li)-Dissolved	0.0081		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Magnesium (Mg)-Dissolved	19.1		0.10	mg/L	10-JUN-20	10-JUN-20	R5115901
Manganese (Mn)-Dissolved	0.00616		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Molybdenum (Mo)-Dissolved	0.00142		0.000050	mg/L	10-JUN-20	10-JUN-20	R5115901
Nickel (Ni)-Dissolved	0.00069		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Potassium (K)-Dissolved	0.726		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Selenium (Se)-Dissolved	4.48		0.050	ug/L	10-JUN-20	10-JUN-20	R5115901
Silicon (Si)-Dissolved	2.37		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Sodium (Na)-Dissolved	2.55		0.050	mg/L	10-JUN-20	10-JUN-20	R5115901
Strontium (Sr)-Dissolved	0.191		0.00020	mg/L	10-JUN-20	10-JUN-20	R5115901
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	10-JUN-20	R5115901
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	10-JUN-20	R5115901
Uranium (U)-Dissolved	0.000742		0.000010	mg/L	10-JUN-20	10-JUN-20	R5115901

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2457220-6 GH_MW-ERSC-1_WG_2020-04-06_NP							
Sampled By: MD BP on 05-JUN-20 @ 14:10							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JUN-20	10-JUN-20	R5115901
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	10-JUN-20	10-JUN-20	R5115901
Hardness							
Hardness (as CaCO3)	209		0.50	mg/L		11-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-JUN-20	R5117783
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	177		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Carbonate (as CaCO3)	5.2		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-JUN-20	R5117282
Alkalinity, Total (as CaCO3)	183		1.0	mg/L		13-JUN-20	R5117282
Ammonia, Total (as N)							
Ammonia as N	0.0319		0.0050	mg/L		15-JUN-20	R5117878
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-JUN-20	R5117153
Chloride in Water by IC							
Chloride (Cl)	0.98		0.50	mg/L		08-JUN-20	R5117153
Electrical Conductivity (EC)							
Conductivity (@ 25C)	378		2.0	uS/cm		13-JUN-20	R5117282
Fluoride in Water by IC							
Fluoride (F)	0.126		0.020	mg/L		08-JUN-20	R5117153
Ion Balance Calculation							
Ion Balance	94.9		-100	%		15-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.6			%		15-JUN-20	
Anion Sum	4.54			meq/L		15-JUN-20	
Cation Sum	4.31			meq/L		15-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.800		0.0050	mg/L		08-JUN-20	R5117153
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0023		0.0010	mg/L		08-JUN-20	R5117153
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		07-JUN-20	R5110640
Oxidation redution potential by elect.							
ORP	544		-1000	mV		15-JUN-20	R5118039
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0032		0.0020	mg/L		12-JUN-20	R5116540
Sulfate in Water by IC							
Sulfate (SO4)	38.4		0.30	mg/L		08-JUN-20	R5117153
Total Dissolved Solids							
Total Dissolved Solids	237	DLHC	20	mg/L		12-JUN-20	R5117227
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		12-JUN-20	R5117185
Turbidity							
Turbidity	0.37		0.10	NTU		07-JUN-20	R5110404
pH							
pH	8.36		0.10	pH		13-JUN-20	R5117282

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2457220

Report Date: 09-FEB-21

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5117783							
WG3342340-8	LCS							
Acidity (as CaCO3)			101.1		%		85-115	14-JUN-20
Batch	R5117783							
WG3342340-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	14-JUN-20
ALK-MAN-CL		Water						
Batch	R5117282							
WG3341773-2	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	13-JUN-20
Batch	R5117282							
WG3341773-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-JUN-20
BE-D-L-CCMS-VA		Water						
Batch	R5115475							
WG3338623-2	LCS							
Beryllium (Be)-Dissolved			99.3		%		80-120	10-JUN-20
Batch	R5115475							
WG3338623-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-20
Batch	R5115901							
WG3339530-2	LCS							
Beryllium (Be)-Dissolved			98.9		%		80-120	10-JUN-20
Batch	R5115901							
WG3339530-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-20
BE-T-L-CCMS-VA		Water						
Batch	R5115539							
WG3339476-2	LCS							
Beryllium (Be)-Total			104.2		%		80-120	10-JUN-20
Batch	R5115539							
WG3339476-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
BIC-CL		Water						
Batch	R5117282							
WG3341773-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-JUN-20
BR-L-IC-N-CL		Water						
Batch	R5117153							
WG3341654-10	LCS							
Bromide (Br)			107.7		%		85-115	08-JUN-20
Batch	R5117153							
WG3341654-6	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5117153							
WG3341654-6	LCS							
Bromide (Br)			105.8		%		85-115	08-JUN-20
WG3341654-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-JUN-20
WG3341654-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-JUN-20
C-DIS-ORG-LOW-CL Water								
Batch	R5117590							
WG3342161-10	LCS							
Dissolved Organic Carbon			96.4		%		80-120	14-JUN-20
WG3342161-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-JUN-20
C-TOT-ORG-LOW-CL Water								
Batch	R5117590							
WG3342161-10	LCS							
Total Organic Carbon			99.97		%		80-120	14-JUN-20
WG3342161-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-JUN-20
CL-IC-N-CL Water								
Batch	R5117153							
WG3341654-10	LCS							
Chloride (Cl)			105.2		%		90-110	08-JUN-20
WG3341654-6	LCS							
Chloride (Cl)			103.9		%		90-110	08-JUN-20
WG3341654-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-JUN-20
WG3341654-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-JUN-20
CO3-CL Water								
Batch	R5117282							
WG3341773-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-JUN-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5117282								
WG3341773-2	LCS							
Conductivity (@ 25C)			98.7		%		90-110	13-JUN-20
WG3341773-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-JUN-20
F-IC-N-CL								
Water								
Batch R5117153								
WG3341654-10	LCS							
Fluoride (F)			104.1		%		90-110	08-JUN-20
WG3341654-6	LCS							
Fluoride (F)			105.6		%		90-110	08-JUN-20
WG3341654-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-JUN-20
WG3341654-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-JUN-20
HG-D-CVAA-VA								
Water								
Batch R5116417								
WG3340380-2	LCS							
Mercury (Hg)-Dissolved			100.1		%		80-120	12-JUN-20
WG3340380-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-JUN-20
HG-T-U-CVAF-VA								
Water								
Batch R5116144								
WG3340253-2	LCS							
Mercury (Hg)-Total			90.8		%		80-120	11-JUN-20
WG3340253-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	11-JUN-20
MET-D-CCMS-VA								
Water								
Batch R5115475								
WG3338623-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			102.1		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			98.6		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			101.3		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			94.7		%		80-120	10-JUN-20
Boron (B)-Dissolved			95.8		%		80-120	10-JUN-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			98.3		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-2	LCS							
Chromium (Cr)-Dissolved			99.3		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			100.6		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			101.2		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			100.7		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			97.0		%		80-120	10-JUN-20
Lithium (Li)-Dissolved			100.5		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			97.2		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			102.5		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	10-JUN-20
Nickel (Ni)-Dissolved			100.7		%		80-120	10-JUN-20
Potassium (K)-Dissolved			100.2		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			101.0		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			96.7		%		60-140	10-JUN-20
Silver (Ag)-Dissolved			96.5		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			102.7		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			97.2		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			98.2		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			100.6		%		80-120	10-JUN-20
Titanium (Ti)-Dissolved			97.6		%		80-120	10-JUN-20
Uranium (U)-Dissolved			96.2		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			100.4		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			104.1		%		80-120	10-JUN-20
WG3338623-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115475							
WG3338623-1	MB	NP						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Batch	R5115901							
WG3339530-2	LCS							
Aluminum (Al)-Dissolved			95.1		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			97.9		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			95.9		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			100.7		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			97.5		%		80-120	10-JUN-20
Boron (B)-Dissolved			91.5		%		80-120	10-JUN-20
Cadmium (Cd)-Dissolved			99.2		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			98.4		%		80-120	10-JUN-20
Chromium (Cr)-Dissolved			99.5		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			96.3		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			95.7		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			92.6		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			95.8		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115901							
WG3339530-2	LCS							
Lithium (Li)-Dissolved			94.2		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			96.7		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			98.3		%		80-120	10-JUN-20
Nickel (Ni)-Dissolved			96.3		%		80-120	10-JUN-20
Potassium (K)-Dissolved			101.1		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			97.0		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			97.8		%		60-140	10-JUN-20
Silver (Ag)-Dissolved			96.1		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			102.3		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			95.3		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			94.7		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			99.1		%		80-120	10-JUN-20
Titanium (Ti)-Dissolved			96.1		%		80-120	10-JUN-20
Uranium (U)-Dissolved			94.1		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			99.7		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			97.4		%		80-120	10-JUN-20
WG3339530-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115901							
WG3339530-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5115539							
WG3339476-2	LCS							
Aluminum (Al)-Total			105.1		%		80-120	10-JUN-20
Antimony (Sb)-Total			108.1		%		80-120	10-JUN-20
Arsenic (As)-Total			102.1		%		80-120	10-JUN-20
Barium (Ba)-Total			103.3		%		80-120	10-JUN-20
Bismuth (Bi)-Total			101.2		%		80-120	10-JUN-20
Boron (B)-Total			98.9		%		80-120	10-JUN-20
Cadmium (Cd)-Total			103.3		%		80-120	10-JUN-20
Calcium (Ca)-Total			103.1		%		80-120	10-JUN-20
Chromium (Cr)-Total			100.1		%		80-120	10-JUN-20
Cobalt (Co)-Total			102.9		%		80-120	10-JUN-20
Copper (Cu)-Total			101.8		%		80-120	10-JUN-20
Iron (Fe)-Total			101.2		%		80-120	10-JUN-20
Lead (Pb)-Total			110.2		%		80-120	10-JUN-20
Lithium (Li)-Total			101.9		%		80-120	10-JUN-20
Magnesium (Mg)-Total			97.5		%		80-120	10-JUN-20
Manganese (Mn)-Total			102.2		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			98.3		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115539							
WG3339476-2	LCS							
Nickel (Ni)-Total			103.1		%		80-120	10-JUN-20
Potassium (K)-Total			103.9		%		80-120	10-JUN-20
Selenium (Se)-Total			110.3		%		80-120	10-JUN-20
Silicon (Si)-Total			103.7		%		80-120	10-JUN-20
Silver (Ag)-Total			104.3		%		80-120	10-JUN-20
Sodium (Na)-Total			101.8		%		80-120	10-JUN-20
Strontium (Sr)-Total			105.1		%		80-120	10-JUN-20
Thallium (Tl)-Total			107.0		%		80-120	10-JUN-20
Tin (Sn)-Total			102.3		%		80-120	10-JUN-20
Titanium (Ti)-Total			96.0		%		80-120	10-JUN-20
Uranium (U)-Total			110.7		%		80-120	10-JUN-20
Vanadium (V)-Total			105.9		%		80-120	10-JUN-20
Zinc (Zn)-Total			105.4		%		80-120	10-JUN-20
WG3339476-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115539							
WG3339476-1	MB							
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUN-20
NH3-L-F-CL		Water						
Batch	R5117878							
WG3342466-46	LCS							
Ammonia as N			107.9		%		85-115	15-JUN-20
WG3342466-50	LCS							
Ammonia as N			94.1		%		85-115	15-JUN-20
WG3342466-45	MB							
Ammonia as N			<0.0050		mg/L		0.005	15-JUN-20
WG3342466-49	MB							
Ammonia as N			<0.0050		mg/L		0.005	15-JUN-20
NO2-L-IC-N-CL		Water						
Batch	R5117153							
WG3341654-10	LCS							
Nitrite (as N)			109.1		%		90-110	08-JUN-20
WG3341654-6	LCS							
Nitrite (as N)			107.5		%		90-110	08-JUN-20
WG3341654-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-JUN-20
WG3341654-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-JUN-20
NO3-L-IC-N-CL		Water						
Batch	R5117153							
WG3341654-10	LCS							
Nitrate (as N)			105.2		%		90-110	08-JUN-20
WG3341654-6	LCS							
Nitrate (as N)			104.0		%		90-110	08-JUN-20

Quality Control Report

Workorder: L2457220

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R5117153							
WG3341654-6	LCS							
Sulfate (SO4)			104.7		%		90-110	08-JUN-20
WG3341654-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-JUN-20
WG3341654-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-JUN-20
SOLIDS-TDS-CL								
Water								
Batch	R5116899							
WG3339819-8	LCS							
Total Dissolved Solids			100.6		%		85-115	11-JUN-20
WG3339819-7	MB							
Total Dissolved Solids			<10		mg/L		10	11-JUN-20
Batch	R5117227							
WG3340766-3	DUP	L2457220-2						
Total Dissolved Solids		209	239		mg/L	13	20	12-JUN-20
WG3340766-2	LCS							
Total Dissolved Solids			104.9		%		85-115	12-JUN-20
WG3340766-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-JUN-20
TKN-L-F-CL								
Water								
Batch	R5120338							
WG3343482-12	LCS							
Total Kjeldahl Nitrogen			99.1		%		75-125	16-JUN-20
WG3343482-16	LCS							
Total Kjeldahl Nitrogen			100.9		%		75-125	16-JUN-20
WG3343482-2	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	16-JUN-20
WG3343482-20	LCS							
Total Kjeldahl Nitrogen			95.3		%		75-125	16-JUN-20
WG3343482-24	LCS							
Total Kjeldahl Nitrogen			100.5		%		75-125	16-JUN-20
WG3343482-28	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	16-JUN-20
WG3343482-32	LCS							
Total Kjeldahl Nitrogen			101.0		%		75-125	16-JUN-20
WG3343482-36	LCS							
Total Kjeldahl Nitrogen			99.0		%		75-125	16-JUN-20
WG3343482-8	LCS							



Quality Control Report

Workorder: L2457220

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5120338							
WG3343482-8	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	16-JUN-20
WG3343482-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3343482-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-31	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
WG3343482-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-20
TSS-L-CL		Water						
Batch	R5116846							
WG3339820-6	LCS							
Total Suspended Solids			89.6		%		85-115	11-JUN-20
WG3339820-5	MB							
Total Suspended Solids			<1.0		mg/L		1	11-JUN-20
Batch	R5117185							
WG3340768-2	LCS							
Total Suspended Solids			93.7		%		85-115	12-JUN-20
WG3340768-1	MB							
Total Suspended Solids			<1.0		mg/L		1	12-JUN-20
TURBIDITY-CL		Water						
Batch	R5110404							
WG3337029-11	LCS							
Turbidity			102.5		%		85-115	07-JUN-20
WG3337029-10	MB							
Turbidity			<0.10		NTU		0.1	07-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Report Date: 09-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	05-JUN-20 15:00	15-JUN-20 18:00	0.25	243	hours	EHTR-FM
	2	05-JUN-20 14:10	15-JUN-20 18:00	0.25	244	hours	EHTR-FM
	3	04-JUN-20 16:30	15-JUN-20 18:00	0.25	265	hours	EHTR-FM
	4	04-JUN-20 17:50	15-JUN-20 18:00	0.25	264	hours	EHTR-FM
	6	05-JUN-20 14:10	15-JUN-20 18:00	0.25	244	hours	EHTR-FM
pH							
	1	05-JUN-20 15:00	13-JUN-20 13:00	0.25	190	hours	EHTR-FM
	2	05-JUN-20 14:10	13-JUN-20 13:00	0.25	191	hours	EHTR-FM
	3	04-JUN-20 16:30	13-JUN-20 13:00	0.25	212	hours	EHTR-FM
	4	04-JUN-20 17:50	13-JUN-20 13:00	0.25	211	hours	EHTR-FM
	6	05-JUN-20 14:10	13-JUN-20 13:00	0.25	191	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	3	04-JUN-20 16:30	08-JUN-20 07:24	3	4	days	EHT
	4	04-JUN-20 17:50	08-JUN-20 07:24	3	4	days	EHT
Nitrite in Water by IC (Low Level)							
	3	04-JUN-20 16:30	08-JUN-20 07:24	3	4	days	EHT
	4	04-JUN-20 17:50	08-JUN-20 07:24	3	4	days	EHT

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2457220 were received on 06-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID:				TURNAROUND TIME:				RUSH:				
PROJECT/CLIENT INFO						LABORATORY				OTHER INFO		
Facility Name / Job# Greenhills Operation						Lab Name ALS Calgary				Report Format / Distribution		
Project Manager Jeremy Enns						Lab Contact Justine Burmaa				Excel	PDF	EDD
Email Jeremy.Enns@teck.com						Email justine.burmaa@ALSGlobal.com				Email 1:	Leigh.Stickney@teck.com	X
Address P.O. BOX 5000						Address 2559 29 Street NE				Email 2:	Laura.Ferguson@teck.com	X
										Email 3:	teckcoal@equisonline.com	X
City Elkford						City Calgary		Province BC	Province AB	Email 4:	jaydon.francis@teck.com	X
Postal Code V0B1H0						Postal Code T1Y 7B5		Country Canada	Country Canada	Email 5:	Brendan.Peachey@teck.com	X
Phone Number 250-865-3048						Phone Number 403 407 1794				Email 6:	DL-Equis-GHO-Field@teck.com	X
								PO number		684125		

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	Y	Y	N	Y	N	N	N	N				
							PRESERV.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4	NONE					
							ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	TSS/Turb					
GH_GA-MW-3_WG_2020-04-06_NP	GH_GA-MW-4	WG		June 5 2020	15:00	G	6		1	1	1	1	1	1	1					
GH_GWD3_WG_2020-04-06_NP	GH_GWD3	WG		June 5 2020	14:10	G	6		1	1	1	1	1	1	1					
GH_MW-TD_WG_2020-04-06_NP	GH_MW-TD	WG		June 4 2020	16:30	G	6		1	1	1	1	1	1	1					
GH_WTDS_WS_2020-06-01_NP	GH_WTDS	WS		June 4 2020	17:50	G	7		1	1	1	1	1	1	1					
GH_ER-MC-IN_WS_2020-06-05_NP	GH_ER-MC-IN	WS		June 5 2020	13:10	G	1													1
GH_MW-ERSC-1_WG_2020-04-06_NP	GH_MW-ERSC-1	WG		June 5 2020	14:10	G	6		1	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME			ACCEPTED BY/AFFILIATION			DATE/TIME		
Dissolved metals, dissolved mercury and DOC not filtered and not preserved for sample set GH_ER-MC-IN_WS_2020-06-04_NP.									OK			6/6 2020		
SERVICE REQUEST (rush - subject to availability)														
Regular (default) X						Sampler's Name			MD BP			Mobile #		
Priority (2-3 business days) - 50% surcharge						Sampler's Signature						Date/Time		
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS														

100



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 09-JUN-20
Report Date: 18-DEC-20 14:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2458015
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 18-DEC-20: Bicarbonate, Carbonate, and Hydroxide results added.

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2458015-1 GH_GA-MW-2_WG_2020-04-06_NP							
Sampled By: JF/SS on 07-JUN-20 @ 15:05							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	260		5.0	mg/L		09-JUN-20	R5113639
Carbonate (CO3)	<5.0		5.0	mg/L		09-JUN-20	R5113639
Dissolved Organic Carbon	0.64		0.50	mg/L		09-JUN-20	R5115065
Hydroxide (OH)	<5.0		5.0	mg/L		09-JUN-20	R5113639
Total Kjeldahl Nitrogen	<0.25	TKNI	0.25	mg/L		10-JUN-20	R5115349
Total Organic Carbon	45.4	RRV	0.50	mg/L		09-JUN-20	R5115065
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JUN-20	11-JUN-20	R5116209
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5114805
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-20	11-JUN-20	R5115651
Dissolved Mercury Filtration Location	FIELD					11-JUN-20	R5115561
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-JUN-20	R5114805
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-JUN-20	11-JUN-20	R5116209
Antimony (Sb)-Dissolved	0.00167		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Arsenic (As)-Dissolved	0.00022		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Barium (Ba)-Dissolved	0.0366		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	11-JUN-20	R5116209
Boron (B)-Dissolved	0.022		0.010	mg/L	10-JUN-20	11-JUN-20	R5116209
Cadmium (Cd)-Dissolved	<0.055	DLM	0.055	ug/L	10-JUN-20	11-JUN-20	R5116209
Calcium (Ca)-Dissolved	167		0.050	mg/L	10-JUN-20	11-JUN-20	R5116209
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Cobalt (Co)-Dissolved	0.57		0.10	ug/L	10-JUN-20	11-JUN-20	R5116209
Copper (Cu)-Dissolved	0.00253		0.00020	mg/L	10-JUN-20	11-JUN-20	R5116209
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	11-JUN-20	R5116209
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	11-JUN-20	R5116209
Lithium (Li)-Dissolved	0.0200		0.0010	mg/L	10-JUN-20	11-JUN-20	R5116209
Magnesium (Mg)-Dissolved	49.4		0.10	mg/L	10-JUN-20	11-JUN-20	R5116209
Manganese (Mn)-Dissolved	0.107		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Molybdenum (Mo)-Dissolved	0.0512		0.000050	mg/L	10-JUN-20	11-JUN-20	R5116209
Nickel (Ni)-Dissolved	0.00863		0.00050	mg/L	10-JUN-20	11-JUN-20	R5116209
Potassium (K)-Dissolved	1.33		0.050	mg/L	10-JUN-20	11-JUN-20	R5116209
Selenium (Se)-Dissolved	15.2		0.050	ug/L	10-JUN-20	11-JUN-20	R5116209
Silicon (Si)-Dissolved	3.72		0.050	mg/L	10-JUN-20	11-JUN-20	R5116209
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	11-JUN-20	R5116209
Sodium (Na)-Dissolved	10.2		0.050	mg/L	10-JUN-20	11-JUN-20	R5116209
Strontium (Sr)-Dissolved	0.660		0.00020	mg/L	10-JUN-20	11-JUN-20	R5116209
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-JUN-20	11-JUN-20	R5116209
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-JUN-20	11-JUN-20	R5116209
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JUN-20	11-JUN-20	R5116209
Uranium (U)-Dissolved	0.00678		0.000010	mg/L	10-JUN-20	11-JUN-20	R5116209
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JUN-20	11-JUN-20	R5116209
Zinc (Zn)-Dissolved	0.0168		0.0010	mg/L	10-JUN-20	11-JUN-20	R5116209
Hardness							
Hardness (as CaCO3)	620		0.50	mg/L		11-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JUN-20	R5115451
Total Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2458015-1 GH_GA-MW-2_WG_2020-04-06_NP							
Sampled By: JF/SS on 07-JUN-20 @ 15:05							
Matrix: WG							
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		11-JUN-20	R5115651
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0036		0.0030	mg/L		10-JUN-20	R5115451
Antimony (Sb)-Total	0.00171		0.00010	mg/L		10-JUN-20	R5115451
Arsenic (As)-Total	0.00024		0.00010	mg/L		10-JUN-20	R5115451
Barium (Ba)-Total	0.0366		0.00010	mg/L		10-JUN-20	R5115451
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115451
Boron (B)-Total	0.025		0.010	mg/L		10-JUN-20	R5115451
Cadmium (Cd)-Total	0.0527		0.0050	ug/L		10-JUN-20	R5115451
Calcium (Ca)-Total	184		0.050	mg/L		10-JUN-20	R5115451
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		10-JUN-20	R5115451
Cobalt (Co)-Total	0.75		0.10	ug/L		10-JUN-20	R5115451
Copper (Cu)-Total	0.00805		0.00050	mg/L		10-JUN-20	R5115451
Iron (Fe)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115451
Lead (Pb)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115451
Lithium (Li)-Total	0.0205		0.0010	mg/L		10-JUN-20	R5115451
Magnesium (Mg)-Total	50.2		0.10	mg/L		10-JUN-20	R5115451
Manganese (Mn)-Total	0.118		0.00010	mg/L		10-JUN-20	R5115451
Molybdenum (Mo)-Total	0.0492		0.000050	mg/L		10-JUN-20	R5115451
Nickel (Ni)-Total	0.00952		0.00050	mg/L		10-JUN-20	R5115451
Potassium (K)-Total	1.22		0.050	mg/L		10-JUN-20	R5115451
Selenium (Se)-Total	13.3		0.050	ug/L		10-JUN-20	R5115451
Silicon (Si)-Total	3.69		0.10	mg/L		10-JUN-20	R5115451
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115451
Sodium (Na)-Total	10.5		0.050	mg/L		10-JUN-20	R5115451
Strontium (Sr)-Total	0.726		0.00020	mg/L		10-JUN-20	R5115451
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115451
Tin (Sn)-Total	<0.000010		0.000010	mg/L		10-JUN-20	R5115451
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JUN-20	R5115451
Uranium (U)-Total	0.00703		0.000010	mg/L		10-JUN-20	R5115451
Vanadium (V)-Total	<0.000050		0.000050	mg/L		10-JUN-20	R5115451
Zinc (Zn)-Total	0.0133		0.0030	mg/L		10-JUN-20	R5115451
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.8		1.0	mg/L		09-JUN-20	R5114616
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	213		1.0	mg/L		09-JUN-20	R5113639
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		09-JUN-20	R5113639
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		09-JUN-20	R5113639
Alkalinity, Total (as CaCO3)	213		1.0	mg/L		09-JUN-20	R5113639
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		09-JUN-20	R5112383
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		09-JUN-20	R5115185
Chloride in Water by IC							
Chloride (Cl)	6.7	DLHC	2.5	mg/L		09-JUN-20	R5115185
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1070		2.0	uS/cm		09-JUN-20	R5113639
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		09-JUN-20	R5115185
Ion Balance Calculation							
Ion Balance	93.7		-100	%		11-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2458015-1 GH_GA-MW-2_WG_2020-04-06_NP							
Sampled By: JF/SS on 07-JUN-20 @ 15:05							
Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	-3.3			%		11-JUN-20	
Anion Sum	13.7			meq/L		11-JUN-20	
Cation Sum	12.9			meq/L		11-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	8.90	DLHC	0.025	mg/L		09-JUN-20	R5115185
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.120	DLHC	0.0050	mg/L		09-JUN-20	R5115185
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		09-JUN-20	R5115333
Oxidation redution potential by elect.							
ORP	367		-1000	mV		09-JUN-20	R5113237
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0022		0.0020	mg/L		10-JUN-20	R5115017
Sulfate in Water by IC							
Sulfate (SO4)	415	DLHC	1.5	mg/L		09-JUN-20	R5115185
Total Dissolved Solids							
Total Dissolved Solids	851	DLHC	20	mg/L		09-JUN-20	R5115440
Total Suspended Solids							
Total Suspended Solids	1.7		1.0	mg/L		09-JUN-20	R5115375
Turbidity							
Turbidity	0.23		0.10	NTU		09-JUN-20	R5113216
pH							
pH	8.09		0.10	pH		09-JUN-20	R5113639

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2458015

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5114616							
WG3339186-2	LCS							
Acidity (as CaCO3)			113.5		%		85-115	09-JUN-20
WG3339186-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	09-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5113639							
WG3338958-18	DUP	L2458015-1						
Alkalinity, Total (as CaCO3)		213	215		mg/L	0.7	20	09-JUN-20
WG3338958-17	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	09-JUN-20
WG3338958-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5115901							
WG3339226-2	LCS							
Beryllium (Be)-Dissolved			96.8		%		80-120	10-JUN-20
WG3339226-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-20
Batch	R5116209							
WG3339226-4	MS	L2458015-1						
Beryllium (Be)-Dissolved			97.7		%		70-130	11-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5115451							
WG3339149-3	DUP	L2458015-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	10-JUN-20
WG3339149-2	LCS							
Beryllium (Be)-Total			94.7		%		80-120	10-JUN-20
WG3339149-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JUN-20
BIC-CL								
	Water							
Batch	R5113639							
WG3338958-18	DUP	L2458015-1						
Bicarbonate (HCO3)		260	262		mg/L	0.7	20	09-JUN-20
WG3338958-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-JUN-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2458015

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL	Water							
Batch	R5115185							
WG3339209-6 LCS								
Bromide (Br)			97.3		%		85-115	09-JUN-20
WG3339209-5 MB								
Bromide (Br)			<0.050		mg/L		0.05	09-JUN-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5115065							
WG3339296-2 LCS								
Dissolved Organic Carbon			97.8		%		80-120	09-JUN-20
WG3339296-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5115065							
WG3339296-2 LCS								
Total Organic Carbon			101.5		%		80-120	09-JUN-20
WG3339296-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	09-JUN-20
CL-IC-N-CL	Water							
Batch	R5115185							
WG3339209-6 LCS								
Chloride (Cl)			103.7		%		90-110	09-JUN-20
WG3339209-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	09-JUN-20
CO3-CL	Water							
Batch	R5113639							
WG3338958-18 DUP		L2458015-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	09-JUN-20
WG3338958-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	09-JUN-20
EC-L-PCT-CL	Water							
Batch	R5113639							
WG3338958-18 DUP		L2458015-1						
Conductivity (@ 25C)		1070	1080		uS/cm	0.1	10	09-JUN-20
WG3338958-17 LCS								
Conductivity (@ 25C)			99.5		%		90-110	09-JUN-20
WG3338958-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	09-JUN-20
F-IC-N-CL	Water							



Quality Control Report

Workorder: L2458015

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5115185							
WG3339209-6	LCS							
Fluoride (F)			97.6		%		90-110	09-JUN-20
WG3339209-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-JUN-20
HG-D-CVAA-VA								
Water								
Batch	R5115651							
WG3339734-2	LCS							
Mercury (Hg)-Dissolved			102.1		%		80-120	11-JUN-20
WG3339734-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-20
HG-T-CVAA-VA								
Water								
Batch	R5115651							
WG3339788-2	LCS							
Mercury (Hg)-Total			102.6		%		80-120	11-JUN-20
WG3339788-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	11-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5115901							
WG3339226-2	LCS							
Aluminum (Al)-Dissolved			98.4		%		80-120	10-JUN-20
Antimony (Sb)-Dissolved			97.4		%		80-120	10-JUN-20
Arsenic (As)-Dissolved			97.1		%		80-120	10-JUN-20
Barium (Ba)-Dissolved			104.8		%		80-120	10-JUN-20
Bismuth (Bi)-Dissolved			96.9		%		80-120	10-JUN-20
Boron (B)-Dissolved			97.1		%		80-120	10-JUN-20
Cadmium (Cd)-Dissolved			100.7		%		80-120	10-JUN-20
Calcium (Ca)-Dissolved			99.3		%		80-120	10-JUN-20
Chromium (Cr)-Dissolved			100.2		%		80-120	10-JUN-20
Cobalt (Co)-Dissolved			99.3		%		80-120	10-JUN-20
Copper (Cu)-Dissolved			97.8		%		80-120	10-JUN-20
Iron (Fe)-Dissolved			91.7		%		80-120	10-JUN-20
Lead (Pb)-Dissolved			98.8		%		80-120	10-JUN-20
Lithium (Li)-Dissolved			93.1		%		80-120	10-JUN-20
Magnesium (Mg)-Dissolved			100.5		%		80-120	10-JUN-20
Manganese (Mn)-Dissolved			102.0		%		80-120	10-JUN-20
Molybdenum (Mo)-Dissolved			100.1		%		80-120	10-JUN-20



Quality Control Report

Workorder: L2458015

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115901							
WG3339226-2	LCS							
Nickel (Ni)-Dissolved			98.8		%		80-120	10-JUN-20
Potassium (K)-Dissolved			102.8		%		80-120	10-JUN-20
Selenium (Se)-Dissolved			94.6		%		80-120	10-JUN-20
Silicon (Si)-Dissolved			91.0		%		60-140	10-JUN-20
Silver (Ag)-Dissolved			96.3		%		80-120	10-JUN-20
Sodium (Na)-Dissolved			102.1		%		80-120	10-JUN-20
Strontium (Sr)-Dissolved			95.3		%		80-120	10-JUN-20
Thallium (Tl)-Dissolved			101.5		%		80-120	10-JUN-20
Tin (Sn)-Dissolved			99.1		%		80-120	10-JUN-20
Titanium (Ti)-Dissolved			97.3		%		80-120	10-JUN-20
Uranium (U)-Dissolved			96.5		%		80-120	10-JUN-20
Vanadium (V)-Dissolved			99.7		%		80-120	10-JUN-20
Zinc (Zn)-Dissolved			98.6		%		80-120	10-JUN-20
WG3339226-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5115901							
WG3339226-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-20
Batch	R5116209							
WG3339226-4	MS	L2458015-1						
Aluminum (Al)-Dissolved			93.7		%		70-130	11-JUN-20
Antimony (Sb)-Dissolved			105.0		%		70-130	11-JUN-20
Arsenic (As)-Dissolved			104.5		%		70-130	11-JUN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	11-JUN-20
Bismuth (Bi)-Dissolved			90.7		%		70-130	11-JUN-20
Boron (B)-Dissolved			107.6		%		70-130	11-JUN-20
Cadmium (Cd)-Dissolved			96.6		%		70-130	11-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	11-JUN-20
Chromium (Cr)-Dissolved			97.0		%		70-130	11-JUN-20
Cobalt (Co)-Dissolved			91.4		%		70-130	11-JUN-20
Copper (Cu)-Dissolved			85.6		%		70-130	11-JUN-20
Iron (Fe)-Dissolved			97.3		%		70-130	11-JUN-20
Lead (Pb)-Dissolved			90.6		%		70-130	11-JUN-20
Lithium (Li)-Dissolved			94.6		%		70-130	11-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	11-JUN-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	11-JUN-20
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	11-JUN-20
Nickel (Ni)-Dissolved			86.6		%		70-130	11-JUN-20
Potassium (K)-Dissolved			95.3		%		70-130	11-JUN-20
Selenium (Se)-Dissolved			124.8		%		70-130	11-JUN-20
Silicon (Si)-Dissolved			90.1		%		70-130	11-JUN-20
Silver (Ag)-Dissolved			98.4		%		70-130	11-JUN-20



Quality Control Report

Workorder: L2458015

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5116209							
WG3339226-4 MS		L2458015-1						
Sodium (Na)-Dissolved			N/A	MS-B	%	-		11-JUN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%	-		11-JUN-20
Thallium (Tl)-Dissolved			94.6		%		70-130	11-JUN-20
Tin (Sn)-Dissolved			101.1		%		70-130	11-JUN-20
Titanium (Ti)-Dissolved			98.3		%		70-130	11-JUN-20
Uranium (U)-Dissolved			N/A	MS-B	%	-		11-JUN-20
Vanadium (V)-Dissolved			101.2		%		70-130	11-JUN-20
Zinc (Zn)-Dissolved			89.7		%		70-130	11-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5115451							
WG3339149-3 DUP		L2458015-1						
Aluminum (Al)-Total		0.0036	<0.0030	RPD-NA	mg/L	N/A	20	10-JUN-20
Antimony (Sb)-Total		0.00171	0.00177		mg/L	3.8	20	10-JUN-20
Arsenic (As)-Total		0.00024	0.00026		mg/L	9.6	20	10-JUN-20
Barium (Ba)-Total		0.0366	0.0377		mg/L	3.0	20	10-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Boron (B)-Total		0.025	0.024		mg/L	2.3	20	10-JUN-20
Cadmium (Cd)-Total		0.0000527	0.0000502		mg/L	4.8	20	10-JUN-20
Calcium (Ca)-Total		184	194		mg/L	5.3	20	10-JUN-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Cobalt (Co)-Total		0.00075	0.00077		mg/L	2.9	20	10-JUN-20
Copper (Cu)-Total		0.00805	0.00844		mg/L	4.8	20	10-JUN-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUN-20
Lithium (Li)-Total		0.0205	0.0205		mg/L	0.1	20	10-JUN-20
Magnesium (Mg)-Total		50.2	51.7		mg/L	2.8	20	10-JUN-20
Manganese (Mn)-Total		0.118	0.125		mg/L	5.8	20	10-JUN-20
Molybdenum (Mo)-Total		0.0492	0.0516		mg/L	4.8	20	10-JUN-20
Nickel (Ni)-Total		0.00952	0.00987		mg/L	3.6	20	10-JUN-20
Potassium (K)-Total		1.22	1.27		mg/L	4.0	20	10-JUN-20
Selenium (Se)-Total		0.0133	0.0147		mg/L	10	20	10-JUN-20
Silicon (Si)-Total		3.69	3.82		mg/L	3.5	20	10-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Sodium (Na)-Total		10.5	11.1		mg/L	5.7	20	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5115451							
WG3339149-3	DUP	L2458015-1						
Strontium (Sr)-Total		0.726	0.741		mg/L	2.1	20	10-JUN-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUN-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUN-20
Uranium (U)-Total		0.00703	0.00714		mg/L	1.5	20	10-JUN-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUN-20
Zinc (Zn)-Total		0.0133	0.0143		mg/L	7.2	20	10-JUN-20
WG3339149-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	10-JUN-20
Antimony (Sb)-Total			115.5		%		80-120	10-JUN-20
Arsenic (As)-Total			98.8		%		80-120	10-JUN-20
Barium (Ba)-Total			98.8		%		80-120	10-JUN-20
Bismuth (Bi)-Total			107.4		%		80-120	10-JUN-20
Boron (B)-Total			98.6		%		80-120	10-JUN-20
Cadmium (Cd)-Total			99.6		%		80-120	10-JUN-20
Calcium (Ca)-Total			103.8		%		80-120	10-JUN-20
Chromium (Cr)-Total			100.9		%		80-120	10-JUN-20
Cobalt (Co)-Total			100.1		%		80-120	10-JUN-20
Copper (Cu)-Total			98.7		%		80-120	10-JUN-20
Iron (Fe)-Total			93.5		%		80-120	10-JUN-20
Lead (Pb)-Total			97.5		%		80-120	10-JUN-20
Lithium (Li)-Total			95.3		%		80-120	10-JUN-20
Magnesium (Mg)-Total			103.2		%		80-120	10-JUN-20
Manganese (Mn)-Total			100.8		%		80-120	10-JUN-20
Molybdenum (Mo)-Total			98.8		%		80-120	10-JUN-20
Nickel (Ni)-Total			100.3		%		80-120	10-JUN-20
Potassium (K)-Total			91.3		%		80-120	10-JUN-20
Selenium (Se)-Total			104.9		%		80-120	10-JUN-20
Silicon (Si)-Total			102.7		%		80-120	10-JUN-20
Silver (Ag)-Total			102.5		%		80-120	10-JUN-20
Sodium (Na)-Total			112.6		%		80-120	10-JUN-20
Strontium (Sr)-Total			108.4		%		80-120	10-JUN-20
Thallium (Tl)-Total			108.1		%		80-120	10-JUN-20
Tin (Sn)-Total			99.9		%		80-120	10-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5115451							
WG3339149-2 LCS								
Titanium (Ti)-Total			101.6		%		80-120	10-JUN-20
Uranium (U)-Total			102.5		%		80-120	10-JUN-20
Vanadium (V)-Total			102.1		%		80-120	10-JUN-20
Zinc (Zn)-Total			99.6		%		80-120	10-JUN-20
WG3339149-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUN-20
Chromium (Cr)-Total			0.0217	B	mg/L		0.0001	10-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUN-20
Iron (Fe)-Total			0.138	B	mg/L		0.01	10-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUN-20
Manganese (Mn)-Total			0.00198	B	mg/L		0.0001	10-JUN-20
Molybdenum (Mo)-Total			0.000126	B	mg/L		0.00005	10-JUN-20
Nickel (Ni)-Total			0.00102	B	mg/L		0.0005	10-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5115017							
WG3339266-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-JUN-20
PH-CL	Water							
Batch	R5113639							
WG3338958-18 DUP		L2458015-1						
pH		8.09	8.10	J	pH	0.01	0.2	09-JUN-20
WG3338958-17 LCS								
pH			7.03		pH		6.9-7.1	09-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5115333							
WG3338596-6 LCS								
Orthophosphate-Dissolved (as P)			104.0		%		80-120	09-JUN-20
WG3338596-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-JUN-20
SO4-IC-N-CL	Water							
Batch	R5115185							
WG3339209-6 LCS								
Sulfate (SO4)			104.1		%		90-110	09-JUN-20
WG3339209-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5115440							
WG3337967-8 LCS								
Total Dissolved Solids			101.8		%		85-115	09-JUN-20
WG3337967-7 MB								
Total Dissolved Solids			<10		mg/L		10	09-JUN-20
TKN-L-F-CL	Water							
Batch	R5115349							
WG3339448-2 LCS								
Total Kjeldahl Nitrogen			88.4		%		75-125	10-JUN-20
WG3339448-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-JUN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5115375							
WG3338014-16 LCS								
Total Suspended Solids			105.8		%		85-115	09-JUN-20
WG3338014-15 MB								
Total Suspended Solids			<1.0		mg/L		1	09-JUN-20
TURBIDITY-CL	Water							
Batch	R5113216							
WG3338455-2 LCS								
Turbidity			103.5		%		85-115	09-JUN-20
WG3338455-1 MB								
Turbidity			<0.10		NTU		0.1	09-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-JUN-20 15:05	09-JUN-20 17:00	0.25	50	hours	EHTR-FM
pH	1	07-JUN-20 15:05	09-JUN-20 13:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2458015 were received on 09-JUN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				RUSH:							
PROJECT/CLIENT INFO								LABORATORY				OTHER INFO			
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution				Excel	PDF	EDD	
Project Manager Leigh Stickney				Lab Contact Justine Buma-a				Email 1: Leigh.Stickney@teck.com		X	X	X			
Email leigh.stickney@teck.com				Email Justine.Bumaa@ALSGlobal.com				Email 2: Jeremy.Enns@teck.com		X	X	X			
Address P.O. BOX 5000				Address 2559 29 Street NE				Email 3: teckcoal@equisonline.com				X			
City Elkford Province BC				City Calgary Province AB				Email 4: jaydon.francis@teck.com		X	X	X			
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5: Brendan.Peachey@teck.com		X	X	X			
Phone Number 250-865-3048				Phone Number 403 407 1794				Email 6: DL-Equis-GHO-Field@teck.com		X	X	X			
								PO number 684125							

SAMPLE DETAILS								ANALYSIS REQUESTED										Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE PRESERV.	Y	Y		Y												
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH	TSS/TURB	HG-T-CVAF-VA					
GH_GA-MW-2_WG_2020-04-06_NP	GH_GA-MW-2	WG		2020/06/07	15:05	G	7	X	X		X	X	X	X					X					
						G																		
						G																		
						G																		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME				ACCEPTED BY/AFFILIATION				DATE/TIME			
1 DAY RUSH												<i>[Signature]</i>				6/9/20			
SERVICE REQUEST (rush - subject to availability)																			
Regular (default)				Sampler's Name				JF/SS				Mobile #							
Priority (2-3 business days) - 50% surcharge																			
Emergency (1 Business Day) - 100% surcharge X																			
For Emergency <1 Day, ASAP or Weekend - Contact ALS				Sampler's Signature								Date/Time							



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

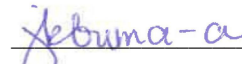
Date Received: 11-JUN-20
Report Date: 02-FEB-21 16:21 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2459695
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2
Legal Site Desc:

Comments: 2-FEB-21: Bicarbonate , Carbonate, and Hydroxide results reported for all samples.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-1 GH_MW-UTC-1B_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	266		5.0	mg/L		17-JUN-20	R5124140
Carbonate (CO3)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Dissolved Organic Carbon	1.05		0.50	mg/L		17-JUN-20	R5124717
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		17-JUN-20	R5123699
Total Organic Carbon	1.30		0.50	mg/L		18-JUN-20	R5124717
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	14-JUN-20	15-JUN-20	R5118081
Dissolved Metals Filtration Location	FIELD					14-JUN-20	R5117391
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-JUN-20	17-JUN-20	R5120697
Dissolved Mercury Filtration Location	FIELD					16-JUN-20	R5118558
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					14-JUN-20	R5117391
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	14-JUN-20	15-JUN-20	R5118081
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Barium (Ba)-Dissolved	0.0734		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Boron (B)-Dissolved	0.080		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cadmium (Cd)-Dissolved	0.0172		0.0050	ug/L	14-JUN-20	15-JUN-20	R5118081
Calcium (Ca)-Dissolved	54.2		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	14-JUN-20	15-JUN-20	R5118081
Copper (Cu)-Dissolved	0.00032		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Lithium (Li)-Dissolved	0.0335		0.0010	mg/L	14-JUN-20	15-JUN-20	R5118081
Magnesium (Mg)-Dissolved	18.5		0.10	mg/L	14-JUN-20	15-JUN-20	R5118081
Manganese (Mn)-Dissolved	0.00563		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Molybdenum (Mo)-Dissolved	0.00128		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Potassium (K)-Dissolved	1.18		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Selenium (Se)-Dissolved	1.52		0.050	ug/L	14-JUN-20	15-JUN-20	R5118081
Silicon (Si)-Dissolved	4.31		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Sodium (Na)-Dissolved	17.0		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Strontium (Sr)-Dissolved	0.949		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Uranium (U)-Dissolved	0.000255		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Zinc (Zn)-Dissolved	0.0051		0.0010	mg/L	14-JUN-20	15-JUN-20	R5118081
Hardness							
Hardness (as CaCO3)	212		0.50	mg/L		16-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-JUN-20	R5118081
Total Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-1 GH_MW-UTC-1B_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		17-JUN-20	R5120697
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0794		0.0030	mg/L		16-JUN-20	R5118081
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Arsenic (As)-Total	0.00015		0.00010	mg/L		16-JUN-20	R5118081
Barium (Ba)-Total	0.0750		0.00010	mg/L		16-JUN-20	R5118081
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-JUN-20	R5118081
Boron (B)-Total	0.089		0.010	mg/L		16-JUN-20	R5118081
Cadmium (Cd)-Total	0.0137		0.0050	ug/L		16-JUN-20	R5118081
Calcium (Ca)-Total	63.2		0.050	mg/L		16-JUN-20	R5118081
Chromium (Cr)-Total	0.00030		0.00010	mg/L		16-JUN-20	R5118081
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-JUN-20	R5118081
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Iron (Fe)-Total	0.448		0.010	mg/L		16-JUN-20	R5118081
Lead (Pb)-Total	0.000130		0.000050	mg/L		16-JUN-20	R5118081
Lithium (Li)-Total	0.0386		0.0010	mg/L		16-JUN-20	R5118081
Magnesium (Mg)-Total	18.5		0.10	mg/L		16-JUN-20	R5118081
Manganese (Mn)-Total	0.0130		0.00010	mg/L		16-JUN-20	R5118081
Molybdenum (Mo)-Total	0.00142		0.000050	mg/L		16-JUN-20	R5118081
Nickel (Ni)-Total	0.00064		0.00050	mg/L		16-JUN-20	R5118081
Potassium (K)-Total	1.20		0.050	mg/L		16-JUN-20	R5118081
Selenium (Se)-Total	1.38		0.050	ug/L		16-JUN-20	R5118081
Silicon (Si)-Total	4.58		0.10	mg/L		16-JUN-20	R5118081
Silver (Ag)-Total	0.000124		0.000010	mg/L		16-JUN-20	R5118081
Sodium (Na)-Total	17.0		0.050	mg/L		16-JUN-20	R5118081
Strontium (Sr)-Total	1.16		0.00020	mg/L		16-JUN-20	R5118081
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081
Tin (Sn)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-JUN-20	R5118081
Uranium (U)-Total	0.000324		0.000010	mg/L		16-JUN-20	R5118081
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Zinc (Zn)-Total	0.0078		0.0030	mg/L		16-JUN-20	R5118081
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		16-JUN-20	R5121262
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	218		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Total (as CaCO3)	218		1.0	mg/L		17-JUN-20	R5124140
Ammonia, Total (as N)							
Ammonia as N	0.0347		0.0050	mg/L		17-JUN-20	R5123276
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-JUN-20	R5122937
Chloride in Water by IC							
Chloride (Cl)	7.21		0.50	mg/L		13-JUN-20	R5122937
Electrical Conductivity (EC)							
Conductivity (@ 25C)	447		2.0	uS/cm		17-JUN-20	R5124140
Fluoride in Water by IC							
Fluoride (F)	0.112		0.020	mg/L		13-JUN-20	R5122937
Ion Balance Calculation							
Cation - Anion Balance	-2.7			%		18-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-1 GH_MW-UTC-1B_WG_2020-04-06_NP Sampled By: JF/SS on 10-JUN-20 @ 14:00 Matrix: WG							
Ion Balance Calculation							
Anion Sum	5.28			meq/L		18-JUN-20	
Cation Sum	5.00			meq/L		18-JUN-20	
Ion Balance Calculation							
Ion Balance	94.7		-100	%		18-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0846		0.0050	mg/L		13-JUN-20	R5122937
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-JUN-20	R5122937
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		11-JUN-20	R5116756
Oxidation redution potential by elect.							
ORP	507		-1000	mV		17-JUN-20	R5123677
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0096	DLM	0.0050	mg/L		17-JUN-20	R5122118
Sulfate in Water by IC							
Sulfate (SO4)	34.3		0.30	mg/L		13-JUN-20	R5122937
Total Dissolved Solids							
Total Dissolved Solids	342	DLHC	20	mg/L		17-JUN-20	R5125576
Total Suspended Solids							
Total Suspended Solids	6.2		1.0	mg/L		17-JUN-20	R5125460
Turbidity							
Turbidity	3.79		0.10	NTU		13-JUN-20	R5117247
pH							
pH	8.28		0.10	pH		17-JUN-20	R5124140
L2459695-2 GH_GWB3_WG_2020-04-06_NP Sampled By: JF/SS on 10-JUN-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Carbonate (CO3)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Dissolved Organic Carbon	<0.50		0.50	mg/L		17-JUN-20	R5124717
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		17-JUN-20	R5123699
Total Organic Carbon	<0.50		0.50	mg/L		17-JUN-20	R5124717
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	14-JUN-20	15-JUN-20	R5118081
Dissolved Metals Filtration Location	FIELD					14-JUN-20	R5117391
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-JUN-20	17-JUN-20	R5120697
Dissolved Mercury Filtration Location	FIELD					16-JUN-20	R5118558
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-JUN-20	R5118138
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	14-JUN-20	15-JUN-20	R5118081
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Boron (B)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	14-JUN-20	15-JUN-20	R5118081
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-2 GH_GWB3_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	14-JUN-20	15-JUN-20	R5118081
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	14-JUN-20	15-JUN-20	R5118081
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	14-JUN-20	15-JUN-20	R5118081
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Potassium (K)-Dissolved	<0.050		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	14-JUN-20	15-JUN-20	R5118081
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Zinc (Zn)-Dissolved	0.0017	RRV	0.0010	mg/L	16-JUN-20	16-JUN-20	R5119976
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		16-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-JUN-20	R5118081
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		17-JUN-20	R5120697
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		16-JUN-20	R5118081
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Arsenic (As)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Barium (Ba)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-JUN-20	R5118081
Boron (B)-Total	<0.010		0.010	mg/L		16-JUN-20	R5118081
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-JUN-20	R5118081
Calcium (Ca)-Total	<0.050		0.050	mg/L		16-JUN-20	R5118081
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-JUN-20	R5118081
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Iron (Fe)-Total	<0.010		0.010	mg/L		16-JUN-20	R5118081
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-JUN-20	R5118081
Lithium (Li)-Total	<0.0010		0.0010	mg/L		16-JUN-20	R5118081
Magnesium (Mg)-Total	<0.10		0.10	mg/L		16-JUN-20	R5118081
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		16-JUN-20	R5118081
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Potassium (K)-Total	<0.050		0.050	mg/L		16-JUN-20	R5118081
Selenium (Se)-Total	<0.050		0.050	ug/L		16-JUN-20	R5118081
Silicon (Si)-Total	<0.10		0.10	mg/L		16-JUN-20	R5118081
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-2 GH_GWB3_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	<0.050		0.050	mg/L		16-JUN-20	R5118081
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		16-JUN-20	R5118081
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-JUN-20	R5118081
Uranium (U)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-JUN-20	R5118081
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		17-JUN-20	R5124076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Ammonia, Total (as N)							
Ammonia as N	0.0078	RRV	0.0050	mg/L		17-JUN-20	R5123276
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-JUN-20	R5122937
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		13-JUN-20	R5122937
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		17-JUN-20	R5124140
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		13-JUN-20	R5122937
Ion Balance Calculation							
Ion Balance	0.0		-100	%		18-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		18-JUN-20	
Anion Sum	<0.10			meq/L		18-JUN-20	
Cation Sum	<0.10			meq/L		18-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-JUN-20	R5122937
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-JUN-20	R5122937
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-JUN-20	R5116756
Oxidation redution potential by elect.							
ORP	306		-1000	mV		17-JUN-20	R5123677
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		17-JUN-20	R5122118
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		13-JUN-20	R5122937
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		17-JUN-20	R5125576
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-JUN-20	R5125460
Turbidity							
Turbidity	<0.10		0.10	NTU		13-JUN-20	R5117247
pH							
pH	5.42		0.10	pH		17-JUN-20	R5124140

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-2 GH_GWB3_WG_2020-04-06_NP Sampled By: JF/SS on 10-JUN-20 @ 14:00 Matrix: WG							
L2459695-3 GH_GWD3_WG_2020-04-06_NP Sampled By: JF/SS on 10-JUN-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	219		5.0	mg/L		17-JUN-20	R5124140
Carbonate (CO3)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Dissolved Organic Carbon	1.24		0.50	mg/L		17-JUN-20	R5124717
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		17-JUN-20	R5123699
Total Organic Carbon	1.10		0.50	mg/L		17-JUN-20	R5124717
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	14-JUN-20	15-JUN-20	R5118081
Dissolved Metals Filtration Location	FIELD					14-JUN-20	R5117391
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	16-JUN-20	17-JUN-20	R5120697
Dissolved Mercury Filtration Location	FIELD					16-JUN-20	R5118558
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					14-JUN-20	R5117391
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	14-JUN-20	15-JUN-20	R5118081
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Barium (Ba)-Dissolved	0.0745		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Boron (B)-Dissolved	0.085		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cadmium (Cd)-Dissolved	0.0105		0.0050	ug/L	14-JUN-20	15-JUN-20	R5118081
Calcium (Ca)-Dissolved	56.2		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	14-JUN-20	15-JUN-20	R5118081
Copper (Cu)-Dissolved	0.00034		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Lithium (Li)-Dissolved	0.0360		0.0010	mg/L	14-JUN-20	15-JUN-20	R5118081
Magnesium (Mg)-Dissolved	19.0		0.10	mg/L	14-JUN-20	15-JUN-20	R5118081
Manganese (Mn)-Dissolved	0.00602		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Molybdenum (Mo)-Dissolved	0.00132		0.000050	mg/L	14-JUN-20	15-JUN-20	R5118081
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Potassium (K)-Dissolved	1.18		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Selenium (Se)-Dissolved	1.46		0.050	ug/L	14-JUN-20	15-JUN-20	R5118081
Silicon (Si)-Dissolved	4.35		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Sodium (Na)-Dissolved	17.6		0.050	mg/L	14-JUN-20	15-JUN-20	R5118081
Strontium (Sr)-Dissolved	0.982		0.00020	mg/L	14-JUN-20	15-JUN-20	R5118081
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	14-JUN-20	15-JUN-20	R5118081
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	14-JUN-20	15-JUN-20	R5118081
Uranium (U)-Dissolved	0.000267		0.000010	mg/L	14-JUN-20	15-JUN-20	R5118081
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	14-JUN-20	15-JUN-20	R5118081
Zinc (Zn)-Dissolved	0.0057		0.0010	mg/L	14-JUN-20	15-JUN-20	R5118081
Hardness							
Hardness (as CaCO3)	218		0.50	mg/L		16-JUN-20	
Total Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-3 GH_GWD3_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-JUN-20	R5118081
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		17-JUN-20	R5120697
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0699		0.0030	mg/L		16-JUN-20	R5118081
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Arsenic (As)-Total	0.00018		0.00010	mg/L		16-JUN-20	R5118081
Barium (Ba)-Total	0.0786		0.00010	mg/L		16-JUN-20	R5118081
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-JUN-20	R5118081
Boron (B)-Total	0.092		0.010	mg/L		16-JUN-20	R5118081
Cadmium (Cd)-Total	0.0147		0.0050	ug/L		16-JUN-20	R5118081
Calcium (Ca)-Total	61.9		0.050	mg/L		16-JUN-20	R5118081
Chromium (Cr)-Total	0.00033		0.00010	mg/L		16-JUN-20	R5118081
Cobalt (Co)-Total	0.11		0.10	ug/L		16-JUN-20	R5118081
Copper (Cu)-Total	0.00074		0.00050	mg/L		16-JUN-20	R5118081
Iron (Fe)-Total	0.457		0.010	mg/L		16-JUN-20	R5118081
Lead (Pb)-Total	0.000145		0.000050	mg/L		16-JUN-20	R5118081
Lithium (Li)-Total	0.0399		0.0010	mg/L		16-JUN-20	R5118081
Magnesium (Mg)-Total	19.7		0.10	mg/L		16-JUN-20	R5118081
Manganese (Mn)-Total	0.0159		0.00010	mg/L		16-JUN-20	R5118081
Molybdenum (Mo)-Total	0.00142		0.000050	mg/L		16-JUN-20	R5118081
Nickel (Ni)-Total	0.00097		0.00050	mg/L		16-JUN-20	R5118081
Potassium (K)-Total	1.26		0.050	mg/L		16-JUN-20	R5118081
Selenium (Se)-Total	1.41		0.050	ug/L		16-JUN-20	R5118081
Silicon (Si)-Total	4.81		0.10	mg/L		16-JUN-20	R5118081
Silver (Ag)-Total	0.000022		0.000010	mg/L		16-JUN-20	R5118081
Sodium (Na)-Total	18.3		0.050	mg/L		16-JUN-20	R5118081
Strontium (Sr)-Total	1.17		0.00020	mg/L		16-JUN-20	R5118081
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-JUN-20	R5118081
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-JUN-20	R5118081
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-JUN-20	R5118081
Uranium (U)-Total	0.000319		0.000010	mg/L		16-JUN-20	R5118081
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-JUN-20	R5118081
Zinc (Zn)-Total	0.0107		0.0030	mg/L		16-JUN-20	R5118081
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		16-JUN-20	R5121262
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	212		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Carbonate (as CaCO3)	7.2		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Total (as CaCO3)	219		1.0	mg/L		17-JUN-20	R5124140
Ammonia, Total (as N)							
Ammonia as N	0.0322		0.0050	mg/L		17-JUN-20	R5123276
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-JUN-20	R5122937
Chloride in Water by IC							
Chloride (Cl)	7.14		0.50	mg/L		13-JUN-20	R5122937
Electrical Conductivity (EC)							
Conductivity (@ 25C)	457		2.0	uS/cm		17-JUN-20	R5124140
Fluoride in Water by IC							
Fluoride (F)	0.112		0.020	mg/L		13-JUN-20	R5122937

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2459695-3 GH_GWD3_WG_2020-04-06_NP							
Sampled By: JF/SS on 10-JUN-20 @ 14:00							
Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	-1.3			%		18-JUN-20	
Anion Sum	5.30			meq/L		18-JUN-20	
Cation Sum	5.16			meq/L		18-JUN-20	
Ion Balance Calculation							
Ion Balance	97.5		-100	%		18-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0849		0.0050	mg/L		13-JUN-20	R5122937
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-JUN-20	R5122937
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		11-JUN-20	R5116756
Oxidation redution potential by elect.							
ORP	470		-1000	mV		17-JUN-20	R5123677
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0114	DLM	0.0050	mg/L		17-JUN-20	R5122118
Sulfate in Water by IC							
Sulfate (SO4)	34.2		0.30	mg/L		13-JUN-20	R5122937
Total Dissolved Solids							
Total Dissolved Solids	292	DLHC	20	mg/L		17-JUN-20	R5125576
Total Suspended Solids							
Total Suspended Solids	15.8		1.0	mg/L		17-JUN-20	R5125460
Turbidity							
Turbidity	2.27		0.10	NTU		13-JUN-20	R5117247
pH							
pH	8.33		0.10	pH		17-JUN-20	R5124140

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2459695

Report Date: 02-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5121262							
WG3343782-11	LCS							
Acidity (as CaCO3)			102.4		%		85-115	16-JUN-20
WG3343782-10	MB							
Acidity (as CaCO3)			1.1		mg/L		2	16-JUN-20
Batch	R5124076							
WG3344686-2	LCS							
Acidity (as CaCO3)			113.6		%		85-115	17-JUN-20
WG3344686-1	MB							
Acidity (as CaCO3)			1.6		mg/L		2	17-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5124140							
WG3344687-8	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	17-JUN-20
WG3344687-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5118081							
WG3341879-2	LCS							
Beryllium (Be)-Dissolved			99.6		%		80-120	15-JUN-20
WG3341879-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5118081							
WG3341815-2	LCS							
Beryllium (Be)-Total			105.1		%		80-120	16-JUN-20
WG3341815-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-JUN-20
BIC-CL								
	Water							
Batch	R5124140							
WG3344687-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-11	DUP	L2459695-2						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10	LCS							

Quality Control Report

Workorder: L2459695

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch R5122937								
WG3344258-10 LCS								
Bromide (Br)			103.2		%		85-115	13-JUN-20
WG3344258-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	13-JUN-20
WG3344258-12 MS L2459695-2								
Bromide (Br)			115.4		%		75-125	13-JUN-20
C-DIS-ORG-LOW-CL Water								
Batch R5124717								
WG3344812-2 LCS								
Dissolved Organic Carbon			107.8		%		80-120	17-JUN-20
WG3344812-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-20
C-TOT-ORG-LOW-CL Water								
Batch R5124717								
WG3344812-2 LCS								
Total Organic Carbon			99.0		%		80-120	17-JUN-20
WG3344812-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-20
CL-IC-N-CL Water								
Batch R5122937								
WG3344258-11 DUP L2459695-2								
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10 LCS								
Chloride (Cl)			101.9		%		90-110	13-JUN-20
WG3344258-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	13-JUN-20
WG3344258-12 MS L2459695-2								
Chloride (Cl)			116.8		%		75-125	13-JUN-20
CO3-CL Water								
Batch R5124140								
WG3344687-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-JUN-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5124140								
WG3344687-8 LCS								
Conductivity (@ 25C)			98.3		%		90-110	17-JUN-20
WG3344687-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUN-20
F-IC-N-CL								
Water								
Batch R5122937								
WG3344258-11 DUP								
Fluoride (F)		L2459695-2	<0.020	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10 LCS								
Fluoride (F)			92.7		%		90-110	13-JUN-20
WG3344258-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-JUN-20
WG3344258-12 MS								
Fluoride (F)		L2459695-2	105.4		%		75-125	13-JUN-20
HG-D-CVAA-VA								
Water								
Batch R5118210								
WG3343064-18 LCS								
Mercury (Hg)-Dissolved			100.7		%		80-120	16-JUN-20
WG3343064-17 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	16-JUN-20
Batch R5120697								
WG3343064-20 MS								
Mercury (Hg)-Dissolved		L2459695-2	97.3		%		70-130	17-JUN-20
HG-T-CVAA-VA								
Water								
Batch R5120697								
WG3343654-3 DUP								
Mercury (Hg)-Total		L2459695-3	<0.0000050	RPD-NA	mg/L	N/A	20	17-JUN-20
WG3343654-2 LCS								
Mercury (Hg)-Total			99.7		%		80-120	17-JUN-20
WG3343654-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	17-JUN-20
MET-D-CCMS-VA								
Water								
Batch R5118081								
WG3341879-2 LCS								
Aluminum (Al)-Dissolved			104.8		%		80-120	15-JUN-20
Antimony (Sb)-Dissolved			101.4		%		80-120	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5118081							
WG3341879-2	LCS							
Arsenic (As)-Dissolved			103.0		%		80-120	15-JUN-20
Barium (Ba)-Dissolved			98.7		%		80-120	15-JUN-20
Bismuth (Bi)-Dissolved			98.1		%		80-120	15-JUN-20
Boron (B)-Dissolved			97.5		%		80-120	15-JUN-20
Cadmium (Cd)-Dissolved			96.5		%		80-120	15-JUN-20
Calcium (Ca)-Dissolved			97.5		%		80-120	15-JUN-20
Chromium (Cr)-Dissolved			102.0		%		80-120	15-JUN-20
Cobalt (Co)-Dissolved			99.1		%		80-120	15-JUN-20
Copper (Cu)-Dissolved			101.4		%		80-120	15-JUN-20
Iron (Fe)-Dissolved			102.1		%		80-120	15-JUN-20
Lead (Pb)-Dissolved			95.6		%		80-120	15-JUN-20
Lithium (Li)-Dissolved			101.3		%		80-120	15-JUN-20
Magnesium (Mg)-Dissolved			103.5		%		80-120	15-JUN-20
Manganese (Mn)-Dissolved			104.5		%		80-120	15-JUN-20
Molybdenum (Mo)-Dissolved			94.9		%		80-120	15-JUN-20
Nickel (Ni)-Dissolved			101.5		%		80-120	15-JUN-20
Potassium (K)-Dissolved			105.3		%		80-120	15-JUN-20
Selenium (Se)-Dissolved			98.6		%		80-120	15-JUN-20
Silicon (Si)-Dissolved			105.5		%		60-140	15-JUN-20
Silver (Ag)-Dissolved			96.4		%		80-120	15-JUN-20
Sodium (Na)-Dissolved			105.9		%		80-120	15-JUN-20
Strontium (Sr)-Dissolved			109.1		%		80-120	15-JUN-20
Thallium (Tl)-Dissolved			96.3		%		80-120	15-JUN-20
Tin (Sn)-Dissolved			97.7		%		80-120	15-JUN-20
Titanium (Ti)-Dissolved			100.7		%		80-120	15-JUN-20
Uranium (U)-Dissolved			92.4		%		80-120	15-JUN-20
Vanadium (V)-Dissolved			105.5		%		80-120	15-JUN-20
Zinc (Zn)-Dissolved			101.2		%		80-120	15-JUN-20
WG3341879-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5118081							
WG3341879-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Batch	R5119976							
WG3342839-2	LCS							
Aluminum (Al)-Dissolved			95.5		%		80-120	16-JUN-20
Antimony (Sb)-Dissolved			98.5		%		80-120	16-JUN-20
Arsenic (As)-Dissolved			92.2		%		80-120	16-JUN-20
Barium (Ba)-Dissolved			98.9		%		80-120	16-JUN-20
Bismuth (Bi)-Dissolved			96.5		%		80-120	16-JUN-20
Boron (B)-Dissolved			86.6		%		80-120	16-JUN-20
Cadmium (Cd)-Dissolved			94.2		%		80-120	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5119976							
WG3342839-2	LCS							
Calcium (Ca)-Dissolved			91.5		%		80-120	16-JUN-20
Chromium (Cr)-Dissolved			91.9		%		80-120	16-JUN-20
Cobalt (Co)-Dissolved			92.1		%		80-120	16-JUN-20
Copper (Cu)-Dissolved			92.1		%		80-120	16-JUN-20
Iron (Fe)-Dissolved			93.4		%		80-120	16-JUN-20
Lead (Pb)-Dissolved			100.1		%		80-120	16-JUN-20
Lithium (Li)-Dissolved			90.6		%		80-120	16-JUN-20
Magnesium (Mg)-Dissolved			90.1		%		80-120	16-JUN-20
Manganese (Mn)-Dissolved			94.2		%		80-120	16-JUN-20
Molybdenum (Mo)-Dissolved			98.6		%		80-120	16-JUN-20
Nickel (Ni)-Dissolved			92.9		%		80-120	16-JUN-20
Potassium (K)-Dissolved			92.5		%		80-120	16-JUN-20
Selenium (Se)-Dissolved			95.6		%		80-120	16-JUN-20
Silicon (Si)-Dissolved			99.4		%		60-140	16-JUN-20
Silver (Ag)-Dissolved			96.1		%		80-120	16-JUN-20
Sodium (Na)-Dissolved			92.2		%		80-120	16-JUN-20
Strontium (Sr)-Dissolved			97.8		%		80-120	16-JUN-20
Thallium (Tl)-Dissolved			96.0		%		80-120	16-JUN-20
Tin (Sn)-Dissolved			96.8		%		80-120	16-JUN-20
Titanium (Ti)-Dissolved			91.9		%		80-120	16-JUN-20
Uranium (U)-Dissolved			100.5		%		80-120	16-JUN-20
Vanadium (V)-Dissolved			93.3		%		80-120	16-JUN-20
Zinc (Zn)-Dissolved			91.6		%		80-120	16-JUN-20
WG3342839-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5119976							
WG3342839-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5118081							
WG3341815-2	LCS							
Aluminum (Al)-Total			103.3		%		80-120	16-JUN-20
Antimony (Sb)-Total			105.7		%		80-120	16-JUN-20
Arsenic (As)-Total			102.6		%		80-120	16-JUN-20
Barium (Ba)-Total			99.5		%		80-120	16-JUN-20
Bismuth (Bi)-Total			105.0		%		80-120	16-JUN-20
Boron (B)-Total			103.7		%		80-120	16-JUN-20
Cadmium (Cd)-Total			99.2		%		80-120	16-JUN-20
Calcium (Ca)-Total			103.1		%		80-120	16-JUN-20
Chromium (Cr)-Total			104.3		%		80-120	16-JUN-20
Cobalt (Co)-Total			97.7		%		80-120	16-JUN-20
Copper (Cu)-Total			100.1		%		80-120	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5118081							
WG3341815-2	LCS							
Iron (Fe)-Total			104.4		%		80-120	16-JUN-20
Lead (Pb)-Total			101.2		%		80-120	16-JUN-20
Lithium (Li)-Total			101.4		%		80-120	16-JUN-20
Magnesium (Mg)-Total			103.1		%		80-120	16-JUN-20
Manganese (Mn)-Total			103.7		%		80-120	16-JUN-20
Molybdenum (Mo)-Total			100.7		%		80-120	16-JUN-20
Nickel (Ni)-Total			99.0		%		80-120	16-JUN-20
Potassium (K)-Total			103.4		%		80-120	16-JUN-20
Selenium (Se)-Total			103.0		%		80-120	16-JUN-20
Silicon (Si)-Total			107.2		%		80-120	16-JUN-20
Silver (Ag)-Total			102.0		%		80-120	16-JUN-20
Sodium (Na)-Total			104.0		%		80-120	16-JUN-20
Strontium (Sr)-Total			112.5		%		80-120	16-JUN-20
Thallium (Tl)-Total			100.2		%		80-120	16-JUN-20
Tin (Sn)-Total			100.4		%		80-120	16-JUN-20
Titanium (Ti)-Total			103.3		%		80-120	16-JUN-20
Uranium (U)-Total			102.5		%		80-120	16-JUN-20
Vanadium (V)-Total			104.9		%		80-120	16-JUN-20
Zinc (Zn)-Total			99.8		%		80-120	16-JUN-20
WG3341815-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	16-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5118081							
WG3341815-1	MB							
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5123276							
WG3344327-58	LCS							
Ammonia as N			97.4		%		85-115	17-JUN-20
WG3344327-57	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-20
NO2-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-11	DUP	L2459695-2						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10	LCS							
Nitrite (as N)			103.1		%		90-110	13-JUN-20
WG3344258-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-JUN-20
WG3344258-12	MS	L2459695-2						
Nitrite (as N)			119.2		%		75-125	13-JUN-20
NO3-L-IC-N-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Batch R5122937								
WG3344258-11	DUP	L2459695-2						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10	LCS							
Nitrate (as N)			102.5		%		90-110	13-JUN-20
WG3344258-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-JUN-20
WG3344258-12	MS	L2459695-2						
Nitrate (as N)			117.0		%		75-125	13-JUN-20
OH-CL								
Batch R5124140								
WG3344687-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-JUN-20
ORP-CL								
Batch R5123677								
WG3344093-5	CRM	CL-ORP						
ORP			221		mV		210-230	17-JUN-20
P-T-L-COL-CL								
Batch R5122118								
WG3343955-6	LCS							
Phosphorus (P)-Total			111.9		%		80-120	17-JUN-20
WG3343955-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-JUN-20
PH-CL								
Batch R5124140								
WG3344687-8	LCS							
pH			6.98		pH		6.9-7.1	17-JUN-20
PO4-DO-L-COL-CL								
Batch R5116756								
WG3340334-26	LCS							
Orthophosphate-Dissolved (as P)			106.1		%		80-120	11-JUN-20
WG3340334-25	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUN-20
SO4-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R5122937							
WG3344258-11	DUP	L2459695-2						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	13-JUN-20
WG3344258-10	LCS							
Sulfate (SO4)			103.7		%		90-110	13-JUN-20
WG3344258-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-JUN-20
WG3344258-12	MS	L2459695-2						
Sulfate (SO4)			118.7		%		75-125	13-JUN-20
SOLIDS-TDS-CL								
Water								
Batch	R5125576							
WG3343762-11	LCS							
Total Dissolved Solids			102.1		%		85-115	17-JUN-20
WG3343762-10	MB							
Total Dissolved Solids			<10		mg/L		10	17-JUN-20
TKN-L-F-CL								
Water								
Batch	R5123699							
WG3344505-11	LCS							
Total Kjeldahl Nitrogen			103.6		%		75-125	17-JUN-20
WG3344505-15	LCS							
Total Kjeldahl Nitrogen			101.0		%		75-125	17-JUN-20
WG3344505-2	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	17-JUN-20
WG3344505-7	LCS							
Total Kjeldahl Nitrogen			105.6		%		75-125	17-JUN-20
WG3344505-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
TSS-L-CL								
Water								
Batch	R5125460							
WG3343611-12	LCS							
Total Suspended Solids			93.8		%		85-115	17-JUN-20
WG3343611-11	MB							
Total Suspended Solids			<1.0		mg/L		1	17-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R5117247							
WG3341737-6	DUP	L2459695-2						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	13-JUN-20
WG3341737-5	LCS							
Turbidity			98.5		%		85-115	13-JUN-20
WG3341737-4	MB							
Turbidity			<0.10		NTU		0.1	13-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Report Date: 02-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	10-JUN-20 14:00	17-JUN-20 08:00	0.25	162	hours	EHTR-FM
	2	10-JUN-20 14:00	17-JUN-20 08:00	0.25	162	hours	EHTR-FM
	3	10-JUN-20 14:00	17-JUN-20 08:00	0.25	162	hours	EHTR-FM
pH	1	10-JUN-20 14:00	17-JUN-20 09:00	0.25	163	hours	EHTR-FM
	2	10-JUN-20 14:00	17-JUN-20 09:00	0.25	163	hours	EHTR-FM
	3	10-JUN-20 14:00	17-JUN-20 09:00	0.25	163	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2459695 were received on 11-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				RUSH:								
PROJECT/CLIENT INFO								LABORATORY				OTHER INFO				
Facility Name / Job# Greenhills Operation								Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Leigh Stickney								Lab Contact Justine Buma-a				Email 1: Leigh.Stickney@teck.com		Excel	PDF	EDD
Email leigh.stickney@teck.com								Email Justine.Bumaa@ALSGlobal.com				Email 2: Jeremy.Enns@teck.com		X	X	X
Address P.O. BOX 5000								Address 2559 29 Street NE				Email 3: teckcoal@equisonline.com				X
City Elkford				Province BC	City Calgary				Province AB	Email 4: jaydon.francis@teck.com		X	X	X		
Postal Code V0B1H0				Country Canada	Postal Code T1Y 7B5				Country Canada	Email 5: Brendan.Peachey@teck.com		X	X	X		
Phone Number 250-865-3048					Phone Number 403 407 1794					Email 6: DL-Equis-GHQ.Field@teck.com		X	X	X		
								PO number 684125								

SAMPLE DETAILS Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED														
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH	TSS/TURB	HG-T-CVAF-VA			
								Y	Y		Y											
								H2SO4	HCL	N	HNO3	HNO3	N	H2SO4								HCL

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Be</i>	<i>6/11/20</i>

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	JF/SS
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Mobile #
Emergency (1 Business Day) - 100% surcharge			Date/Time
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

7



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0


Date Received: 13-JUN-20
Report Date: 08-FEB-21 16:42 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2460418
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 8-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2460418-1 GH_MW-PC_WG_2020-04-06_NP							
Sampled By: MD BP on 11-JUN-20 @ 15:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	266		5.0	mg/L		18-JUN-20	R5125746
Carbonate (CO3)	6.1		5.0	mg/L		18-JUN-20	R5125746
Dissolved Organic Carbon	1.57		0.50	mg/L		21-JUN-20	R5127028
Hydroxide (OH)	<5.0		5.0	mg/L		18-JUN-20	R5125746
Total Kjeldahl Nitrogen	0.266		0.050	mg/L		22-JUN-20	R5130358
Mercury (Hg)-Total	0.00269		0.00050	ug/L		18-JUN-20	R5125540
Total Organic Carbon	1.74		0.50	mg/L		21-JUN-20	R5127028
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-JUN-20	17-JUN-20	R5122217
Dissolved Metals Filtration Location	FIELD					16-JUN-20	R5120141
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-JUN-20	20-JUN-20	R5126426
Dissolved Mercury Filtration Location	FIELD					19-JUN-20	R5126133
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-JUN-20	R5120141
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-JUN-20	17-JUN-20	R5122217
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Arsenic (As)-Dissolved	0.00033		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Barium (Ba)-Dissolved	0.0708		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-JUN-20	17-JUN-20	R5122217
Boron (B)-Dissolved	<0.010		0.010	mg/L	16-JUN-20	17-JUN-20	R5122217
Cadmium (Cd)-Dissolved	0.0340		0.0050	ug/L	16-JUN-20	17-JUN-20	R5122217
Calcium (Ca)-Dissolved	112		0.050	mg/L	16-JUN-20	17-JUN-20	R5122217
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-JUN-20	17-JUN-20	R5122217
Copper (Cu)-Dissolved	0.0451		0.00020	mg/L	16-JUN-20	17-JUN-20	R5122217
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-JUN-20	17-JUN-20	R5122217
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-JUN-20	17-JUN-20	R5122217
Lithium (Li)-Dissolved	0.0074		0.0010	mg/L	16-JUN-20	17-JUN-20	R5122217
Magnesium (Mg)-Dissolved	80.1		0.10	mg/L	16-JUN-20	17-JUN-20	R5122217
Manganese (Mn)-Dissolved	0.00056		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Molybdenum (Mo)-Dissolved	0.00290		0.000050	mg/L	16-JUN-20	17-JUN-20	R5122217
Nickel (Ni)-Dissolved	0.00118		0.00050	mg/L	16-JUN-20	17-JUN-20	R5122217
Potassium (K)-Dissolved	1.19		0.050	mg/L	16-JUN-20	17-JUN-20	R5122217
Selenium (Se)-Dissolved	81.2		0.050	ug/L	16-JUN-20	17-JUN-20	R5122217
Silicon (Si)-Dissolved	2.43		0.050	mg/L	16-JUN-20	17-JUN-20	R5122217
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-JUN-20	17-JUN-20	R5122217
Sodium (Na)-Dissolved	1.13		0.050	mg/L	16-JUN-20	17-JUN-20	R5122217
Strontium (Sr)-Dissolved	0.138		0.00020	mg/L	16-JUN-20	17-JUN-20	R5122217
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-JUN-20	17-JUN-20	R5122217
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-JUN-20	17-JUN-20	R5122217
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-JUN-20	17-JUN-20	R5122217
Uranium (U)-Dissolved	0.00515		0.000010	mg/L	16-JUN-20	17-JUN-20	R5122217
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-JUN-20	17-JUN-20	R5122217
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	16-JUN-20	17-JUN-20	R5122217
Hardness							
Hardness (as CaCO3)	610		0.50	mg/L		17-JUN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.2		1.0	mg/L		17-JUN-20	R5124076

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2460418-1 GH_MW-PC_WG_2020-04-06_NP							
Sampled By: MD BP on 11-JUN-20 @ 15:00							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	218		1.0	mg/L		18-JUN-20	R5125746
Alkalinity, Carbonate (as CaCO3)	10.2		1.0	mg/L		18-JUN-20	R5125746
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-JUN-20	R5125746
Alkalinity, Total (as CaCO3)	228		1.0	mg/L		18-JUN-20	R5125746
Ammonia, Total (as N)							
Ammonia as N	0.0068		0.0050	mg/L		22-JUN-20	R5129468
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-JUN-20	R5122937
Chloride in Water by IC							
Chloride (Cl)	0.65		0.50	mg/L		13-JUN-20	R5122937
Electrical Conductivity (EC)							
Conductivity (@ 25C)	922		2.0	uS/cm		18-JUN-20	R5125746
Fluoride in Water by IC							
Fluoride (F)	0.282		0.020	mg/L		13-JUN-20	R5122937
Ion Balance Calculation							
Ion Balance	105		-100	%		19-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	2.4			%		19-JUN-20	
Anion Sum	11.7			meq/L		19-JUN-20	
Cation Sum	12.3			meq/L		19-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.74		0.0050	mg/L		13-JUN-20	R5122937
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-JUN-20	R5122937
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0100		0.0010	mg/L		13-JUN-20	R5117552
Oxidation redution potential by elect.							
ORP	366		-1000	mV		22-JUN-20	R5127501
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0138		0.0020	mg/L		19-JUN-20	R5126003
Sulfate in Water by IC							
Sulfate (SO4)	334		0.30	mg/L		13-JUN-20	R5122937
Total Dissolved Solids							
Total Dissolved Solids	771	DLHC	20	mg/L		18-JUN-20	R5126309
Total Suspended Solids							
Total Suspended Solids	21.9		1.0	mg/L		18-JUN-20	R5126273
Turbidity							
Turbidity	16.7		0.10	NTU		13-JUN-20	R5117247
pH							
pH	8.39		0.10	pH		18-JUN-20	R5125746

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5124076							
WG3344686-5	LCS							
Acidity (as CaCO3)			112.2		%		85-115	17-JUN-20
WG3344686-4	MB							
Acidity (as CaCO3)			1.0		mg/L		2	17-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5125746							
WG3345628-5	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	18-JUN-20
WG3345628-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5122217							
WG3343446-2	LCS							
Beryllium (Be)-Dissolved			95.8		%		80-120	17-JUN-20
WG3343446-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUN-20
BIC-CL								
	Water							
Batch	R5125746							
WG3345628-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5127028							
WG3347008-31	DUP	L2460418-1						
Dissolved Organic Carbon		1.57	1.55		mg/L	1.0	20	21-JUN-20
WG3347008-30	LCS							
Dissolved Organic Carbon			99.1		%		80-120	21-JUN-20
WG3347008-29	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-JUN-20
WG3347008-32	MS	L2460418-1						
Dissolved Organic Carbon			102.2		%		70-130	21-JUN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5127028							
WG3347008-31	DUP	L2460418-1						
Total Organic Carbon		1.74	1.71		mg/L	1.4	20	21-JUN-20
WG3347008-30	LCS							
Total Organic Carbon			99.1		%		80-120	21-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5127028							
WG3347008-29 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-JUN-20
WG3347008-32 MS		L2460418-1						
Total Organic Carbon			109.7		%		70-130	21-JUN-20
CO3-CL	Water							
Batch	R5125746							
WG3345628-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	18-JUN-20
EC-L-PCT-CL	Water							
Batch	R5125746							
WG3345628-5 LCS								
Conductivity (@ 25C)			96.2		%		90-110	18-JUN-20
WG3345628-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-20
HG-D-CVAA-VA	Water							
Batch	R5126426							
WG3346056-10 LCS								
Mercury (Hg)-Dissolved			97.7		%		80-120	20-JUN-20
WG3346056-9 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-20
HG-T-U-CVAF-VA	Water							
Batch	R5125540							
WG3345343-2 LCS								
Mercury (Hg)-Total			101.6		%		80-120	18-JUN-20
WG3345343-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	18-JUN-20
MET-D-CCMS-VA	Water							
Batch	R5122217							
WG3343446-2 LCS								
Aluminum (Al)-Dissolved			98.9		%		80-120	17-JUN-20
Antimony (Sb)-Dissolved			95.7		%		80-120	17-JUN-20
Arsenic (As)-Dissolved			96.3		%		80-120	17-JUN-20
Barium (Ba)-Dissolved			96.6		%		80-120	17-JUN-20
Bismuth (Bi)-Dissolved			92.4		%		80-120	17-JUN-20
Boron (B)-Dissolved			92.2		%		80-120	17-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	17-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5122217							
WG3343446-2	LCS							
Calcium (Ca)-Dissolved			98.2		%		80-120	17-JUN-20
Chromium (Cr)-Dissolved			94.2		%		80-120	17-JUN-20
Cobalt (Co)-Dissolved			98.2		%		80-120	17-JUN-20
Copper (Cu)-Dissolved			97.1		%		80-120	17-JUN-20
Iron (Fe)-Dissolved			91.9		%		80-120	17-JUN-20
Lead (Pb)-Dissolved			95.8		%		80-120	17-JUN-20
Lithium (Li)-Dissolved			98.0		%		80-120	17-JUN-20
Magnesium (Mg)-Dissolved			99.7		%		80-120	17-JUN-20
Manganese (Mn)-Dissolved			98.5		%		80-120	17-JUN-20
Molybdenum (Mo)-Dissolved			95.1		%		80-120	17-JUN-20
Nickel (Ni)-Dissolved			95.2		%		80-120	17-JUN-20
Potassium (K)-Dissolved			99.9		%		80-120	17-JUN-20
Selenium (Se)-Dissolved			104.9		%		80-120	17-JUN-20
Silicon (Si)-Dissolved			98.7		%		60-140	17-JUN-20
Silver (Ag)-Dissolved			100.0		%		80-120	17-JUN-20
Sodium (Na)-Dissolved			101.2		%		80-120	17-JUN-20
Strontium (Sr)-Dissolved			95.6		%		80-120	17-JUN-20
Thallium (Tl)-Dissolved			95.5		%		80-120	17-JUN-20
Tin (Sn)-Dissolved			95.0		%		80-120	17-JUN-20
Titanium (Ti)-Dissolved			90.7		%		80-120	17-JUN-20
Uranium (U)-Dissolved			93.6		%		80-120	17-JUN-20
Vanadium (V)-Dissolved			97.6		%		80-120	17-JUN-20
Zinc (Zn)-Dissolved			101.2		%		80-120	17-JUN-20
WG3343446-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5122217							
WG3343446-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5129468							
WG3347454-2	LCS							
Ammonia as N			98.5		%		85-115	22-JUN-20
WG3347454-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	22-JUN-20
OH-CL								
	Water							
Batch	R5125746							
WG3345628-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-JUN-20
ORP-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5127501							
WG3347378-5	CRM	CL-ORP						
ORP			220		mV		210-230	22-JUN-20
P-T-L-COL-CL	Water							
Batch	R5126003							
WG3345740-10	LCS							
Phosphorus (P)-Total			105.8		%		80-120	19-JUN-20
WG3345740-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-JUN-20
PH-CL	Water							
Batch	R5125746							
WG3345628-5	LCS							
pH			7.00		pH		6.9-7.1	18-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5117552							
WG3341678-6	LCS							
Orthophosphate-Dissolved (as P)			104.7		%		80-120	13-JUN-20
WG3341678-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5126309							
WG3344725-11	LCS							
Total Dissolved Solids			98.7		%		85-115	18-JUN-20
WG3344725-10	MB							
Total Dissolved Solids			<10		mg/L		10	18-JUN-20
TKN-L-F-CL	Water							
Batch	R5130358							
WG3348291-12	LCS							
Total Kjeldahl Nitrogen			83.4		%		75-125	22-JUN-20
WG3348291-16	LCS							
Total Kjeldahl Nitrogen			85.4		%		75-125	22-JUN-20
WG3348291-19	LCS							
Total Kjeldahl Nitrogen			85.4		%		75-125	22-JUN-20
WG3348291-2	LCS							
Total Kjeldahl Nitrogen			84.9		%		75-125	22-JUN-20
WG3348291-5	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5130358							
WG3348291-5	LCS							
Total Kjeldahl Nitrogen			85.5		%		75-125	22-JUN-20
WG3348291-8	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	22-JUN-20
WG3348291-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
WG3348291-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUN-20
TSS-L-CL		Water						
Batch	R5126273							
WG3344734-6	LCS							
Total Suspended Solids			95.5		%		85-115	18-JUN-20
WG3344734-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-JUN-20
TURBIDITY-CL		Water						
Batch	R5117247							
WG3341737-23	LCS							
Turbidity			99.96		%		85-115	13-JUN-20
WG3341737-22	MB							
Turbidity			<0.10		NTU		0.1	13-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2460418

Report Date: 08-FEB-21

Page 8 of 8

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-JUN-20 15:00	22-JUN-20 08:30	0.25	258	hours	EHTR-FM
pH	1	11-JUN-20 15:00	18-JUN-20 13:00	0.25	166	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2460418 were received on 13-JUN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.cor	X	X	X
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City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV:	ANALYSIS	Y	Y	N	Y	N	N	N
								H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4		
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC		
GH_MW-PC_WG_2020-04-06_NP	GH_MW-PC	WG		6/11/2020	15:00	G	6	1	1	1	1		1	1		



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

SERVICE REQUEST (rush - subject to availability)

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	MD BP	Mobile #	
				Sampler's Signature		Date/Time	

1000



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 13-AUG-20
Report Date: 20-AUG-20 17:37 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2488309
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 01-03-Q3-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488309-1 WP 12-AUG-20 08:09 RG_DW-01- 03_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	390			
	Hardness (as CaCO3) (mg/L)	227			
	pH (pH)	8.43			
	ORP (mV)	433			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	250	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	149			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	155			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.23			
	Fluoride (F) (mg/L)	0.134			
	Ion Balance (%)	107			
	Nitrate (as N) (mg/L)	1.30			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.209			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	51.5			
	Anion Sum (meq/L)	4.31			
	Cation Sum (meq/L)	4.61			
	Cation - Anion Balance (%)	3.4			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.0822			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0099			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488309-1 WP 12-AUG-20 08:09 RG_DW-01- 03_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	60.8			
	Chromium (Cr)-Total (mg/L)	0.00030			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00331			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000253			
	Lithium (Li)-Total (mg/L)	0.0027			
	Magnesium (Mg)-Total (mg/L)	15.4			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000989			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.436			
	Selenium (Se)-Total (ug/L)	5.09			
	Silicon (Si)-Total (mg/L)	2.26			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.30			
	Strontium (Sr)-Total (mg/L)	0.239			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000938			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0095			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0837			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0082			
	Calcium (Ca)-Dissolved (mg/L)	64.1			
	Chromium (Cr)-Dissolved (mg/L)	0.00029			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488309-1 WP 12-AUG-20 08:09 RG_DW-01- 03_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00098			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000099			
	Lithium (Li)-Dissolved (mg/L)	0.0025			
	Magnesium (Mg)-Dissolved (mg/L)	16.3			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000974			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.443			
	Selenium (Se)-Dissolved (ug/L)	5.11			
	Silicon (Si)-Dissolved (mg/L)	2.14			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.40			
	Strontium (Sr)-Dissolved (mg/L)	0.249			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000931			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0084			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP10	Samples Received with temperature >10 Degrees C - 11C

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Bismuth (Bi)-Dissolved	MES	L2488309-1
Laboratory Control Sample	Uranium (U)-Dissolved	MES	L2488309-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2488309-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2488309-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2488309-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2488309-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2488309-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2488309-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2488309-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2488309-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2488309-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2488309-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2488309-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2488309-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2488309-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2488309-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by			

Reference Information

subtracting the TIC from the TC.
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

Reference Information

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

01-03-Q3-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2488309

Report Date: 20-AUG-20

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5189582							
WG3384248-11	LCS							
Acidity (as CaCO3)			93.0		%		85-115	14-AUG-20
WG3384248-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	14-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5191343							
WG3386441-2	LCS							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	18-AUG-20
WG3386441-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5190436							
WG3385083-2	LCS							
Beryllium (Be)-Dissolved			100.3		%		80-120	17-AUG-20
WG3385083-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5191989							
WG3385686-2	LCS							
Beryllium (Be)-Total			103.5		%		80-120	19-AUG-20
WG3385686-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-AUG-20
WG3385686-4	MS	L2488309-1						
Beryllium (Be)-Total			102.1		%		70-130	19-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189812							
WG3384499-2	LCS							
Bromide (Br)			101.3		%		85-115	14-AUG-20
WG3384499-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5192415							
WG3387403-2	LCS							
Dissolved Organic Carbon			104.8		%		80-120	19-AUG-20
WG3387403-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-AUG-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5192415							
WG3387403-2	LCS							
Total Organic Carbon			104.3		%		80-120	19-AUG-20
WG3387403-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-AUG-20
CL-IC-N-CL	Water							
Batch	R5189812							
WG3384499-2	LCS							
Chloride (Cl)			102.1		%		90-110	14-AUG-20
WG3384499-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-AUG-20
EC-L-PCT-CL	Water							
Batch	R5191343							
WG3386441-2	LCS							
Conductivity (@ 25C)			98.4		%		90-110	18-AUG-20
WG3386441-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-AUG-20
F-IC-N-CL	Water							
Batch	R5189812							
WG3384499-2	LCS							
Fluoride (F)			94.9		%		90-110	14-AUG-20
WG3384499-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5190571							
WG3386023-6	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	18-AUG-20
WG3386023-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-AUG-20
WG3386023-8	MS	L2488309-1						
Mercury (Hg)-Dissolved			97.1		%		70-130	18-AUG-20
HG-T-CVAA-VA	Water							
Batch	R5189770							
WG3384406-2	LCS							
Mercury (Hg)-Total			100.8		%		80-120	15-AUG-20
WG3384406-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-AUG-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190436							
WG3385083-2	LCS							
Aluminum (Al)-Dissolved			116.9		%		80-120	17-AUG-20
Antimony (Sb)-Dissolved			106.6		%		80-120	17-AUG-20
Arsenic (As)-Dissolved			113.7		%		80-120	17-AUG-20
Barium (Ba)-Dissolved			114.2		%		80-120	17-AUG-20
Bismuth (Bi)-Dissolved			121.4	MES	%		80-120	17-AUG-20
Boron (B)-Dissolved			99.1		%		80-120	17-AUG-20
Cadmium (Cd)-Dissolved			111.7		%		80-120	17-AUG-20
Calcium (Ca)-Dissolved			110.4		%		80-120	17-AUG-20
Chromium (Cr)-Dissolved			110.9		%		80-120	17-AUG-20
Cobalt (Co)-Dissolved			112.0		%		80-120	17-AUG-20
Copper (Cu)-Dissolved			113.6		%		80-120	17-AUG-20
Iron (Fe)-Dissolved			96.3		%		80-120	17-AUG-20
Lead (Pb)-Dissolved			109.8		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			99.1		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			116.3		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			116.2		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			108.3		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			110.3		%		80-120	17-AUG-20
Potassium (K)-Dissolved			113.9		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			105.5		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			108.8		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			113.7		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			119.8		%		80-120	17-AUG-20
Strontium (Sr)-Dissolved			115.4		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			110.6		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			110.8		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			108.4		%		80-120	17-AUG-20
Uranium (U)-Dissolved			121.5	MES	%		80-120	17-AUG-20
Vanadium (V)-Dissolved			114.5		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			111.4		%		80-120	17-AUG-20
WG3385083-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190436							
WG3385083-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5191989							
WG3385686-2	LCS							
Aluminum (Al)-Total			100.8		%		80-120	19-AUG-20
Antimony (Sb)-Total			103.1		%		80-120	19-AUG-20
Arsenic (As)-Total			99.2		%		80-120	19-AUG-20
Barium (Ba)-Total			102.7		%		80-120	19-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5191989							
WG3385686-2	LCS							
Bismuth (Bi)-Total			108.8		%		80-120	19-AUG-20
Boron (B)-Total			96.6		%		80-120	19-AUG-20
Cadmium (Cd)-Total			99.3		%		80-120	19-AUG-20
Calcium (Ca)-Total			106.8		%		80-120	19-AUG-20
Chromium (Cr)-Total			102.4		%		80-120	19-AUG-20
Cobalt (Co)-Total			100.1		%		80-120	19-AUG-20
Copper (Cu)-Total			97.1		%		80-120	19-AUG-20
Iron (Fe)-Total			100.4		%		80-120	19-AUG-20
Lead (Pb)-Total			101.2		%		80-120	19-AUG-20
Lithium (Li)-Total			103.9		%		80-120	19-AUG-20
Magnesium (Mg)-Total			95.5		%		80-120	19-AUG-20
Manganese (Mn)-Total			102.6		%		80-120	19-AUG-20
Molybdenum (Mo)-Total			103.6		%		80-120	19-AUG-20
Nickel (Ni)-Total			99.0		%		80-120	19-AUG-20
Potassium (K)-Total			101.0		%		80-120	19-AUG-20
Selenium (Se)-Total			97.8		%		80-120	19-AUG-20
Silicon (Si)-Total			104.7		%		80-120	19-AUG-20
Silver (Ag)-Total			99.1		%		80-120	19-AUG-20
Sodium (Na)-Total			110.6		%		80-120	19-AUG-20
Strontium (Sr)-Total			107.8		%		80-120	19-AUG-20
Thallium (Tl)-Total			104.6		%		80-120	19-AUG-20
Tin (Sn)-Total			99.6		%		80-120	19-AUG-20
Titanium (Ti)-Total			99.4		%		80-120	19-AUG-20
Uranium (U)-Total			102.4		%		80-120	19-AUG-20
Vanadium (V)-Total			100.5		%		80-120	19-AUG-20
Zinc (Zn)-Total			96.1		%		80-120	19-AUG-20
WG3385686-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	19-AUG-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	19-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5191989							
WG3385686-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	19-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	19-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	19-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	19-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-AUG-20
WG3385686-4	MS	L2488309-1						
Aluminum (Al)-Total			94.5		%		70-130	19-AUG-20
Antimony (Sb)-Total			101.2		%		70-130	19-AUG-20
Arsenic (As)-Total			95.6		%		70-130	19-AUG-20
Barium (Ba)-Total			N/A	MS-B	%		-	19-AUG-20
Bismuth (Bi)-Total			97.9		%		70-130	19-AUG-20
Boron (B)-Total			101.3		%		70-130	19-AUG-20
Cadmium (Cd)-Total			97.5		%		70-130	19-AUG-20
Calcium (Ca)-Total			N/A	MS-B	%		-	19-AUG-20
Chromium (Cr)-Total			99.3		%		70-130	19-AUG-20
Cobalt (Co)-Total			93.6		%		70-130	19-AUG-20
Copper (Cu)-Total			91.0		%		70-130	19-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5191989							
WG3385686-4	MS	L2488309-1						
Iron (Fe)-Total			96.9		%		70-130	19-AUG-20
Lead (Pb)-Total			99.7		%		70-130	19-AUG-20
Lithium (Li)-Total			100.8		%		70-130	19-AUG-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	19-AUG-20
Manganese (Mn)-Total			95.7		%		70-130	19-AUG-20
Molybdenum (Mo)-Total			102.0		%		70-130	19-AUG-20
Nickel (Ni)-Total			92.8		%		70-130	19-AUG-20
Potassium (K)-Total			93.4		%		70-130	19-AUG-20
Selenium (Se)-Total			101.5		%		70-130	19-AUG-20
Silicon (Si)-Total			91.6		%		70-130	19-AUG-20
Silver (Ag)-Total			100.7		%		70-130	19-AUG-20
Sodium (Na)-Total			97.8		%		70-130	19-AUG-20
Strontium (Sr)-Total			N/A	MS-B	%		-	19-AUG-20
Thallium (Tl)-Total			101.2		%		70-130	19-AUG-20
Tin (Sn)-Total			99.0		%		70-130	19-AUG-20
Titanium (Ti)-Total			95.0		%		70-130	19-AUG-20
Uranium (U)-Total			104.2		%		70-130	19-AUG-20
Vanadium (V)-Total			97.8		%		70-130	19-AUG-20
Zinc (Zn)-Total			91.8		%		70-130	19-AUG-20
Batch	R5193739							
WG3385686-1	MB							
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5191746							
WG3386206-6	LCS							
Ammonia as N			103.4		%		85-115	18-AUG-20
WG3386206-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5189812							
WG3384499-2	LCS							
Nitrite (as N)			100.1		%		90-110	14-AUG-20
WG3384499-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5189812							
WG3384499-2	LCS							
Nitrate (as N)			102.6		%		90-110	14-AUG-20
WG3384499-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-AUG-20
ORP-CL	Water							
Batch	R5189407							
WG3383539-7	CRM	CL-ORP						
ORP			229		mV		210-230	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5190317							
WG3385016-18	LCS							
Phosphorus (P)-Total			108.3		%		80-120	17-AUG-20
WG3385016-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-AUG-20
PH-CL	Water							
Batch	R5191343							
WG3386441-2	LCS							
pH			6.98		pH		6.9-7.1	18-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-10	LCS							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	13-AUG-20
WG3382949-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20
SO4-IC-N-CL	Water							
Batch	R5189812							
WG3384499-2	LCS							
Sulfate (SO4)			100.4		%		90-110	14-AUG-20
WG3384499-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191924							
WG3385511-5	LCS							
Total Dissolved Solids			100.4		%		85-115	18-AUG-20
WG3385511-4	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5191924							
WG3385511-4	MB							
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
TKN-L-F-CL		Water						
Batch	R5190807							
WG3385755-10	LCS							
Total Kjeldahl Nitrogen			93.9		%		75-125	18-AUG-20
WG3385755-14	LCS							
Total Kjeldahl Nitrogen			91.4		%		75-125	18-AUG-20
WG3385755-2	LCS							
Total Kjeldahl Nitrogen			93.8		%		75-125	18-AUG-20
WG3385755-5	LCS							
Total Kjeldahl Nitrogen			92.2		%		75-125	18-AUG-20
WG3385755-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-AUG-20
WG3385755-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-AUG-20
WG3385755-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-AUG-20
WG3385755-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-AUG-20
TSS-L-CL		Water						
Batch	R5191850							
WG3385510-4	LCS							
Total Suspended Solids			90.4		%		85-115	18-AUG-20
WG3385510-3	MB							
Total Suspended Solids			<1.0		mg/L		1	18-AUG-20
TURBIDITY-CL		Water						
Batch	R5187018							
WG3383089-5	LCS							
Turbidity			98.5		%		85-115	13-AUG-20
WG3383089-4	MB							
Turbidity			<0.10		NTU		0.1	13-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	12-AUG-20 08:09	14-AUG-20 10:00	0.25	50	hours	EHTR-FM
pH	1	12-AUG-20 08:09	18-AUG-20 13:00	0.25	149	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:


Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2488309 were received on 13-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 01-03-Q3-2020		TURNAROUND TIME:				RUSH:					
PROJECT/CLIENT INFO					LABORATORY				OTHER INFO		
Facility Name / Job# Regional Effects Program		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Project Manager Cam Jaeger		Lab Contact Lyudmyla Shvets		Email 1: cam.jaeger@teck.com		X	X	X			
Email cam.jaeger@teck.com		Email lyudmyla.shvets@alsglobal.com		Email 2: jennifer.dewerk@teck.com		X	X	X			
Address 421 Pine Ave		Address 2559 29 st NE		Email 3: teckcoal@equisonline.com		X	X	X			
City Sparwood Province BC		City Calgary Province AB		Email 4:				X			
Postal Code V0B 2G0 Country Canada		Postal Code T1Y 7B5 Country Canada		Email 5:							
Phone Number 250-425-8449		Phone Number 403-407-1800		PO number		690772					

SAMPLE DETAILS							ANALYSIS REQUESTED							Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	F	N	F	N	F	N	N			
 L2488309-COFC								ALS_Package-DOC	H2SO4	F	N	F	N	F	N	N			
RG_DW-01-03_WP_Q3-2020_NP	RG_DW-01-03	WP	N	Aug 12	8:09	G	7	ALS_Package-TKN/TOC	H2SO4			HCL	HCL	HNO3	HNO3				
								HG-D-CYAF-VA											
								HG-T-CYAF-VA											
								TECKCOAL-MET-D-VA											
								TECKCOAL-MET-T-VA											
								TECKCOAL-ROUTINE-VA											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>JM</i>	08/13 8:45

SERVICE REQUEST (rush - subject to availability)		Sampler's Name Jennifer de Werk		Mobile # 250-910-7287	
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Sampler's Signature <i>Jennifer de Werk</i>		Date/Time <i>Aug 12, 20</i>	
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS				

11°



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 21-AUG-20
Report Date: 03-FEB-21 16:26 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2492436
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 3-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported for all samples.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492436-1 GH_GA-MW-1_WG_2020-07-06_N							
Sampled By: JF/SS on 20-AUG-20 @ 11:27							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	441		5.0	mg/L		24-AUG-20	R5198982
Carbonate (CO3)	10.3		5.0	mg/L		24-AUG-20	R5198982
Dissolved Organic Carbon	3.08		0.50	mg/L		25-AUG-20	R5201720
Hydroxide (OH)	<5.0		5.0	mg/L		24-AUG-20	R5198982
Total Kjeldahl Nitrogen	0.380		0.050	mg/L		23-AUG-20	R5197562
Mercury (Hg)-Total	0.00077		0.00050	ug/L		25-AUG-20	R5200029
Total Organic Carbon	2.84		0.50	mg/L		25-AUG-20	R5201720
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-AUG-20	24-AUG-20	R5199449
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-AUG-20	25-AUG-20	R5199559
Dissolved Mercury Filtration Location	FIELD					25-AUG-20	R5199833
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199449
Antimony (Sb)-Dissolved	0.00048		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Arsenic (As)-Dissolved	0.00055		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Barium (Ba)-Dissolved	0.0387		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Boron (B)-Dissolved	0.856		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Cadmium (Cd)-Dissolved	0.0240		0.0050	ug/L	24-AUG-20	24-AUG-20	R5199449
Calcium (Ca)-Dissolved	57.0		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Cobalt (Co)-Dissolved	0.47		0.10	ug/L	24-AUG-20	24-AUG-20	R5199449
Copper (Cu)-Dissolved	0.0527		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Iron (Fe)-Dissolved	0.035		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Lithium (Li)-Dissolved	0.172		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Magnesium (Mg)-Dissolved	32.3		0.10	mg/L	24-AUG-20	24-AUG-20	R5199449
Manganese (Mn)-Dissolved	0.181		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Molybdenum (Mo)-Dissolved	0.00600		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Nickel (Ni)-Dissolved	0.00384		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Potassium (K)-Dissolved	3.35		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Selenium (Se)-Dissolved	0.153		0.050	ug/L	24-AUG-20	24-AUG-20	R5199449
Silicon (Si)-Dissolved	4.02		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Silver (Ag)-Dissolved	0.000027		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Sodium (Na)-Dissolved	159		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Strontium (Sr)-Dissolved	4.39		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Thallium (Tl)-Dissolved	0.000032		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Uranium (U)-Dissolved	0.00168		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Hardness							
Hardness (as CaCO3)	275		0.50	mg/L		25-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		25-AUG-20	R5200538

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492436-1 GH_GA-MW-1_WG_2020-07-06_N Sampled By: JF/SS on 20-AUG-20 @ 11:27 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	361		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Carbonate (as CaCO3)	17.2		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Total (as CaCO3)	378		1.0	mg/L		24-AUG-20	R5198982
Ammonia, Total (as N)							
Ammonia as N	0.300		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-AUG-20	R5197601
Chloride in Water by IC							
Chloride (Cl)	16.7	DLHC	2.5	mg/L		21-AUG-20	R5197601
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1160		2.0	uS/cm		24-AUG-20	R5198982
Fluoride in Water by IC							
Fluoride (F)	0.64	DLHC	0.10	mg/L		21-AUG-20	R5197601
Ion Balance Calculation							
Ion Balance	92.7		-100	%		26-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.8			%		26-AUG-20	
Anion Sum	13.5			meq/L		26-AUG-20	
Cation Sum	12.5			meq/L		26-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.105	DLHC	0.025	mg/L		21-AUG-20	R5197601
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-AUG-20	R5197601
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0331		0.0010	mg/L		21-AUG-20	R5196636
Oxidation redution potential by elect.							
ORP	339		-1000	mV		21-AUG-20	R5196696
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.043	DLM	0.020	mg/L		25-AUG-20	R5199828
Sulfate in Water by IC							
Sulfate (SO4)	260	DLHC	1.5	mg/L		21-AUG-20	R5197601
Total Dissolved Solids							
Total Dissolved Solids	739	DLHC	20	mg/L		26-AUG-20	R5202973
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity							
Turbidity	1.69		0.10	NTU		21-AUG-20	R5196698
pH							
pH	8.48		0.10	pH		24-AUG-20	R5198982
L2492436-2 GH_GA-MW-2_WG_2020-07-06_N Sampled By: JF/SS on 20-AUG-20 @ 14:27 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	250		5.0	mg/L		24-AUG-20	R5198982
Carbonate (CO3)	<5.0		5.0	mg/L		24-AUG-20	R5198982
Dissolved Organic Carbon	<0.50		0.50	mg/L		25-AUG-20	R5201720
Hydroxide (OH)	<5.0		5.0	mg/L		24-AUG-20	R5198982
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		23-AUG-20	R5197562
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		25-AUG-20	R5200029
Total Organic Carbon	<0.50		0.50	mg/L		25-AUG-20	R5201720

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492436-2 GH_GA-MW-2_WG_2020-07-06_N							
Sampled By: JF/SS on 20-AUG-20 @ 14:27							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-AUG-20	24-AUG-20	R5199449
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-AUG-20	25-AUG-20	R5199559
Dissolved Mercury Filtration Location	FIELD					25-AUG-20	R5199833
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199449
Antimony (Sb)-Dissolved	0.00169		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Arsenic (As)-Dissolved	0.00025		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Barium (Ba)-Dissolved	0.0385		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Boron (B)-Dissolved	0.020		0.010	mg/L	24-AUG-20	25-AUG-20	R5200157
Cadmium (Cd)-Dissolved	0.0663		0.0050	ug/L	24-AUG-20	24-AUG-20	R5199449
Calcium (Ca)-Dissolved	182		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Cobalt (Co)-Dissolved	0.60		0.10	ug/L	24-AUG-20	24-AUG-20	R5199449
Copper (Cu)-Dissolved	0.00288		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Lithium (Li)-Dissolved	0.0209		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Magnesium (Mg)-Dissolved	55.0		0.10	mg/L	24-AUG-20	24-AUG-20	R5199449
Manganese (Mn)-Dissolved	0.109		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Molybdenum (Mo)-Dissolved	0.0471		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Nickel (Ni)-Dissolved	0.00929		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Potassium (K)-Dissolved	1.59		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Selenium (Se)-Dissolved	22.6		0.050	ug/L	24-AUG-20	24-AUG-20	R5199449
Silicon (Si)-Dissolved	3.81		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Sodium (Na)-Dissolved	11.2		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Strontium (Sr)-Dissolved	0.735		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Uranium (U)-Dissolved	0.00792		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Zinc (Zn)-Dissolved	0.0151		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Hardness							
Hardness (as CaCO3)	681		0.50	mg/L		25-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		25-AUG-20	R5200538
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	205		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Total (as CaCO3)	205		1.0	mg/L		24-AUG-20	R5198982
Ammonia, Total (as N)							
Ammonia as N	0.0200		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-AUG-20	R5197601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492436-2 GH_GA-MW-2_WG_2020-07-06_N							
Sampled By: JF/SS on 20-AUG-20 @ 14:27							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	6.7	DLHC	2.5	mg/L		21-AUG-20	R5197601
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1160		2.0	uS/cm		24-AUG-20	R5198982
Fluoride in Water by IC							
Fluoride (F)	0.12	DLHC	0.10	mg/L		21-AUG-20	R5197601
Ion Balance Calculation							
Cation - Anion Balance	-0.8			%		26-AUG-20	
Anion Sum	14.4			meq/L		26-AUG-20	
Cation Sum	14.1			meq/L		26-AUG-20	
Ion Balance Calculation							
Ion Balance	98.4		-100	%		26-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	9.60	DLHC	0.025	mg/L		21-AUG-20	R5197601
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.128	DLHC	0.0050	mg/L		21-AUG-20	R5197601
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0029		0.0010	mg/L		21-AUG-20	R5196636
Oxidation redution potential by elect.							
ORP	448		-1000	mV		21-AUG-20	R5196696
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.023	DLM	0.010	mg/L		25-AUG-20	R5199828
Sulfate in Water by IC							
Sulfate (SO4)	451	DLHC	1.5	mg/L		21-AUG-20	R5197601
Total Dissolved Solids							
Total Dissolved Solids	906	DLHC	20	mg/L		26-AUG-20	R5202973
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity							
Turbidity	0.20		0.10	NTU		21-AUG-20	R5196698
pH							
pH	8.21		0.10	pH		24-AUG-20	R5198982

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2492436

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0
 Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5200538							
WG3391329-6 DUP		L2492436-2						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	25-AUG-20
WG3391329-5 LCS								
Acidity (as CaCO3)			98.9		%		85-115	25-AUG-20
WG3391329-4 MB								
Acidity (as CaCO3)			1.5		mg/L		2	25-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5198982							
WG3389872-14 LCS								
Alkalinity, Total (as CaCO3)			100.2		%		85-115	24-AUG-20
WG3389872-13 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2 LCS								
Beryllium (Be)-Dissolved			95.8		%		80-120	24-AUG-20
WG3389976-1 MB		NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-AUG-20
BIC-CL								
	Water							
Batch	R5198982							
WG3389872-13 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	24-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-14 LCS								
Bromide (Br)			101.9		%		85-115	21-AUG-20
WG3389325-13 MB								
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5201720							
WG3391674-2 LCS								
Dissolved Organic Carbon			102.0		%		80-120	25-AUG-20
WG3391674-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5201720							
WG3391674-2 LCS								
Total Organic Carbon			102.0		%		80-120	25-AUG-20
WG3391674-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
CL-IC-N-CL	Water							
Batch	R5197601							
WG3389325-14 LCS								
Chloride (Cl)			98.2		%		90-110	21-AUG-20
WG3389325-13 MB								
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-20
CO3-CL	Water							
Batch	R5198982							
WG3389872-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-AUG-20
EC-L-PCT-CL	Water							
Batch	R5198982							
WG3389872-14 LCS								
Conductivity (@ 25C)			97.3		%		90-110	24-AUG-20
WG3389872-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-AUG-20
F-IC-N-CL	Water							
Batch	R5197601							
WG3389325-14 LCS								
Fluoride (F)			99.8		%		90-110	21-AUG-20
WG3389325-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5199559							
WG3390759-6 LCS								
Mercury (Hg)-Dissolved			97.1		%		80-120	25-AUG-20
WG3390759-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-AUG-20
WG3390759-8 MS		L2492436-2						
Mercury (Hg)-Dissolved			103.3		%		70-130	25-AUG-20
HG-T-U-CVAF-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA		Water						
Batch	R5200029							
WG3390953-2	LCS							
Mercury (Hg)-Total			90.8		%		80-120	25-AUG-20
WG3390953-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	25-AUG-20
MET-D-CCMS-VA		Water						
Batch	R5199449							
WG3389976-2	LCS							
Aluminum (Al)-Dissolved			98.1		%		80-120	24-AUG-20
Antimony (Sb)-Dissolved			96.3		%		80-120	24-AUG-20
Arsenic (As)-Dissolved			97.1		%		80-120	24-AUG-20
Barium (Ba)-Dissolved			98.0		%		80-120	24-AUG-20
Bismuth (Bi)-Dissolved			101.0		%		80-120	24-AUG-20
Boron (B)-Dissolved			92.7		%		80-120	24-AUG-20
Cadmium (Cd)-Dissolved			97.2		%		80-120	24-AUG-20
Calcium (Ca)-Dissolved			96.7		%		80-120	24-AUG-20
Chromium (Cr)-Dissolved			96.8		%		80-120	24-AUG-20
Cobalt (Co)-Dissolved			96.4		%		80-120	24-AUG-20
Copper (Cu)-Dissolved			95.5		%		80-120	24-AUG-20
Iron (Fe)-Dissolved			104.5		%		80-120	24-AUG-20
Lead (Pb)-Dissolved			98.6		%		80-120	24-AUG-20
Lithium (Li)-Dissolved			97.1		%		80-120	24-AUG-20
Magnesium (Mg)-Dissolved			95.4		%		80-120	24-AUG-20
Manganese (Mn)-Dissolved			99.0		%		80-120	24-AUG-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	24-AUG-20
Nickel (Ni)-Dissolved			96.7		%		80-120	24-AUG-20
Potassium (K)-Dissolved			104.1		%		80-120	24-AUG-20
Selenium (Se)-Dissolved			99.8		%		80-120	24-AUG-20
Silicon (Si)-Dissolved			112.7		%		60-140	24-AUG-20
Silver (Ag)-Dissolved			100.1		%		80-120	24-AUG-20
Sodium (Na)-Dissolved			100.3		%		80-120	24-AUG-20
Strontium (Sr)-Dissolved			100.7		%		80-120	24-AUG-20
Thallium (Tl)-Dissolved			100.4		%		80-120	24-AUG-20
Tin (Sn)-Dissolved			97.0		%		80-120	24-AUG-20
Titanium (Ti)-Dissolved			97.8		%		80-120	24-AUG-20
Uranium (U)-Dissolved			102.8		%		80-120	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2	LCS							
Vanadium (V)-Dissolved			97.5		%		80-120	24-AUG-20
Zinc (Zn)-Dissolved			97.1		%		80-120	24-AUG-20
WG3389976-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5200876							
WG3390871-2	LCS							
Ammonia as N			94.1		%		85-115	25-AUG-20
WG3390871-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-AUG-20
NO2-L-IC-N-CL								
Water								
Batch	R5197601							
WG3389325-14	LCS							
Nitrite (as N)			96.2		%		90-110	21-AUG-20
WG3389325-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
NO3-L-IC-N-CL								
Water								
Batch	R5197601							
WG3389325-14	LCS							
Nitrate (as N)			102.1		%		90-110	21-AUG-20
WG3389325-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
OH-CL								
Water								
Batch	R5198982							
WG3389872-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-AUG-20
ORP-CL								
Water								
Batch	R5196696							
WG3388952-3	CRM	CL-ORP						
ORP			221		mV		210-230	21-AUG-20
P-T-L-COL-CL								
Water								
Batch	R5199828							
WG3390762-10	LCS							
Phosphorus (P)-Total			106.9		%		80-120	25-AUG-20
WG3390762-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-AUG-20
PH-CL								
Water								
Batch	R5198982							
WG3389872-14	LCS							
pH			6.98		pH		6.9-7.1	24-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5196636							
WG3388785-10 LCS								
Orthophosphate-Dissolved (as P)			100.4		%		80-120	21-AUG-20
WG3388785-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-AUG-20
SO4-IC-N-CL	Water							
Batch	R5197601							
WG3389325-14 LCS								
Sulfate (SO4)			100.2		%		90-110	21-AUG-20
WG3389325-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5202973							
WG3391334-2 LCS								
Total Dissolved Solids			96.2		%		85-115	26-AUG-20
WG3391334-1 MB								
Total Dissolved Solids			<10		mg/L		10	26-AUG-20
TKN-L-F-CL	Water							
Batch	R5197562							
WG3389289-11 LCS								
Total Kjeldahl Nitrogen			118.6		%		75-125	23-AUG-20
WG3389289-13 LCS								
Total Kjeldahl Nitrogen			107.9		%		75-125	23-AUG-20
WG3389289-2 LCS								
Total Kjeldahl Nitrogen			112.8		%		75-125	23-AUG-20
WG3389289-5 LCS								
Total Kjeldahl Nitrogen			110.9		%		75-125	23-AUG-20
WG3389289-7 LCS								
Total Kjeldahl Nitrogen			112.8		%		75-125	23-AUG-20
WG3389289-9 LCS								
Total Kjeldahl Nitrogen			110.0		%		75-125	23-AUG-20
WG3389289-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20



Quality Control Report

Workorder: L2492436

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5197562							
WG3389289-6 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
WG3389289-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-20
TSS-L-CL	Water							
Batch	R5202984							
WG3391335-2 LCS								
Total Suspended Solids			88.4		%		85-115	26-AUG-20
WG3391335-1 MB								
Total Suspended Solids			<1.0		mg/L		1	26-AUG-20
TURBIDITY-CL	Water							
Batch	R5196698							
WG3388930-8 LCS								
Turbidity			96.4		%		85-115	21-AUG-20
WG3388930-7 MB								
Turbidity			<0.10		NTU		0.1	21-AUG-20

Quality Control Report

Workorder: L2492436

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2492436

Report Date: 03-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-AUG-20 11:27	21-AUG-20 20:00	0.25	33	hours	EHTR-FM
	2	20-AUG-20 14:27	21-AUG-20 20:00	0.25	30	hours	EHTR-FM
pH	1	20-AUG-20 11:27	24-AUG-20 12:00	0.25	96	hours	EHTR-FM
	2	20-AUG-20 14:27	24-AUG-20 12:00	0.25	94	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2492436 were received on 21-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Justine Buma-a			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	leigh.stickney@teck.com			Email	Justine.Bumaa@ALSGlobal.com			Email 2:	Jeremy.Enns@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2492436-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL	PRESERV.	ANALYSIS REQUESTED							BOD/Colour	EPH	PAH	TSS/TURB	SULFIDES
										ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC					
GH_GA-MW-1_WG_2020-07-06_N	GH_GA-MW-1	WG		8/20/2020	11:27	G	6	Y	H2SO4	HCL	N	HNO3	HNO3	N	H2SO4						
GH_GA-MW-2_WG_2020-07-06_N	GH_GA-MW-2	WG		8/20/2020	14:27	G	6	Y	H2SO4	HCL	N	HNO3	HNO3	N	H2SO4						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

SERVICE REQUEST (rush - subject to availability) Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS				

AM

8/21 8:45

Regular (default) X	Sampler's Name	JF/SS	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

70



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 22-AUG-20
Report Date: 02-FEB-21 16:38 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2492687
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 2-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported for all samples.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-1 GH_GA-MW-4_WG_2020-07-06_NP							
Sampled By: JF/SS on 21-AUG-20 @ 11:35							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	240		5.0	mg/L		27-AUG-20	R5202821
Carbonate (CO3)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Dissolved Organic Carbon	0.75		0.50	mg/L		25-AUG-20	R5202491
Hydroxide (OH)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Total Kjeldahl Nitrogen	0.239		0.050	mg/L		24-AUG-20	R5202200
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-AUG-20	R5202236
Total Organic Carbon	0.82		0.50	mg/L		25-AUG-20	R5202491
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-20	25-AUG-20	R5201744
Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	28-AUG-20	R5203312
Dissolved Mercury Filtration Location	FIELD					28-AUG-20	R5203200
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-20	25-AUG-20	R5201744
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Barium (Ba)-Dissolved	0.0830		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Boron (B)-Dissolved	0.012		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cadmium (Cd)-Dissolved	0.0079		0.0050	ug/L	25-AUG-20	25-AUG-20	R5201744
Calcium (Ca)-Dissolved	52.8		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Chromium (Cr)-Dissolved	0.00017		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-20	25-AUG-20	R5201744
Copper (Cu)-Dissolved	0.00041		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Lithium (Li)-Dissolved	0.0163		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Magnesium (Mg)-Dissolved	19.0		0.10	mg/L	25-AUG-20	25-AUG-20	R5201744
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Molybdenum (Mo)-Dissolved	0.00142		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-20	25-AUG-20	R5201744
Potassium (K)-Dissolved	1.04		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Selenium (Se)-Dissolved	2.63		0.050	ug/L	25-AUG-20	25-AUG-20	R5201744
Silicon (Si)-Dissolved	2.39		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Sodium (Na)-Dissolved	5.75		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Strontium (Sr)-Dissolved	0.184		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Uranium (U)-Dissolved	0.00141		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-20	25-AUG-20	R5201744
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Hardness							
Hardness (as CaCO3)	210		0.50	mg/L		26-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		27-AUG-20	R5203321

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-1 GH_GA-MW-4_WG_2020-07-06_NP							
Sampled By: JF/SS on 21-AUG-20 @ 11:35							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	197		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Total (as CaCO3)	197		1.0	mg/L		27-AUG-20	R5202821
Ammonia, Total (as N)							
Ammonia as N	0.134		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-AUG-20	R5197785
Chloride in Water by IC							
Chloride (Cl)	1.36		0.50	mg/L		22-AUG-20	R5197785
Electrical Conductivity (EC)							
Conductivity (@ 25C)	400		2.0	uS/cm		27-AUG-20	R5202821
Fluoride in Water by IC							
Fluoride (F)	0.166		0.020	mg/L		22-AUG-20	R5197785
Ion Balance Calculation							
Cation - Anion Balance	-3.2			%		28-AUG-20	
Anion Sum	4.79			meq/L		28-AUG-20	
Cation Sum	4.48			meq/L		28-AUG-20	
Ion Balance Calculation							
Ion Balance	93.7		-100	%		28-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.453		0.0050	mg/L		22-AUG-20	R5197785
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		22-AUG-20	R5197785
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0024		0.0010	mg/L		22-AUG-20	R5198060
Oxidation redution potential by elect.							
ORP	336		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		28-AUG-20	R5203597
Sulfate in Water by IC							
Sulfate (SO4)	37.3		0.30	mg/L		22-AUG-20	R5197785
Total Dissolved Solids							
Total Dissolved Solids	242	DLHC	20	mg/L		26-AUG-20	R5202973
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity							
Turbidity	0.11		0.10	NTU		23-AUG-20	R5197757
pH							
pH	8.02		0.10	pH		27-AUG-20	R5202821
L2492687-2 GH_DUP2_WG_2020-07-06_NP							
Sampled By: JF/SS on 21-AUG-20 @ 11:35							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	242		5.0	mg/L		27-AUG-20	R5202821
Carbonate (CO3)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Dissolved Organic Carbon	0.82		0.50	mg/L		25-AUG-20	R5202491
Hydroxide (OH)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Total Kjeldahl Nitrogen	0.176		0.050	mg/L		24-AUG-20	R5202200
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-AUG-20	R5202236
Total Organic Carbon	0.81		0.50	mg/L		25-AUG-20	R5202491

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-2 GH_DUP2_WG_2020-07-06_NP							
Sampled By: JF/SS on 21-AUG-20 @ 11:35							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-20	25-AUG-20	R5201744
Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-20	28-AUG-20	R5203312
Dissolved Mercury Filtration Location	FIELD					28-AUG-20	R5203200
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-20	25-AUG-20	R5201744
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Barium (Ba)-Dissolved	0.0810		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Boron (B)-Dissolved	0.012		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cadmium (Cd)-Dissolved	0.0091		0.0050	ug/L	25-AUG-20	25-AUG-20	R5201744
Calcium (Ca)-Dissolved	51.8		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-20	25-AUG-20	R5201744
Copper (Cu)-Dissolved	0.00044		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Lithium (Li)-Dissolved	0.0158		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Magnesium (Mg)-Dissolved	19.0		0.10	mg/L	25-AUG-20	25-AUG-20	R5201744
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Molybdenum (Mo)-Dissolved	0.00142		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Nickel (Ni)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Potassium (K)-Dissolved	1.04		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Selenium (Se)-Dissolved	2.49		0.050	ug/L	25-AUG-20	25-AUG-20	R5201744
Silicon (Si)-Dissolved	2.38		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Sodium (Na)-Dissolved	5.63		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Strontium (Sr)-Dissolved	0.183		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Uranium (U)-Dissolved	0.00139		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Hardness							
Hardness (as CaCO3)	208		0.50	mg/L		26-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.4		1.0	mg/L		27-AUG-20	R5203321
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	199		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		27-AUG-20	R5202821
Ammonia, Total (as N)							
Ammonia as N	0.0639		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-AUG-20	R5197785

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-2 GH_DUP2_WG_2020-07-06_NP Sampled By: JF/SS on 21-AUG-20 @ 11:35 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	1.35		0.50	mg/L		22-AUG-20	R5197785
Electrical Conductivity (EC) Conductivity (@ 25C)	401		2.0	uS/cm		27-AUG-20	R5202821
Fluoride in Water by IC Fluoride (F)	0.165		0.020	mg/L		22-AUG-20	R5197785
Ion Balance Calculation Ion Balance	91.6		-100	%		28-AUG-20	
Ion Balance Calculation Cation - Anion Balance	-4.4			%		28-AUG-20	
Anion Sum	4.83			meq/L		28-AUG-20	
Cation Sum	4.42			meq/L		28-AUG-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.455		0.0050	mg/L		22-AUG-20	R5197785
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		22-AUG-20	R5197785
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		22-AUG-20	R5198060
Oxidation redution potential by elect. ORP	326		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total Phosphorus (P)-Total	0.0024		0.0020	mg/L		28-AUG-20	R5203597
Sulfate in Water by IC Sulfate (SO4)	37.4		0.30	mg/L		22-AUG-20	R5197785
Total Dissolved Solids Total Dissolved Solids	240	DLHC	20	mg/L		26-AUG-20	R5202973
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity Turbidity	<0.10		0.10	NTU		23-AUG-20	R5197757
pH pH	8.09		0.10	pH		27-AUG-20	R5202821
L2492687-3 GH_BLNK2_WG_2020-07-06_NP Sampled By: JF/SS on 21-AUG-20 @ 11:35 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Carbonate (CO3)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Dissolved Organic Carbon	<0.50		0.50	mg/L		25-AUG-20	R5202491
Hydroxide (OH)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-SEP-20	R5202200
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-AUG-20	R5202236
Total Organic Carbon	<0.50		0.50	mg/L		25-AUG-20	R5202491
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-20	25-AUG-20	R5201744
Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-20	28-AUG-20	R5203312
Dissolved Mercury Filtration Location	FIELD					28-AUG-20	R5203200
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					25-AUG-20	R5200124

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-3 GH_BLNK2_WG_2020-07-06_NP							
Sampled By: JF/SS on 21-AUG-20 @ 11:35							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-20	25-AUG-20	R5201744
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Boron (B)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	25-AUG-20	25-AUG-20	R5201744
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-20	25-AUG-20	R5201744
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	25-AUG-20	25-AUG-20	R5201744
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	25-AUG-20	R5201744
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-20	25-AUG-20	R5201744
Potassium (K)-Dissolved	<0.050		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	25-AUG-20	25-AUG-20	R5201744
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	25-AUG-20	25-AUG-20	R5201744
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	25-AUG-20	25-AUG-20	R5201744
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-20	25-AUG-20	R5201744
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	25-AUG-20	25-AUG-20	R5201744
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-20	25-AUG-20	R5201744
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-20	25-AUG-20	R5201744
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-20	25-AUG-20	R5201744
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		26-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-AUG-20	R5203321
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Ammonia, Total (as N)							
Ammonia as N	0.0208	RRV	0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		22-AUG-20	R5197785
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		22-AUG-20	R5197785
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-AUG-20	R5202821
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		22-AUG-20	R5197785
Ion Balance Calculation							
Ion Balance	0.0		-100	%		28-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492687-3 GH_BLNK2_WG_2020-07-06_NP Sampled By: JF/SS on 21-AUG-20 @ 11:35 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		28-AUG-20	
Anion Sum	<0.10			meq/L		28-AUG-20	
Cation Sum	<0.10			meq/L		28-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		22-AUG-20	R5197785
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		22-AUG-20	R5197785
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-AUG-20	R5198060
Oxidation redution potential by elect.							
ORP	265		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		28-AUG-20	R5203597
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		22-AUG-20	R5197785
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		26-AUG-20	R5202973
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity							
Turbidity	<0.10		0.10	NTU		23-AUG-20	R5197757
pH							
pH	5.44		0.10	pH		27-AUG-20	R5202821
L2492687-4 GH_BLNK1_WG_2020-01-06_NP Sampled By: JF/SS on 21-AUG-20 @ 11:35 Matrix: WG							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.*

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2492687

Report Date: 02-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5203321							
WG3393319-2	LCS							
Acidity (as CaCO3)			105.7		%		85-115	27-AUG-20
WG3393319-1	MB							
Acidity (as CaCO3)			1.4		mg/L		2	27-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5202821							
WG3392774-5	LCS							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	27-AUG-20
WG3392774-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5201744							
WG3391112-2	LCS							
Beryllium (Be)-Dissolved			95.3		%		80-120	25-AUG-20
WG3391112-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-20
BIC-CL								
	Water							
Batch	R5202821							
WG3392774-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5197785							
WG3389373-10	LCS							
Bromide (Br)			102.0		%		85-115	22-AUG-20
WG3389373-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5202491							
WG3391690-2	LCS							
Dissolved Organic Carbon			103.6		%		80-120	25-AUG-20
WG3391690-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2492687

Report Date: 02-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5202491							
WG3391690-2	LCS							
Total Organic Carbon			105.4		%		80-120	25-AUG-20
WG3391690-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-20
CL-IC-N-CL	Water							
Batch	R5197785							
WG3389373-10	LCS							
Chloride (Cl)			100.9		%		90-110	22-AUG-20
WG3389373-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-20
CO3-CL	Water							
Batch	R5202821							
WG3392774-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	27-AUG-20
EC-L-PCT-CL	Water							
Batch	R5202821							
WG3392774-5	LCS							
Conductivity (@ 25C)			95.6		%		90-110	27-AUG-20
WG3392774-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-20
F-IC-N-CL	Water							
Batch	R5197785							
WG3389373-10	LCS							
Fluoride (F)			101.8		%		90-110	22-AUG-20
WG3389373-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5203312							
WG3393154-2	LCS							
Mercury (Hg)-Dissolved			92.5		%		80-120	28-AUG-20
WG3393154-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-AUG-20
HG-T-U-CVAF-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA								
	Water							
Batch	R5202236							
WG3392070-2	LCS							
Mercury (Hg)-Total			87.8		%		80-120	26-AUG-20
WG3392070-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	26-AUG-20
WG3392070-7	MS	L2492687-2						
Mercury (Hg)-Total			77.1		%		70-130	26-AUG-20
MET-D-CCMS-VA								
	Water							
Batch	R5201744							
WG3391112-2	LCS							
Aluminum (Al)-Dissolved			97.0		%		80-120	25-AUG-20
Antimony (Sb)-Dissolved			99.3		%		80-120	25-AUG-20
Arsenic (As)-Dissolved			97.4		%		80-120	25-AUG-20
Barium (Ba)-Dissolved			96.3		%		80-120	25-AUG-20
Bismuth (Bi)-Dissolved			96.5		%		80-120	25-AUG-20
Boron (B)-Dissolved			96.0		%		80-120	25-AUG-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	25-AUG-20
Calcium (Ca)-Dissolved			98.9		%		80-120	25-AUG-20
Chromium (Cr)-Dissolved			100.2		%		80-120	25-AUG-20
Cobalt (Co)-Dissolved			99.8		%		80-120	25-AUG-20
Copper (Cu)-Dissolved			96.0		%		80-120	25-AUG-20
Iron (Fe)-Dissolved			97.1		%		80-120	25-AUG-20
Lead (Pb)-Dissolved			95.8		%		80-120	25-AUG-20
Lithium (Li)-Dissolved			98.6		%		80-120	25-AUG-20
Magnesium (Mg)-Dissolved			98.3		%		80-120	25-AUG-20
Manganese (Mn)-Dissolved			95.6		%		80-120	25-AUG-20
Molybdenum (Mo)-Dissolved			95.6		%		80-120	25-AUG-20
Nickel (Ni)-Dissolved			99.1		%		80-120	25-AUG-20
Potassium (K)-Dissolved			99.0		%		80-120	25-AUG-20
Selenium (Se)-Dissolved			99.3		%		80-120	25-AUG-20
Silicon (Si)-Dissolved			96.8		%		60-140	25-AUG-20
Silver (Ag)-Dissolved			99.1		%		80-120	25-AUG-20
Sodium (Na)-Dissolved			99.3		%		80-120	25-AUG-20
Strontium (Sr)-Dissolved			104.8		%		80-120	25-AUG-20
Thallium (Tl)-Dissolved			94.0		%		80-120	25-AUG-20
Tin (Sn)-Dissolved			98.5		%		80-120	25-AUG-20
Titanium (Ti)-Dissolved			93.0		%		80-120	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5201744							
WG3391112-2	LCS							
Uranium (U)-Dissolved			96.7		%		80-120	25-AUG-20
Vanadium (V)-Dissolved			101.5		%		80-120	25-AUG-20
Zinc (Zn)-Dissolved			96.9		%		80-120	25-AUG-20
WG3391112-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5200876							
WG3390871-26	LCS							
Ammonia as N			106.8		%		85-115	25-AUG-20
WG3390871-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-AUG-20
NO2-L-IC-N-CL								
Water								
Batch	R5197785							
WG3389373-10	LCS							
Nitrite (as N)			101.2		%		90-110	22-AUG-20
WG3389373-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-20
NO3-L-IC-N-CL								
Water								
Batch	R5197785							
WG3389373-10	LCS							
Nitrate (as N)			101.0		%		90-110	22-AUG-20
WG3389373-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-20
OH-CL								
Water								
Batch	R5202821							
WG3392774-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	27-AUG-20
ORP-CL								
Water								
Batch	R5200135							
WG3390977-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-20
P-T-L-COL-CL								
Water								
Batch	R5203597							
WG3393521-2	LCS							
Phosphorus (P)-Total			111.7		%		80-120	28-AUG-20
WG3393521-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-AUG-20
PH-CL								
Water								
Batch	R5202821							
WG3392774-5	LCS							
pH			6.99		pH		6.9-7.1	27-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5198060							
WG3389228-2 LCS								
Orthophosphate-Dissolved (as P)			99.6		%		80-120	22-AUG-20
WG3389228-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-20
SO4-IC-N-CL	Water							
Batch	R5197785							
WG3389373-10 LCS								
Sulfate (SO4)			102.1		%		90-110	22-AUG-20
WG3389373-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5202973							
WG3391334-8 LCS								
Total Dissolved Solids			96.0		%		85-115	26-AUG-20
WG3391334-7 MB								
Total Dissolved Solids			<10		mg/L		10	26-AUG-20
TKN-L-F-CL	Water							
Batch	R5202200							
WG3391977-13 LCS								
Total Kjeldahl Nitrogen			92.5		%		75-125	24-AUG-20
WG3391977-17 LCS								
Total Kjeldahl Nitrogen			93.5		%		75-125	24-AUG-20
WG3391977-2 LCS								
Total Kjeldahl Nitrogen			97.0		%		75-125	24-AUG-20
WG3391977-6 LCS								
Total Kjeldahl Nitrogen			95.2		%		75-125	24-AUG-20
WG3391977-9 LCS								
Total Kjeldahl Nitrogen			94.1		%		75-125	24-AUG-20
WG3391977-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5202984							
WG3391335-4	LCS							
Total Suspended Solids			97.5		%		85-115	26-AUG-20
WG3391335-3	MB							
Total Suspended Solids			<1.0		mg/L		1	26-AUG-20
TURBIDITY-CL	Water							
Batch	R5197757							
WG3389367-2	LCS							
Turbidity			98.4		%		85-115	23-AUG-20
WG3389367-1	MB							
Turbidity			<0.10		NTU		0.1	23-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	21-AUG-20 11:35	25-AUG-20 14:00	0.25	98	hours	EHTR-FM
	2	21-AUG-20 11:35	25-AUG-20 14:00	0.25	98	hours	EHTR-FM
	3	21-AUG-20 11:35	25-AUG-20 14:00	0.25	98	hours	EHTR-FM
pH	1	21-AUG-20 11:35	27-AUG-20 13:00	0.25	145	hours	EHTR-FM
	2	21-AUG-20 11:35	27-AUG-20 13:00	0.25	145	hours	EHTR-FM
	3	21-AUG-20 11:35	27-AUG-20 13:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2492687 were received on 22-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				RUSH:				
PROJECT/CLIENT INFO							LABORATORY			OTHER INFO		
Facility Name / Job# Greenhills Operation							Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Leigh Stickney							Lab Contact Justine Buma-a			Excel <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EDD <input checked="" type="checkbox"/>		
Email leigh.stickney@teck.com							Email Justine.Bumaa@ALSGlobal.com			Email 1: Leigh.Stickney@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
Address P.O. BOX 5000							Address 2559 29 Street NE			Email 2: Jeremy.Enns@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
										Email 3: teckcoal@equisonline.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
										Email 4: jaydon.francis@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
City Elkford Province BC							City Calgary Province AB			Email 5: Brendan.Peachey@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
Postal Code V0B1H0 Country Canada							Postal Code T1Y 7B5 Country Canada			Email 6: DL-Equis-GHO-Field@teck.com <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
Phone Number 250-865-3048							Phone Number 403 407 1794			PO number 684125		

SAMPLE DETAILS ANALYSIS REQUESTED Filtered - F: Field, L: Lab, F1: Field & Lab, N: None



L2492687-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								PH	Y	Y		Y								
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH	TSS/TURB	SULFIDES	
GH_GA-MW-4_WG_2020-07-06_NP	GH_GA-MW-4	WG		8/21/2020	11:35	G	6	1	1	1	1		1	1						
GH_DUP2_WG_2020-07-06_NP	GH_DUP2	WG		8/21/2020	11:35	G	6	1	1	1	1		1	1						
GH_BLNK2_WG_2020-07-06_NP	GH_BLNK2	WG		8/21/2020	11:35	G	6	1	1	1	1		1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	<i>8/22/2020</i>

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	JF/SS	
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

10°C



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 25-AUG-20
Report Date: 03-FEB-21 16:34 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2493686
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 3-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported for all samples.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-1 GH_PHS3_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 12:15							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	340		5.0	mg/L		26-AUG-20	R5201517
Carbonate (CO3)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Hydroxide (OH)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Total Kjeldahl Nitrogen	0.27	TKNI	0.10	mg/L		26-AUG-20	R5201208
Mercury (Hg)-Total	0.00056		0.00050	ug/L		27-AUG-20	R5202792
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-20	26-AUG-20	R5202253
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5201421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202253
Antimony (Sb)-Dissolved	0.00349		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Barium (Ba)-Dissolved	0.0152		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Boron (B)-Dissolved	0.013		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cadmium (Cd)-Dissolved	0.588		0.0050	ug/L	26-AUG-20	26-AUG-20	R5202253
Calcium (Ca)-Dissolved	254		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cobalt (Co)-Dissolved	26.7		0.10	ug/L	26-AUG-20	26-AUG-20	R5202253
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Lithium (Li)-Dissolved	0.120		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Magnesium (Mg)-Dissolved	162		0.10	mg/L	26-AUG-20	26-AUG-20	R5202253
Manganese (Mn)-Dissolved	0.200		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Molybdenum (Mo)-Dissolved	0.0163		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Nickel (Ni)-Dissolved	0.141		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Potassium (K)-Dissolved	6.13		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Selenium (Se)-Dissolved	23.1		0.050	ug/L	26-AUG-20	26-AUG-20	R5202253
Silicon (Si)-Dissolved	2.23		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Sodium (Na)-Dissolved	8.64		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Strontium (Sr)-Dissolved	0.396		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Thallium (Tl)-Dissolved	0.000086		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Uranium (U)-Dissolved	0.0119		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Zinc (Zn)-Dissolved	0.0416		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Hardness							
Hardness (as CaCO3)	1300		0.50	mg/L		27-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-1 GH_PHS3_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 12:15							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0610		0.0030	mg/L		26-AUG-20	R5202253
Antimony (Sb)-Total	0.00350		0.00010	mg/L		26-AUG-20	R5202253
Arsenic (As)-Total	0.00020		0.00010	mg/L		26-AUG-20	R5202253
Barium (Ba)-Total	0.0203		0.00010	mg/L		26-AUG-20	R5202253
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Boron (B)-Total	0.016		0.010	mg/L		26-AUG-20	R5202253
Cadmium (Cd)-Total	0.641		0.0050	ug/L		26-AUG-20	R5202253
Calcium (Ca)-Total	253		0.050	mg/L		26-AUG-20	R5202253
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Cobalt (Co)-Total	27.0		0.10	ug/L		26-AUG-20	R5202253
Copper (Cu)-Total	<0.00050		0.00050	mg/L		26-AUG-20	R5202253
Iron (Fe)-Total	0.037		0.010	mg/L		26-AUG-20	R5202253
Lead (Pb)-Total	0.000096		0.000050	mg/L		26-AUG-20	R5202253
Lithium (Li)-Total	0.120		0.0010	mg/L		26-AUG-20	R5202253
Magnesium (Mg)-Total	161		0.10	mg/L		26-AUG-20	R5202253
Manganese (Mn)-Total	0.205		0.00010	mg/L		26-AUG-20	R5202253
Molybdenum (Mo)-Total	0.0169		0.000050	mg/L		26-AUG-20	R5202253
Nickel (Ni)-Total	0.145		0.00050	mg/L		26-AUG-20	R5202253
Potassium (K)-Total	5.98		0.050	mg/L		26-AUG-20	R5202253
Selenium (Se)-Total	23.1		0.050	ug/L		26-AUG-20	R5202253
Silicon (Si)-Total	2.45		0.10	mg/L		26-AUG-20	R5202253
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253
Sodium (Na)-Total	8.60		0.050	mg/L		26-AUG-20	R5202253
Strontium (Sr)-Total	0.399		0.00020	mg/L		26-AUG-20	R5202253
Thallium (Tl)-Total	0.000087		0.000010	mg/L		26-AUG-20	R5202253
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-AUG-20	R5202253
Uranium (U)-Total	0.0122		0.000010	mg/L		26-AUG-20	R5202253
Vanadium (V)-Total	<0.00050		0.00050	mg/L		26-AUG-20	R5202253
Zinc (Zn)-Total	0.0423		0.0030	mg/L		26-AUG-20	R5202253
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	7.6		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	279		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Total (as CaCO3)	279		1.0	mg/L		26-AUG-20	R5201517
Ammonia, Total (as N)							
Ammonia as N	0.650	DLHC	0.050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-AUG-20	R5201481
Chloride in Water by IC							
Chloride (Cl)	4.4	DLHC	2.5	mg/L		25-AUG-20	R5201481
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1770		2.0	uS/cm		26-AUG-20	R5201517
Fluoride in Water by IC							
Fluoride (F)	0.28	DLHC	0.10	mg/L		25-AUG-20	R5201481
Ion Balance Calculation							
Ion Balance	94.7		-100	%		27-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.7			%		27-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-1 GH_PHS3_WS_2020-08-24_N Sampled By: BP/MD on 24-AUG-20 @ 12:15 Matrix: WS							
Ion Balance Calculation							
Anion Sum	28.1			meq/L		27-AUG-20	
Cation Sum	26.6			meq/L		27-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	22.8	DLHC	0.025	mg/L		25-AUG-20	R5201481
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0455	DLHC	0.0050	mg/L		25-AUG-20	R5201481
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	451		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0025		0.0020	mg/L		26-AUG-20	R5200780
Sulfate in Water by IC							
Sulfate (SO4)	997	DLHC	1.5	mg/L		25-AUG-20	R5201481
Total Dissolved Solids							
Total Dissolved Solids	1810	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	4.1		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	5.99		0.10	NTU		25-AUG-20	R5200137
pH							
pH	8.03		0.10	pH		26-AUG-20	R5201517
L2493686-2 GH_PHS6_WS_2020-08-24_NP Sampled By: BP/MD on 24-AUG-20 @ 11:45 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	395		5.0	mg/L		26-AUG-20	R5201517
Carbonate (CO3)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Hydroxide (OH)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Total Kjeldahl Nitrogen	1.97	DLM	0.10	mg/L		26-AUG-20	R5201208
Mercury (Hg)-Total	0.00055		0.00050	ug/L		28-AUG-20	R5203816
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-20	26-AUG-20	R5202253
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5201421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202253
Antimony (Sb)-Dissolved	0.00650		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Arsenic (As)-Dissolved	0.00046		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Barium (Ba)-Dissolved	0.0414		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Boron (B)-Dissolved	0.011		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cadmium (Cd)-Dissolved	0.243		0.0050	ug/L	26-AUG-20	26-AUG-20	R5202253
Calcium (Ca)-Dissolved	185		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-2 GH_PHS6_WS_2020-08-24_NP							
Sampled By: BP/MD on 24-AUG-20 @ 11:45							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	34.3		0.10	ug/L	26-AUG-20	26-AUG-20	R5202253
Copper (Cu)-Dissolved	0.00032		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Iron (Fe)-Dissolved	0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Lithium (Li)-Dissolved	0.229		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Magnesium (Mg)-Dissolved	125		0.10	mg/L	26-AUG-20	26-AUG-20	R5202253
Manganese (Mn)-Dissolved	0.122		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Molybdenum (Mo)-Dissolved	0.0290		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Nickel (Ni)-Dissolved	0.207		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Potassium (K)-Dissolved	7.83		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Selenium (Se)-Dissolved	12.4		0.050	ug/L	26-AUG-20	26-AUG-20	R5202253
Silicon (Si)-Dissolved	2.39		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Sodium (Na)-Dissolved	9.65		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Strontium (Sr)-Dissolved	0.719		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Thallium (Tl)-Dissolved	0.000152		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Tin (Sn)-Dissolved	0.00027		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Uranium (U)-Dissolved	0.00921		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Zinc (Zn)-Dissolved	0.0301		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Hardness							
Hardness (as CaCO3)	975		0.50	mg/L		27-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		26-AUG-20	R5202253
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0325		0.0030	mg/L		26-AUG-20	R5202253
Antimony (Sb)-Total	0.00654		0.00010	mg/L		26-AUG-20	R5202253
Arsenic (As)-Total	0.00047		0.00010	mg/L		26-AUG-20	R5202253
Barium (Ba)-Total	0.0412		0.00010	mg/L		26-AUG-20	R5202253
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Boron (B)-Total	0.012		0.010	mg/L		26-AUG-20	R5202253
Cadmium (Cd)-Total	0.263		0.0050	ug/L		26-AUG-20	R5202253
Calcium (Ca)-Total	184		0.050	mg/L		26-AUG-20	R5202253
Chromium (Cr)-Total	0.00019		0.00010	mg/L		26-AUG-20	R5202253
Cobalt (Co)-Total	34.1		0.10	ug/L		26-AUG-20	R5202253
Copper (Cu)-Total	0.00066		0.00050	mg/L		26-AUG-20	R5202253
Iron (Fe)-Total	0.173		0.010	mg/L		26-AUG-20	R5202253
Lead (Pb)-Total	0.000836		0.000050	mg/L		26-AUG-20	R5202253
Lithium (Li)-Total	0.221		0.0010	mg/L		26-AUG-20	R5202253
Magnesium (Mg)-Total	121		0.10	mg/L		26-AUG-20	R5202253
Manganese (Mn)-Total	0.120		0.00010	mg/L		26-AUG-20	R5202253
Molybdenum (Mo)-Total	0.0296		0.000050	mg/L		26-AUG-20	R5202253
Nickel (Ni)-Total	0.212		0.00050	mg/L		26-AUG-20	R5202253
Potassium (K)-Total	7.64		0.050	mg/L		26-AUG-20	R5202253
Selenium (Se)-Total	12.0		0.050	ug/L		26-AUG-20	R5202253
Silicon (Si)-Total	2.54		0.10	mg/L		26-AUG-20	R5202253
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253
Sodium (Na)-Total	9.44		0.050	mg/L		26-AUG-20	R5202253
Strontium (Sr)-Total	0.735		0.00020	mg/L		26-AUG-20	R5202253
Thallium (Tl)-Total	0.000154		0.000010	mg/L		26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-2 GH_PHS6_WS_2020-08-24_NP							
Sampled By: BP/MD on 24-AUG-20 @ 11:45							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Tin (Sn)-Total	0.00056		0.00010	mg/L		26-AUG-20	R5202253
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-AUG-20	R5202253
Uranium (U)-Total	0.00953		0.000010	mg/L		26-AUG-20	R5202253
Vanadium (V)-Total	<0.00050		0.00050	mg/L		26-AUG-20	R5202253
Zinc (Zn)-Total	0.0330		0.0030	mg/L		26-AUG-20	R5202253
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.5		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	324		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Total (as CaCO3)	324		1.0	mg/L		26-AUG-20	R5201517
Ammonia, Total (as N)							
Ammonia as N	1.49	DLHC	0.050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-AUG-20	R5201481
Chloride in Water by IC							
Chloride (Cl)	3.0	DLHC	2.5	mg/L		25-AUG-20	R5201481
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1400		2.0	uS/cm		26-AUG-20	R5201517
Fluoride in Water by IC							
Fluoride (F)	0.33	DLHC	0.10	mg/L		25-AUG-20	R5201481
Ion Balance Calculation							
Ion Balance	93.5		-100	%		27-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.4			%		27-AUG-20	
Anion Sum	21.6			meq/L		27-AUG-20	
Cation Sum	20.2			meq/L		27-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	9.07	DLHC	0.025	mg/L		25-AUG-20	R5201481
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.501	DLHC	0.0050	mg/L		25-AUG-20	R5201481
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	465		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0030		0.0020	mg/L		26-AUG-20	R5200780
Sulfate in Water by IC							
Sulfate (SO4)	690	DLHC	1.5	mg/L		25-AUG-20	R5201481
Total Dissolved Solids							
Total Dissolved Solids	1400	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	3.7		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	3.64		0.10	NTU		25-AUG-20	R5200137
pH							
pH	8.07		0.10	pH		26-AUG-20	R5201517
L2493686-3 GH_TPS_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 12:45							
Matrix: WS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-3 GH_TPS_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 12:45							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	195		5.0	mg/L		26-AUG-20	R5201517
Carbonate (CO3)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Hydroxide (OH)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Total Kjeldahl Nitrogen	1.15		0.050	mg/L		26-AUG-20	R5201208
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-20	R5203816
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-20	26-AUG-20	R5202253
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5201421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202253
Antimony (Sb)-Dissolved	0.00781		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Arsenic (As)-Dissolved	0.00055		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Barium (Ba)-Dissolved	0.0653		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Boron (B)-Dissolved	0.015		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cadmium (Cd)-Dissolved	0.0822		0.0050	ug/L	26-AUG-20	26-AUG-20	R5202253
Calcium (Ca)-Dissolved	101		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cobalt (Co)-Dissolved	1.26		0.10	ug/L	26-AUG-20	26-AUG-20	R5202253
Copper (Cu)-Dissolved	0.00025		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Lithium (Li)-Dissolved	0.0753		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Magnesium (Mg)-Dissolved	65.6		0.10	mg/L	26-AUG-20	26-AUG-20	R5202253
Manganese (Mn)-Dissolved	0.00369		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Molybdenum (Mo)-Dissolved	0.0543		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Nickel (Ni)-Dissolved	0.0104		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Potassium (K)-Dissolved	9.10		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Selenium (Se)-Dissolved	15.0		0.050	ug/L	26-AUG-20	26-AUG-20	R5202253
Silicon (Si)-Dissolved	1.21		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Sodium (Na)-Dissolved	9.88		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Strontium (Sr)-Dissolved	0.373		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Thallium (Tl)-Dissolved	0.000053		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Uranium (U)-Dissolved	0.0167		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Vanadium (V)-Dissolved	0.00074		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Hardness							
Hardness (as CaCO3)	524		0.50	mg/L		27-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-3 GH_TPS_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 12:45							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0076		0.0030	mg/L		26-AUG-20	R5202253
Antimony (Sb)-Total	0.00790		0.00010	mg/L		26-AUG-20	R5202253
Arsenic (As)-Total	0.00057		0.00010	mg/L		26-AUG-20	R5202253
Barium (Ba)-Total	0.0646		0.00010	mg/L		26-AUG-20	R5202253
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Boron (B)-Total	0.016		0.010	mg/L		26-AUG-20	R5202253
Cadmium (Cd)-Total	0.0902		0.0050	ug/L		26-AUG-20	R5202253
Calcium (Ca)-Total	103		0.050	mg/L		26-AUG-20	R5202253
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Cobalt (Co)-Total	1.32		0.10	ug/L		26-AUG-20	R5202253
Copper (Cu)-Total	<0.00050		0.00050	mg/L		26-AUG-20	R5202253
Iron (Fe)-Total	<0.010		0.010	mg/L		26-AUG-20	R5202253
Lead (Pb)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Lithium (Li)-Total	0.0749		0.0010	mg/L		26-AUG-20	R5202253
Magnesium (Mg)-Total	66.0		0.10	mg/L		26-AUG-20	R5202253
Manganese (Mn)-Total	0.00697		0.00010	mg/L		26-AUG-20	R5202253
Molybdenum (Mo)-Total	0.0555		0.000050	mg/L		26-AUG-20	R5202253
Nickel (Ni)-Total	0.0106		0.00050	mg/L		26-AUG-20	R5202253
Potassium (K)-Total	9.14		0.050	mg/L		26-AUG-20	R5202253
Selenium (Se)-Total	15.5		0.050	ug/L		26-AUG-20	R5202253
Silicon (Si)-Total	1.32		0.10	mg/L		26-AUG-20	R5202253
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253
Sodium (Na)-Total	9.92		0.050	mg/L		26-AUG-20	R5202253
Strontium (Sr)-Total	0.384		0.00020	mg/L		26-AUG-20	R5202253
Thallium (Tl)-Total	0.000052		0.000010	mg/L		26-AUG-20	R5202253
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-AUG-20	R5202253
Uranium (U)-Total	0.0166		0.000010	mg/L		26-AUG-20	R5202253
Vanadium (V)-Total	0.00084		0.00050	mg/L		26-AUG-20	R5202253
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		26-AUG-20	R5202253
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	160		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Total (as CaCO3)	160		1.0	mg/L		26-AUG-20	R5201517
Ammonia, Total (as N)							
Ammonia as N	0.189		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.052		0.050	mg/L		25-AUG-20	R5201481
Chloride in Water by IC							
Chloride (Cl)	15.5		0.50	mg/L		25-AUG-20	R5201481
Electrical Conductivity (EC)							
Conductivity (@ 25C)	880		2.0	uS/cm		26-AUG-20	R5201517
Fluoride in Water by IC							
Fluoride (F)	0.542		0.020	mg/L		25-AUG-20	R5201481
Ion Balance Calculation							
Ion Balance	95.5		-100	%		27-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.3			%		27-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-3 GH_TPS_WS_2020-08-24_N Sampled By: BP/MD on 24-AUG-20 @ 12:45 Matrix: WS							
Ion Balance Calculation							
Anion Sum	11.7			meq/L		27-AUG-20	
Cation Sum	11.1			meq/L		27-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.54		0.0050	mg/L		25-AUG-20	R5201481
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0620		0.0010	mg/L		25-AUG-20	R5201481
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	457		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0021		0.0020	mg/L		26-AUG-20	R5200780
Sulfate in Water by IC							
Sulfate (SO4)	376		0.30	mg/L		25-AUG-20	R5201481
Total Dissolved Solids							
Total Dissolved Solids	752	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	2.1		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	2.60		0.10	NTU		25-AUG-20	R5200137
pH							
pH	8.24		0.10	pH		26-AUG-20	R5201517
L2493686-4 GH_MW-RLP-1D_WG_2020-07-06_N Sampled By: BP/MD on 24-AUG-20 @ 14:45 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	279		5.0	mg/L		26-AUG-20	R5201517
Carbonate (CO3)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Hydroxide (OH)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Total Kjeldahl Nitrogen	0.588		0.050	mg/L		26-AUG-20	R5201208
Mercury (Hg)-Total	0.00071		0.00050	ug/L		28-AUG-20	R5203816
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-20	26-AUG-20	R5202253
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5201421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202253
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Arsenic (As)-Dissolved	0.00120		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Barium (Ba)-Dissolved	0.0451		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Boron (B)-Dissolved	0.016		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-AUG-20	26-AUG-20	R5202253
Calcium (Ca)-Dissolved	57.4		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-4 GH_MW-RLP-1D_WG_2020-07-06_N							
Sampled By: BP/MD on 24-AUG-20 @ 14:45							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-AUG-20	26-AUG-20	R5202253
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Iron (Fe)-Dissolved	0.546		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Lithium (Li)-Dissolved	0.0074		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Magnesium (Mg)-Dissolved	29.1		0.10	mg/L	26-AUG-20	26-AUG-20	R5202253
Manganese (Mn)-Dissolved	0.0857		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Molybdenum (Mo)-Dissolved	0.00335		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Potassium (K)-Dissolved	1.18		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-AUG-20	26-AUG-20	R5202253
Silicon (Si)-Dissolved	4.89		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Sodium (Na)-Dissolved	3.30		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Strontium (Sr)-Dissolved	0.182		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Uranium (U)-Dissolved	0.000980		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Hardness							
Hardness (as CaCO3)	263		0.50	mg/L		27-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.020		0.020	ug/L		26-AUG-20	R5202253
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.392		0.0030	mg/L		26-AUG-20	R5202253
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Arsenic (As)-Total	0.00138		0.00010	mg/L		26-AUG-20	R5202253
Barium (Ba)-Total	0.0466		0.00010	mg/L		26-AUG-20	R5202253
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Boron (B)-Total	0.017		0.010	mg/L		26-AUG-20	R5202253
Cadmium (Cd)-Total	0.0148		0.0050	ug/L		26-AUG-20	R5202253
Calcium (Ca)-Total	57.6		0.050	mg/L		26-AUG-20	R5202253
Chromium (Cr)-Total	0.00052		0.00010	mg/L		26-AUG-20	R5202253
Cobalt (Co)-Total	0.14		0.10	ug/L		26-AUG-20	R5202253
Copper (Cu)-Total	<0.00050		0.00050	mg/L		26-AUG-20	R5202253
Iron (Fe)-Total	0.811		0.010	mg/L		26-AUG-20	R5202253
Lead (Pb)-Total	0.000150		0.000050	mg/L		26-AUG-20	R5202253
Lithium (Li)-Total	0.0074		0.0010	mg/L		26-AUG-20	R5202253
Magnesium (Mg)-Total	28.5		0.10	mg/L		26-AUG-20	R5202253
Manganese (Mn)-Total	0.0927		0.00010	mg/L		26-AUG-20	R5202253
Molybdenum (Mo)-Total	0.00329		0.000050	mg/L		26-AUG-20	R5202253
Nickel (Ni)-Total	0.00073		0.00050	mg/L		26-AUG-20	R5202253
Potassium (K)-Total	1.28		0.050	mg/L		26-AUG-20	R5202253
Selenium (Se)-Total	<0.050		0.050	ug/L		26-AUG-20	R5202253
Silicon (Si)-Total	5.77		0.10	mg/L		26-AUG-20	R5202253
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253
Sodium (Na)-Total	3.24		0.050	mg/L		26-AUG-20	R5202253
Strontium (Sr)-Total	0.182		0.00020	mg/L		26-AUG-20	R5202253
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-4 GH_MW-RLP-1D_WG_2020-07-06_N							
Sampled By: BP/MD on 24-AUG-20 @ 14:45							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Titanium (Ti)-Total	0.011		0.010	mg/L		26-AUG-20	R5202253
Uranium (U)-Total	0.00101		0.000010	mg/L		26-AUG-20	R5202253
Vanadium (V)-Total	0.00115		0.00050	mg/L		26-AUG-20	R5202253
Zinc (Zn)-Total	0.0081		0.0030	mg/L		26-AUG-20	R5202253
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.7		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	228		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Total (as CaCO3)	228		1.0	mg/L		26-AUG-20	R5201517
Ammonia, Total (as N)							
Ammonia as N	0.165		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-AUG-20	R5201481
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		25-AUG-20	R5201481
Electrical Conductivity (EC)							
Conductivity (@ 25C)	429		2.0	uS/cm		26-AUG-20	R5201517
Fluoride in Water by IC							
Fluoride (F)	1.91		0.020	mg/L		25-AUG-20	R5201481
Ion Balance Calculation							
Ion Balance	98.3		-100	%		27-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.9			%		27-AUG-20	
Anion Sum	5.57			meq/L		27-AUG-20	
Cation Sum	5.47			meq/L		27-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0078		0.0050	mg/L		25-AUG-20	R5201481
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-AUG-20	R5201481
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0011		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	441		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0117		0.0020	mg/L		26-AUG-20	R5200780
Sulfate in Water by IC							
Sulfate (SO4)	43.5		0.30	mg/L		25-AUG-20	R5201481
Total Dissolved Solids							
Total Dissolved Solids	304	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	8.9		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	20.3		0.10	NTU		25-AUG-20	R5200137
pH							
pH	8.06		0.10	pH		26-AUG-20	R5201517
L2493686-5 GH_RLP_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 13:55							
Matrix: WS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-5 GH_RLP_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 13:55							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	194		5.0	mg/L		26-AUG-20	R5201517
Carbonate (CO3)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-20	R5201780
Hydroxide (OH)	<5.0		5.0	mg/L		26-AUG-20	R5201517
Total Kjeldahl Nitrogen	1.96	DLM	0.10	mg/L		26-AUG-20	R5201208
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-20	R5203816
Total Organic Carbon	2.44		0.50	mg/L		26-AUG-20	R5201780
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-20	26-AUG-20	R5202253
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5201421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-AUG-20	R5201700
Aluminum (Al)-Dissolved	0.0086		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202253
Antimony (Sb)-Dissolved	0.00698		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Arsenic (As)-Dissolved	0.00051		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Barium (Ba)-Dissolved	0.0843		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Boron (B)-Dissolved	0.023		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cadmium (Cd)-Dissolved	<0.030	DLM	0.030	ug/L	26-AUG-20	26-AUG-20	R5202253
Calcium (Ca)-Dissolved	96.9		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Cobalt (Co)-Dissolved	0.79		0.10	ug/L	26-AUG-20	26-AUG-20	R5202253
Copper (Cu)-Dissolved	0.00049		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Lead (Pb)-Dissolved	0.00247	DTMF	0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Lithium (Li)-Dissolved	0.0598		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Magnesium (Mg)-Dissolved	62.6		0.10	mg/L	26-AUG-20	26-AUG-20	R5202253
Manganese (Mn)-Dissolved	0.00226		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Molybdenum (Mo)-Dissolved	0.0396		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202253
Nickel (Ni)-Dissolved	0.00553		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Potassium (K)-Dissolved	7.58		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Selenium (Se)-Dissolved	13.5		0.050	ug/L	26-AUG-20	26-AUG-20	R5202253
Silicon (Si)-Dissolved	2.64		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Sodium (Na)-Dissolved	10.2		0.050	mg/L	26-AUG-20	26-AUG-20	R5202253
Strontium (Sr)-Dissolved	0.376		0.00020	mg/L	26-AUG-20	26-AUG-20	R5202253
Thallium (Tl)-Dissolved	0.000062		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202253
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-20	26-AUG-20	R5202253
Uranium (U)-Dissolved	0.0119		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202253
Vanadium (V)-Dissolved	0.00210		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202253
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-20	26-AUG-20	R5202253
Hardness							
Hardness (as CaCO3)	500		0.50	mg/L		27-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		26-AUG-20	R5202253

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-5 GH_RLP_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 13:55							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0265		0.0030	mg/L		26-AUG-20	R5202253
Antimony (Sb)-Total	0.00701		0.00010	mg/L		26-AUG-20	R5202253
Arsenic (As)-Total	0.00052		0.00010	mg/L		26-AUG-20	R5202253
Barium (Ba)-Total	0.0863		0.00010	mg/L		26-AUG-20	R5202253
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Boron (B)-Total	0.024		0.010	mg/L		26-AUG-20	R5202253
Cadmium (Cd)-Total	<0.030	DLM	0.030	ug/L		26-AUG-20	R5202253
Calcium (Ca)-Total	98.0		0.050	mg/L		26-AUG-20	R5202253
Chromium (Cr)-Total	0.00014		0.00010	mg/L		26-AUG-20	R5202253
Cobalt (Co)-Total	0.85		0.10	ug/L		26-AUG-20	R5202253
Copper (Cu)-Total	0.00058		0.00050	mg/L		26-AUG-20	R5202253
Iron (Fe)-Total	0.011		0.010	mg/L		26-AUG-20	R5202253
Lead (Pb)-Total	<0.000050		0.000050	mg/L		26-AUG-20	R5202253
Lithium (Li)-Total	0.0608		0.0010	mg/L		26-AUG-20	R5202253
Magnesium (Mg)-Total	63.1		0.10	mg/L		26-AUG-20	R5202253
Manganese (Mn)-Total	0.00859		0.00010	mg/L		26-AUG-20	R5202253
Molybdenum (Mo)-Total	0.0421		0.000050	mg/L		26-AUG-20	R5202253
Nickel (Ni)-Total	0.00570		0.00050	mg/L		26-AUG-20	R5202253
Potassium (K)-Total	7.62		0.050	mg/L		26-AUG-20	R5202253
Selenium (Se)-Total	13.6		0.050	ug/L		26-AUG-20	R5202253
Silicon (Si)-Total	2.83		0.10	mg/L		26-AUG-20	R5202253
Silver (Ag)-Total	<0.000010		0.000010	mg/L		26-AUG-20	R5202253
Sodium (Na)-Total	10.1		0.050	mg/L		26-AUG-20	R5202253
Strontium (Sr)-Total	0.394		0.00020	mg/L		26-AUG-20	R5202253
Thallium (Tl)-Total	0.000060		0.000010	mg/L		26-AUG-20	R5202253
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-AUG-20	R5202253
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-AUG-20	R5202253
Uranium (U)-Total	0.0119		0.000010	mg/L		26-AUG-20	R5202253
Vanadium (V)-Total	0.00232		0.00050	mg/L		26-AUG-20	R5202253
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		26-AUG-20	R5202253
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	159		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-20	R5201517
Alkalinity, Total (as CaCO3)	159		1.0	mg/L		26-AUG-20	R5201517
Ammonia, Total (as N)							
Ammonia as N	0.373		0.0050	mg/L		25-AUG-20	R5200876
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.060		0.050	mg/L		25-AUG-20	R5201481
Chloride in Water by IC							
Chloride (Cl)	14.2		0.50	mg/L		25-AUG-20	R5201481
Electrical Conductivity (EC)							
Conductivity (@ 25C)	857		2.0	uS/cm		26-AUG-20	R5201517
Fluoride in Water by IC							
Fluoride (F)	0.674		0.020	mg/L		25-AUG-20	R5201481
Ion Balance Calculation							
Ion Balance	96.4		-100	%		27-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.8			%		27-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493686-5 GH_RLP_WS_2020-08-24_N							
Sampled By: BP/MD on 24-AUG-20 @ 13:55							
Matrix: WS							
Ion Balance Calculation							
Anion Sum	11.0			meq/L		27-AUG-20	
Cation Sum	10.6			meq/L		27-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.70		0.0050	mg/L		25-AUG-20	R5201481
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	1.23		0.0010	mg/L		25-AUG-20	R5201481
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	485		-1000	mV		25-AUG-20	R5200135
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		26-AUG-20	R5200780
Sulfate in Water by IC							
Sulfate (SO4)	344		0.30	mg/L		25-AUG-20	R5201481
Total Dissolved Solids							
Total Dissolved Solids	728	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	9.9		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	14.2		0.10	NTU		25-AUG-20	R5200137
pH							
pH	8.23		0.10	pH		26-AUG-20	R5201517

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2493686

Report Date: 03-FEB-21

Page 1 of 16

Client: TECK COAL LIMITED (GREENHILLS)

BOX 5000
Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5201484							
WG3391754-2	LCS							
Acidity (as CaCO3)			97.7		%		85-115	25-AUG-20
WG3391754-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	25-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5201517							
WG3391767-3	DUP	L2493686-5						
Alkalinity, Total (as CaCO3)		159	155		mg/L	2.5	20	26-AUG-20
WG3391767-2	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	26-AUG-20
WG3391767-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5202253							
WG3391810-3	DUP	L2493686-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391810-2	LCS							
Beryllium (Be)-Dissolved			101.5		%		80-120	26-AUG-20
WG3391810-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-20
WG3391810-4	MS	L2493686-2						
Beryllium (Be)-Dissolved			97.8		%		70-130	26-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-3	DUP	L2493686-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391702-2	LCS							
Beryllium (Be)-Total			105.4		%		80-120	26-AUG-20
WG3391702-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	26-AUG-20
WG3391702-4	MS	L2493686-2						
Beryllium (Be)-Total			96.0		%		70-130	26-AUG-20
BIC-CL								
	Water							
Batch	R5201517							
WG3391767-3	DUP	L2493686-5						
Bicarbonate (HCO3)		194	189		mg/L	2.5	20	26-AUG-20
WG3391767-1	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL	Water							
Batch	R5201517							
WG3391767-1 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	26-AUG-20
BR-L-IC-N-CL	Water							
Batch	R5201481							
WG3391590-6 LCS								
Bromide (Br)			102.6		%		85-115	25-AUG-20
WG3391590-5 MB								
Bromide (Br)			<0.050		mg/L		0.05	25-AUG-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5201780							
WG3391848-3 DUP		L2493686-5						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391848-2 LCS								
Dissolved Organic Carbon			100.9		%		80-120	26-AUG-20
WG3391848-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-AUG-20
WG3391848-4 MS		L2493686-5						
Dissolved Organic Carbon			99.0		%		70-130	26-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5201780							
WG3391848-3 DUP		L2493686-5						
Total Organic Carbon		2.44	2.93		mg/L	18	20	26-AUG-20
WG3391848-2 LCS								
Total Organic Carbon			103.3		%		80-120	26-AUG-20
WG3391848-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-20
WG3391848-4 MS		L2493686-5						
Total Organic Carbon			97.2		%		70-130	26-AUG-20
CL-IC-N-CL	Water							
Batch	R5201481							
WG3391590-6 LCS								
Chloride (Cl)			103.6		%		90-110	25-AUG-20
WG3391590-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	25-AUG-20
CO3-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL								
Batch R5201517								
WG3391767-3 DUP		L2493686-5						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391767-1 MB								
Carbonate (CO3)			<5.0		mg/L		5	26-AUG-20
EC-L-PCT-CL								
Batch R5201517								
WG3391767-3 DUP		L2493686-5						
Conductivity (@ 25C)		857	867		uS/cm	1.2	10	26-AUG-20
WG3391767-2 LCS								
Conductivity (@ 25C)			97.5		%		90-110	26-AUG-20
WG3391767-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	26-AUG-20
F-IC-N-CL								
Batch R5201481								
WG3391590-6 LCS								
Fluoride (F)			105.0		%		90-110	25-AUG-20
WG3391590-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-AUG-20
HG-D-CVAA-VA								
Batch R5200454								
WG3391729-2 LCS								
Mercury (Hg)-Dissolved			100.4		%		80-120	26-AUG-20
WG3391729-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-AUG-20
HG-T-U-CVAF-VA								
Batch R5202792								
WG3392741-2 LCS								
Mercury (Hg)-Total			94.2		%		80-120	27-AUG-20
WG3392741-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	27-AUG-20
Batch R5203816								
WG3393789-5 DUP		L2493686-5						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	28-AUG-20
WG3393789-2 LCS								
Mercury (Hg)-Total			101.4		%		80-120	28-AUG-20
WG3393789-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-AUG-20
WG3393789-4		L2493686-4						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA								
	Water							
Batch	R5203816							
WG3393789-4 MS		L2493686-4						
Mercury (Hg)-Total			94.6		%		70-130	28-AUG-20
MET-D-CCMS-VA								
	Water							
Batch	R5202253							
WG3391810-3 DUP		L2493686-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	26-AUG-20
Antimony (Sb)-Dissolved		0.00349	0.00338		mg/L	3.2	20	26-AUG-20
Arsenic (As)-Dissolved		0.00016	0.00016		mg/L	1.4	20	26-AUG-20
Barium (Ba)-Dissolved		0.0152	0.0156		mg/L	2.5	20	26-AUG-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-20
Boron (B)-Dissolved		0.013	0.012		mg/L	5.0	20	26-AUG-20
Cadmium (Cd)-Dissolved		0.000588	0.000593		mg/L	0.9	20	26-AUG-20
Calcium (Ca)-Dissolved		254	248		mg/L	2.3	20	26-AUG-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-20
Cobalt (Co)-Dissolved		0.0267	0.0267		mg/L	0.1	20	26-AUG-20
Copper (Cu)-Dissolved		0.00028	0.00028		mg/L	0.3	20	26-AUG-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-20
Lithium (Li)-Dissolved		0.120	0.116		mg/L	3.8	20	26-AUG-20
Magnesium (Mg)-Dissolved		162	163		mg/L	0.4	20	26-AUG-20
Manganese (Mn)-Dissolved		0.200	0.202		mg/L	1.1	20	26-AUG-20
Molybdenum (Mo)-Dissolved		0.0163	0.0162		mg/L	0.1	20	26-AUG-20
Nickel (Ni)-Dissolved		0.141	0.143		mg/L	1.6	20	26-AUG-20
Potassium (K)-Dissolved		6.13	6.20		mg/L	1.0	20	26-AUG-20
Selenium (Se)-Dissolved		0.0231	0.0238		mg/L	3.4	20	26-AUG-20
Silicon (Si)-Dissolved		2.23	2.27		mg/L	1.5	20	26-AUG-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-20
Sodium (Na)-Dissolved		8.64	8.82		mg/L	2.0	20	26-AUG-20
Strontium (Sr)-Dissolved		0.396	0.386		mg/L	2.5	20	26-AUG-20
Thallium (Tl)-Dissolved		0.000086	0.000088		mg/L	2.9	20	26-AUG-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-20
Uranium (U)-Dissolved		0.0119	0.0119		mg/L	0.1	20	26-AUG-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5202253							
WG3391810-3	DUP	L2493686-1						
Zinc (Zn)-Dissolved		0.0416	0.0414		mg/L	0.5	20	26-AUG-20
WG3391810-2	LCS							
Aluminum (Al)-Dissolved			104.0		%		80-120	26-AUG-20
Antimony (Sb)-Dissolved			96.3		%		80-120	26-AUG-20
Arsenic (As)-Dissolved			98.9		%		80-120	26-AUG-20
Barium (Ba)-Dissolved			103.3		%		80-120	26-AUG-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	26-AUG-20
Boron (B)-Dissolved			103.0		%		80-120	26-AUG-20
Cadmium (Cd)-Dissolved			100.5		%		80-120	26-AUG-20
Calcium (Ca)-Dissolved			103.2		%		80-120	26-AUG-20
Chromium (Cr)-Dissolved			99.3		%		80-120	26-AUG-20
Cobalt (Co)-Dissolved			99.5		%		80-120	26-AUG-20
Copper (Cu)-Dissolved			97.1		%		80-120	26-AUG-20
Iron (Fe)-Dissolved			103.1		%		80-120	26-AUG-20
Lead (Pb)-Dissolved			102.1		%		80-120	26-AUG-20
Lithium (Li)-Dissolved			106.9		%		80-120	26-AUG-20
Magnesium (Mg)-Dissolved			99.1		%		80-120	26-AUG-20
Manganese (Mn)-Dissolved			102.1		%		80-120	26-AUG-20
Molybdenum (Mo)-Dissolved			99.3		%		80-120	26-AUG-20
Nickel (Ni)-Dissolved			95.9		%		80-120	26-AUG-20
Potassium (K)-Dissolved			102.0		%		80-120	26-AUG-20
Selenium (Se)-Dissolved			96.0		%		80-120	26-AUG-20
Silicon (Si)-Dissolved			110.3		%		60-140	26-AUG-20
Silver (Ag)-Dissolved			99.8		%		80-120	26-AUG-20
Sodium (Na)-Dissolved			103.7		%		80-120	26-AUG-20
Strontium (Sr)-Dissolved			101.5		%		80-120	26-AUG-20
Thallium (Tl)-Dissolved			100.7		%		80-120	26-AUG-20
Tin (Sn)-Dissolved			97.5		%		80-120	26-AUG-20
Titanium (Ti)-Dissolved			99.4		%		80-120	26-AUG-20
Uranium (U)-Dissolved			100.6		%		80-120	26-AUG-20
Vanadium (V)-Dissolved			99.5		%		80-120	26-AUG-20
Zinc (Zn)-Dissolved			94.9		%		80-120	26-AUG-20
WG3391810-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5202253							
WG3391810-1	MB	NP						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-20
WG3391810-4	MS	L2493686-2						
Aluminum (Al)-Dissolved			102.4		%		70-130	26-AUG-20
Antimony (Sb)-Dissolved			102.0		%		70-130	26-AUG-20
Arsenic (As)-Dissolved			101.2		%		70-130	26-AUG-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Bismuth (Bi)-Dissolved			90.2		%		70-130	26-AUG-20



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MET-D-CCMS-VA								
	Water							
Batch	R5202253							
WG3391810-4 MS		L2493686-2						
Boron (B)-Dissolved			97.3		%		70-130	26-AUG-20
Cadmium (Cd)-Dissolved			97.7		%		70-130	26-AUG-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Chromium (Cr)-Dissolved			97.7		%		70-130	26-AUG-20
Cobalt (Co)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Copper (Cu)-Dissolved			90.6		%		70-130	26-AUG-20
Iron (Fe)-Dissolved			96.7		%		70-130	26-AUG-20
Lead (Pb)-Dissolved			95.1		%		70-130	26-AUG-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Nickel (Ni)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Selenium (Se)-Dissolved			107.7		%		70-130	26-AUG-20
Silicon (Si)-Dissolved			96.8		%		70-130	26-AUG-20
Silver (Ag)-Dissolved			99.5		%		70-130	26-AUG-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Thallium (Tl)-Dissolved			96.8		%		70-130	26-AUG-20
Tin (Sn)-Dissolved			100.5		%		70-130	26-AUG-20
Titanium (Ti)-Dissolved			97.6		%		70-130	26-AUG-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	26-AUG-20
Vanadium (V)-Dissolved			100.1		%		70-130	26-AUG-20
Zinc (Zn)-Dissolved			90.0		%		70-130	26-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-3 DUP		L2493686-1						
Aluminum (Al)-Total		0.0610	0.0529		mg/L	14	20	26-AUG-20
Antimony (Sb)-Total		0.00350	0.00343		mg/L	1.8	20	26-AUG-20
Arsenic (As)-Total		0.00020	0.00019		mg/L	4.2	20	26-AUG-20
Barium (Ba)-Total		0.0203	0.0203		mg/L	0.2	20	26-AUG-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-20
Boron (B)-Total		0.016	0.014		mg/L	16	20	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-3	DUP	L2493686-1						
Cadmium (Cd)-Total		0.000641	0.000587		mg/L	8.9	20	26-AUG-20
Calcium (Ca)-Total		253	252		mg/L	0.4	20	26-AUG-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-20
Cobalt (Co)-Total		0.0270	0.0268		mg/L	0.7	20	26-AUG-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-20
Iron (Fe)-Total		0.037	0.036		mg/L	1.2	20	26-AUG-20
Lead (Pb)-Total		0.000096	0.000110		mg/L	14	20	26-AUG-20
Lithium (Li)-Total		0.120	0.115		mg/L	4.5	20	26-AUG-20
Magnesium (Mg)-Total		161	161		mg/L	0.0	20	26-AUG-20
Manganese (Mn)-Total		0.205	0.203		mg/L	1.1	20	26-AUG-20
Molybdenum (Mo)-Total		0.0169	0.0166		mg/L	2.2	20	26-AUG-20
Nickel (Ni)-Total		0.145	0.145		mg/L	0.0	20	26-AUG-20
Potassium (K)-Total		5.98	6.03		mg/L	0.8	20	26-AUG-20
Selenium (Se)-Total		0.0231	0.0227		mg/L	1.5	20	26-AUG-20
Silicon (Si)-Total		2.45	2.45		mg/L	0.2	20	26-AUG-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-20
Sodium (Na)-Total		8.60	8.56		mg/L	0.4	20	26-AUG-20
Strontium (Sr)-Total		0.399	0.392		mg/L	1.7	20	26-AUG-20
Thallium (Tl)-Total		0.000087	0.000087		mg/L	0.3	20	26-AUG-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-20
Uranium (U)-Total		0.0122	0.0125		mg/L	2.6	20	26-AUG-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-20
Zinc (Zn)-Total		0.0423	0.0429		mg/L	1.5	20	26-AUG-20
WG3391702-2	LCS							
Aluminum (Al)-Total			107.3		%		80-120	26-AUG-20
Antimony (Sb)-Total			97.6		%		80-120	26-AUG-20
Arsenic (As)-Total			99.0		%		80-120	26-AUG-20
Barium (Ba)-Total			105.0		%		80-120	26-AUG-20
Bismuth (Bi)-Total			100.3		%		80-120	26-AUG-20
Boron (B)-Total			107.3		%		80-120	26-AUG-20
Cadmium (Cd)-Total			99.8		%		80-120	26-AUG-20
Calcium (Ca)-Total			104.8		%		80-120	26-AUG-20
Chromium (Cr)-Total			99.8		%		80-120	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-2	LCS							
Cobalt (Co)-Total			100.4		%		80-120	26-AUG-20
Copper (Cu)-Total			98.4		%		80-120	26-AUG-20
Iron (Fe)-Total			102.9		%		80-120	26-AUG-20
Lead (Pb)-Total			101.9		%		80-120	26-AUG-20
Lithium (Li)-Total			111.1		%		80-120	26-AUG-20
Magnesium (Mg)-Total			101.8		%		80-120	26-AUG-20
Manganese (Mn)-Total			102.5		%		80-120	26-AUG-20
Molybdenum (Mo)-Total			98.8		%		80-120	26-AUG-20
Nickel (Ni)-Total			97.0		%		80-120	26-AUG-20
Potassium (K)-Total			101.0		%		80-120	26-AUG-20
Selenium (Se)-Total			95.8		%		80-120	26-AUG-20
Silicon (Si)-Total			116.8		%		80-120	26-AUG-20
Silver (Ag)-Total			98.6		%		80-120	26-AUG-20
Sodium (Na)-Total			106.1		%		80-120	26-AUG-20
Strontium (Sr)-Total			102.8		%		80-120	26-AUG-20
Thallium (Tl)-Total			100.7		%		80-120	26-AUG-20
Tin (Sn)-Total			98.1		%		80-120	26-AUG-20
Titanium (Ti)-Total			99.96		%		80-120	26-AUG-20
Uranium (U)-Total			97.9		%		80-120	26-AUG-20
Vanadium (V)-Total			99.96		%		80-120	26-AUG-20
Zinc (Zn)-Total			96.8		%		80-120	26-AUG-20
WG3391702-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	26-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	26-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	26-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-1	MB							
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	26-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	26-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	26-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-AUG-20
WG3391702-4	MS	L2493686-2						
Aluminum (Al)-Total			100.2		%		70-130	26-AUG-20
Antimony (Sb)-Total			101.9		%		70-130	26-AUG-20
Arsenic (As)-Total			102.1		%		70-130	26-AUG-20
Barium (Ba)-Total			N/A	MS-B	%		-	26-AUG-20
Bismuth (Bi)-Total			91.5		%		70-130	26-AUG-20
Boron (B)-Total			99.4		%		70-130	26-AUG-20
Cadmium (Cd)-Total			97.1		%		70-130	26-AUG-20
Calcium (Ca)-Total			N/A	MS-B	%		-	26-AUG-20
Chromium (Cr)-Total			98.0		%		70-130	26-AUG-20
Cobalt (Co)-Total			N/A	MS-B	%		-	26-AUG-20
Copper (Cu)-Total			92.2		%		70-130	26-AUG-20
Iron (Fe)-Total			98.5		%		70-130	26-AUG-20
Lead (Pb)-Total			92.8		%		70-130	26-AUG-20
Lithium (Li)-Total			N/A	MS-B	%		-	26-AUG-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5202253							
WG3391702-4	MS	L2493686-2						
Manganese (Mn)-Total			N/A	MS-B	%		-	26-AUG-20
Molybdenum (Mo)-Total			N/A	MS-B	%		-	26-AUG-20
Nickel (Ni)-Total			N/A	MS-B	%		-	26-AUG-20
Potassium (K)-Total			N/A	MS-B	%		-	26-AUG-20
Selenium (Se)-Total			109.7		%		70-130	26-AUG-20
Silicon (Si)-Total			96.6		%		70-130	26-AUG-20
Silver (Ag)-Total			98.7		%		70-130	26-AUG-20
Sodium (Na)-Total			N/A	MS-B	%		-	26-AUG-20
Strontium (Sr)-Total			N/A	MS-B	%		-	26-AUG-20
Thallium (Tl)-Total			92.2		%		70-130	26-AUG-20
Tin (Sn)-Total			100.1		%		70-130	26-AUG-20
Titanium (Ti)-Total			100.5		%		70-130	26-AUG-20
Uranium (U)-Total			N/A	MS-B	%		-	26-AUG-20
Vanadium (V)-Total			101.6		%		70-130	26-AUG-20
Zinc (Zn)-Total			90.1		%		70-130	26-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5200876							
WG3390871-14	LCS							
Ammonia as N			106.8		%		85-115	25-AUG-20
WG3390871-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5201481							
WG3391590-6	LCS							
Nitrite (as N)			104.6		%		90-110	25-AUG-20
WG3391590-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	25-AUG-20
NO3-L-IC-N-CL								
	Water							
Batch	R5201481							
WG3391590-6	LCS							
Nitrate (as N)			103.6		%		90-110	25-AUG-20
WG3391590-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	25-AUG-20
OH-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL								
Batch R5201517								
WG3391767-3	DUP	L2493686-5						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	26-AUG-20
WG3391767-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	26-AUG-20
ORP-CL								
Batch R5200135								
WG3390977-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-20
WG3390977-3	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-20
WG3390977-5	CRM	CL-ORP						
ORP			220		mV		210-230	25-AUG-20
WG3390977-2	DUP	L2493686-1						
ORP		451	449	J	mV	2.3	15	25-AUG-20
P-T-L-COL-CL								
Batch R5200780								
WG3391484-6	LCS							
Phosphorus (P)-Total			110.2		%		80-120	26-AUG-20
WG3391484-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-AUG-20
PH-CL								
Batch R5201517								
WG3391767-3	DUP	L2493686-5						
pH		8.23	8.24	J	pH	0.01	0.2	26-AUG-20
WG3391767-2	LCS							
pH			6.99		pH		6.9-7.1	26-AUG-20
PO4-DO-L-COL-CL								
Batch R5200140								
WG3390978-6	LCS							
Orthophosphate-Dissolved (as P)			95.9		%		80-120	25-AUG-20
WG3390978-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-AUG-20
SO4-IC-N-CL								
Batch R5201481								
WG3391590-6	LCS							
Sulfate (SO4)			103.8		%		90-110	25-AUG-20
WG3391590-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5202097							
WG3390199-5 MB								
Total Suspended Solids			<1.0		mg/L		1	25-AUG-20
WG3390199-7 MB								
Total Suspended Solids			<1.0		mg/L		1	25-AUG-20
TURBIDITY-CL	Water							
Batch	R5200137							
WG3390920-5 LCS								
Turbidity			96.9		%		85-115	25-AUG-20
WG3390920-4 MB								
Turbidity			<0.10		NTU		0.1	25-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	24-AUG-20 12:15	25-AUG-20 14:00	0.25	26	hours	EHTR-FM
	2	24-AUG-20 11:45	25-AUG-20 14:00	0.25	26	hours	EHTR-FM
	3	24-AUG-20 12:45	25-AUG-20 14:00	0.25	25	hours	EHTR-FM
	4	24-AUG-20 14:45	25-AUG-20 14:00	0.25	23	hours	EHTR-FM
	5	24-AUG-20 13:55	25-AUG-20 14:00	0.25	24	hours	EHTR-FM
pH	1	24-AUG-20 12:15	26-AUG-20 11:00	0.25	47	hours	EHTR-FM
	2	24-AUG-20 11:45	26-AUG-20 11:00	0.25	47	hours	EHTR-FM
	3	24-AUG-20 12:45	26-AUG-20 11:00	0.25	46	hours	EHTR-FM
	4	24-AUG-20 14:45	26-AUG-20 11:00	0.25	44	hours	EHTR-FM
	5	24-AUG-20 13:55	26-AUG-20 11:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2493686 were received on 25-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burma-a			Email 1:	Leigh.Stickney@teck.com	X	X
Email	Jeremy.Enns@teck.com			Email	justine.bumaa@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com		X
								Email 4:	jaydon.francis@teck.com	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	Brendan.Peachey@teck.com	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	DL-Equis-GHO-Field@teck.com	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125		

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	PRESERV.	ANALYSIS	Y	Y	N	Y	N	N	N	N	N	
											ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC			
GH_PHS3 WS 2020-08-24 N	GH_PHS3	WS		8/24/2020	12:15	G	7		H2SO4											
GH_PHS6 WS 2020-08-24 NP	GH_E-SEEP	WS		8/24/2020	11:45	G	7		HCL											
GH TPS WS 2020-08-24 N	GH_TPS	WS		8/24/2020	12:45	G	7		NONE											
GH MW-RLP-1D WG 2020-07-06 N	GH_MW-RLP-1D	WG		8/24/2020	14:45	G	7		HNO3											
GH RLP WS 2020-08-24 N	GH_RLP	WS		8/24/2020	13:55	G	7		HNO3											
									NONE											
									YES											



L2493686-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

Rush analysis - 1 day TAT

Jh

08/25 8:45

SERVICE REQUEST (rush - subject to availability)

Regular (default)

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge X

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

BP/MD

Mobile #

Sampler's Signature

Date/Time

4.50



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 27-AUG-20
Report Date: 09-FEB-21 11:59 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2495070
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 9-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-1 GH_POTW06_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	367		5.0	mg/L		28-AUG-20	R5204136
Carbonate (CO3)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Hydroxide (OH)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		27-AUG-20	R5213660
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Total Kjeldahl Nitrogen	0.350		0.050	mg/L		28-AUG-20	R5203509
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		02-SEP-20	R5208894
Total Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-AUG-20	29-AUG-20	R5204303
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-20	01-SEP-20	R5207158
Dissolved Mercury Filtration Location	FIELD					31-AUG-20	R5206900
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					31-AUG-20	R5204936
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-AUG-20	29-AUG-20	R5204303
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Barium (Ba)-Dissolved	0.0537		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Boron (B)-Dissolved	0.014		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cadmium (Cd)-Dissolved	0.0470		0.0050	ug/L	28-AUG-20	29-AUG-20	R5204303
Calcium (Ca)-Dissolved	159		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	28-AUG-20	29-AUG-20	R5204303
Copper (Cu)-Dissolved	0.0108	DTC	0.00020	mg/L	31-AUG-20	31-AUG-20	R5206238
Iron (Fe)-Dissolved	0.010		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Lead (Pb)-Dissolved	0.00112	DTC	0.000050	mg/L	31-AUG-20	31-AUG-20	R5206238
Lithium (Li)-Dissolved	0.0124		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Magnesium (Mg)-Dissolved	87.9		0.10	mg/L	28-AUG-20	29-AUG-20	R5204303
Manganese (Mn)-Dissolved	0.00175		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Molybdenum (Mo)-Dissolved	0.000800		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Nickel (Ni)-Dissolved	0.00113		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Potassium (K)-Dissolved	1.61		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Selenium (Se)-Dissolved	27.6		0.050	ug/L	28-AUG-20	29-AUG-20	R5204303
Silicon (Si)-Dissolved	4.45		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Sodium (Na)-Dissolved	7.61		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Strontium (Sr)-Dissolved	0.297		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Tin (Sn)-Dissolved	0.00019		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Uranium (U)-Dissolved	0.00364		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Zinc (Zn)-Dissolved	0.0082		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Hardness							
Hardness (as CaCO3)	759		0.50	mg/L		31-AUG-20	
Total Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-1 GH_POTW06_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:15							
Matrix: WG							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-AUG-20	R5204369
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Arsenic (As)-Total	0.00011		0.00010	mg/L		29-AUG-20	R5204369
Barium (Ba)-Total	0.0550		0.00010	mg/L		29-AUG-20	R5204369
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Boron (B)-Total	0.016		0.010	mg/L		29-AUG-20	R5204369
Cadmium (Cd)-Total	0.0425		0.0050	ug/L		29-AUG-20	R5204369
Calcium (Ca)-Total	164		0.050	mg/L		29-AUG-20	R5204369
Chromium (Cr)-Total	0.00018		0.00010	mg/L		29-AUG-20	R5204369
Cobalt (Co)-Total	<0.10		0.10	ug/L		29-AUG-20	R5204369
Copper (Cu)-Total	0.00510		0.00050	mg/L		29-AUG-20	R5204369
Iron (Fe)-Total	0.021		0.010	mg/L		29-AUG-20	R5204369
Lead (Pb)-Total	0.000504		0.000050	mg/L		29-AUG-20	R5204369
Lithium (Li)-Total	0.0122		0.0010	mg/L		29-AUG-20	R5204369
Magnesium (Mg)-Total	91.9		0.10	mg/L		29-AUG-20	R5204369
Manganese (Mn)-Total	0.00160		0.00010	mg/L		29-AUG-20	R5204369
Molybdenum (Mo)-Total	0.000862		0.000050	mg/L		29-AUG-20	R5204369
Nickel (Ni)-Total	0.00100		0.00050	mg/L		29-AUG-20	R5204369
Potassium (K)-Total	1.60		0.050	mg/L		29-AUG-20	R5204369
Selenium (Se)-Total	25.7		0.050	ug/L		29-AUG-20	R5204369
Silicon (Si)-Total	4.34		0.10	mg/L		29-AUG-20	R5204369
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Sodium (Na)-Total	7.73		0.050	mg/L		29-AUG-20	R5204369
Strontium (Sr)-Total	0.288		0.00020	mg/L		29-AUG-20	R5204369
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Tin (Sn)-Total	0.00019		0.00010	mg/L		29-AUG-20	R5204369
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5204369
Uranium (U)-Total	0.00380		0.000010	mg/L		29-AUG-20	R5204369
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Zinc (Zn)-Total	0.0066		0.0030	mg/L		29-AUG-20	R5204369
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.7		1.0	mg/L		31-AUG-20	R5207076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	301		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Total (as CaCO3)	301		1.0	mg/L		28-AUG-20	R5204136
Ammonia, Total (as N)							
Ammonia as N	0.0701		0.0050	mg/L		27-AUG-20	R5203161
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		28-AUG-20	R5208081
Chloride in Water by IC							
Chloride (Cl)	17.9	DLHC	2.5	mg/L		28-AUG-20	R5208081
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1250		2.0	uS/cm		28-AUG-20	R5204136
Fluoride in Water by IC							
Fluoride (F)	0.24	DLHC	0.10	mg/L		28-AUG-20	R5208081
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		01-SEP-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-1 GH_POTW06_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 13:15 Matrix: WG							
Ion Balance Calculation							
Anion Sum	16.5			meq/L		01-SEP-20	
Cation Sum	15.5			meq/L		01-SEP-20	
Ion Balance Calculation							
Ion Balance	94.5		-100	%		01-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.07	DLHC	0.025	mg/L		28-AUG-20	R5208081
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		28-AUG-20	R5208081
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0022		0.0010	mg/L		27-AUG-20	R5203043
Oxidation redution potential by elect.							
ORP	321		-1000	mV		27-AUG-20	R5203160
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-SEP-20	R5208926
Sulfate in Water by IC							
Sulfate (SO4)	473	DLHC	1.5	mg/L		28-AUG-20	R5208081
Total Dissolved Solids							
Total Dissolved Solids	1020	DLHC	20	mg/L		30-AUG-20	R5205825
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-AUG-20	R5205756
Turbidity							
Turbidity	0.17		0.10	NTU		27-AUG-20	R5203138
pH							
pH	8.25		0.10	pH		28-AUG-20	R5204136
L2495070-2 GH_POTW09_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 13:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	298		5.0	mg/L		28-AUG-20	R5204136
Carbonate (CO3)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Hydroxide (OH)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Iron Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Total Kjeldahl Nitrogen	0.29	DLM	0.10	mg/L		01-SEP-20	R5203509
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		02-SEP-20	R5208894
Total Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-AUG-20	29-AUG-20	R5204303
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-AUG-20	01-SEP-20	R5207158
Dissolved Mercury Filtration Location	FIELD					31-AUG-20	R5206900
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-AUG-20	29-AUG-20	R5204303
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Arsenic (As)-Dissolved	0.00050		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Barium (Ba)-Dissolved	0.0334		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-2 GH_POTW09_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Boron (B)-Dissolved	0.019		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cadmium (Cd)-Dissolved	0.0090		0.0050	ug/L	28-AUG-20	29-AUG-20	R5204303
Calcium (Ca)-Dissolved	94.4		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	28-AUG-20	29-AUG-20	R5204303
Copper (Cu)-Dissolved	0.00065		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Iron (Fe)-Dissolved	0.166		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Lithium (Li)-Dissolved	0.0122		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Magnesium (Mg)-Dissolved	42.1		0.10	mg/L	28-AUG-20	29-AUG-20	R5204303
Manganese (Mn)-Dissolved	0.184		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Molybdenum (Mo)-Dissolved	0.00241		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Nickel (Ni)-Dissolved	0.00100		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Potassium (K)-Dissolved	1.60		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Selenium (Se)-Dissolved	1.34		0.050	ug/L	28-AUG-20	29-AUG-20	R5204303
Silicon (Si)-Dissolved	5.12		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Sodium (Na)-Dissolved	7.62		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Strontium (Sr)-Dissolved	0.349		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Uranium (U)-Dissolved	0.00223		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Zinc (Zn)-Dissolved	0.0045		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Hardness							
Hardness (as CaCO3)	409		0.50	mg/L		30-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-AUG-20	R5204369
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Arsenic (As)-Total	0.00060		0.00010	mg/L		29-AUG-20	R5204369
Barium (Ba)-Total	0.0346		0.00010	mg/L		29-AUG-20	R5204369
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Boron (B)-Total	0.021		0.010	mg/L		29-AUG-20	R5204369
Cadmium (Cd)-Total	0.0097		0.0050	ug/L		29-AUG-20	R5204369
Calcium (Ca)-Total	96.9		0.050	mg/L		29-AUG-20	R5204369
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Cobalt (Co)-Total	0.19		0.10	ug/L		29-AUG-20	R5204369
Copper (Cu)-Total	0.00195		0.00050	mg/L		29-AUG-20	R5204369
Iron (Fe)-Total	0.244		0.010	mg/L		29-AUG-20	R5204369
Lead (Pb)-Total	0.000479		0.000050	mg/L		29-AUG-20	R5204369
Lithium (Li)-Total	0.0119		0.0010	mg/L		29-AUG-20	R5204369
Magnesium (Mg)-Total	42.0		0.10	mg/L		29-AUG-20	R5204369
Manganese (Mn)-Total	0.176		0.00010	mg/L		29-AUG-20	R5204369
Molybdenum (Mo)-Total	0.00258		0.000050	mg/L		29-AUG-20	R5204369
Nickel (Ni)-Total	0.00222		0.00050	mg/L		29-AUG-20	R5204369
Potassium (K)-Total	1.60		0.050	mg/L		29-AUG-20	R5204369
Selenium (Se)-Total	1.20		0.050	ug/L		29-AUG-20	R5204369
Silicon (Si)-Total	5.12		0.10	mg/L		29-AUG-20	R5204369

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-2 GH_POTW09_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:50							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Sodium (Na)-Total	7.46		0.050	mg/L		29-AUG-20	R5204369
Strontium (Sr)-Total	0.336		0.00020	mg/L		29-AUG-20	R5204369
Thallium (Tl)-Total	0.000016		0.000010	mg/L		29-AUG-20	R5204369
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5204369
Uranium (U)-Total	0.00232		0.000010	mg/L		29-AUG-20	R5204369
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Zinc (Zn)-Total	0.0132		0.0030	mg/L		29-AUG-20	R5204369
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-AUG-20	R5207076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	244		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Total (as CaCO3)	244		1.0	mg/L		28-AUG-20	R5204136
Ammonia, Total (as N)							
Ammonia as N	0.286		0.0050	mg/L		27-AUG-20	R5203161
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		28-AUG-20	R5208081
Chloride in Water by IC							
Chloride (Cl)	6.45		0.50	mg/L		28-AUG-20	R5208081
Electrical Conductivity (EC)							
Conductivity (@ 25C)	741		2.0	uS/cm		28-AUG-20	R5204136
Fluoride in Water by IC							
Fluoride (F)	0.845		0.020	mg/L		28-AUG-20	R5208081
Ion Balance Calculation							
Cation - Anion Balance	-1.2			%		01-SEP-20	
Anion Sum	8.79			meq/L		01-SEP-20	
Cation Sum	8.58			meq/L		01-SEP-20	
Ion Balance Calculation							
Ion Balance	97.6		-100	%		01-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0148		0.0050	mg/L		28-AUG-20	R5208081
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-AUG-20	R5208081
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-AUG-20	R5203043
Oxidation redution potential by elect.							
ORP	435		-1000	mV		27-AUG-20	R5203160
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-SEP-20	R5208926
Sulfate in Water by IC							
Sulfate (SO4)	177		0.30	mg/L		28-AUG-20	R5208081
Total Dissolved Solids							
Total Dissolved Solids	537	DLHC	20	mg/L		30-AUG-20	R5205825
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-AUG-20	R5205756
Turbidity							
Turbidity	1.01		0.10	NTU		27-AUG-20	R5203138
pH							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-3 GH_POTW10_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 11:55							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Uranium (U)-Dissolved	0.000683		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Hardness							
Hardness (as CaCO3)	388		0.50	mg/L		30-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-AUG-20	R5204369
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Arsenic (As)-Total	0.00150		0.00010	mg/L		29-AUG-20	R5204369
Barium (Ba)-Total	0.0191		0.00010	mg/L		29-AUG-20	R5204369
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Boron (B)-Total	0.038		0.010	mg/L		29-AUG-20	R5204369
Cadmium (Cd)-Total	0.0055		0.0050	ug/L		29-AUG-20	R5204369
Calcium (Ca)-Total	88.8		0.050	mg/L		29-AUG-20	R5204369
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Cobalt (Co)-Total	0.15		0.10	ug/L		29-AUG-20	R5204369
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Iron (Fe)-Total	0.806		0.010	mg/L		29-AUG-20	R5204369
Lead (Pb)-Total	0.000097		0.000050	mg/L		29-AUG-20	R5204369
Lithium (Li)-Total	0.0162		0.0010	mg/L		29-AUG-20	R5204369
Magnesium (Mg)-Total	42.2		0.10	mg/L		29-AUG-20	R5204369
Manganese (Mn)-Total	0.0470		0.00010	mg/L		29-AUG-20	R5204369
Molybdenum (Mo)-Total	0.00302		0.000050	mg/L		29-AUG-20	R5204369
Nickel (Ni)-Total	0.00370		0.00050	mg/L		29-AUG-20	R5204369
Potassium (K)-Total	1.67		0.050	mg/L		29-AUG-20	R5204369
Selenium (Se)-Total	3.58		0.050	ug/L		29-AUG-20	R5204369
Silicon (Si)-Total	5.02		0.10	mg/L		29-AUG-20	R5204369
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Sodium (Na)-Total	5.23		0.050	mg/L		29-AUG-20	R5204369
Strontium (Sr)-Total	0.518		0.00020	mg/L		29-AUG-20	R5204369
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5204369
Uranium (U)-Total	0.000714		0.000010	mg/L		29-AUG-20	R5204369
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-AUG-20	R5207076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	209		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Total (as CaCO3)	209		1.0	mg/L		28-AUG-20	R5204136
Ammonia, Total (as N)							
Ammonia as N	0.179		0.0050	mg/L		27-AUG-20	R5203161
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		28-AUG-20	R5208081
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-3 GH_POTW10_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 11:55 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	7.56		0.50	mg/L		28-AUG-20	R5208081
Electrical Conductivity (EC) Conductivity (@ 25C)	709		2.0	uS/cm		28-AUG-20	R5204136
Fluoride in Water by IC Fluoride (F)	0.866		0.020	mg/L		28-AUG-20	R5208081
Ion Balance Calculation Ion Balance	96.3		-100	%		01-SEP-20	
Ion Balance Calculation Cation - Anion Balance	-1.9			%		01-SEP-20	
Anion Sum	8.39			meq/L		01-SEP-20	
Cation Sum	8.07			meq/L		01-SEP-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.453		0.0050	mg/L		28-AUG-20	R5208081
Nitrite in Water by IC (Low Level) Nitrite (as N)	0.0140		0.0010	mg/L		28-AUG-20	R5208081
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-AUG-20	R5203043
Oxidation redution potential by elect. ORP	426		-1000	mV		27-AUG-20	R5203160
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-SEP-20	R5208926
Sulfate in Water by IC Sulfate (SO4)	188		0.30	mg/L		28-AUG-20	R5208081
Total Dissolved Solids Total Dissolved Solids	523	DLHC	20	mg/L		30-AUG-20	R5205825
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		30-AUG-20	R5205756
Turbidity Turbidity	8.67		0.10	NTU		27-AUG-20	R5203138
pH pH	8.25		0.10	pH		28-AUG-20	R5204136
L2495070-4 GH_POTW15_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 11:40 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	279		5.0	mg/L		28-AUG-20	R5204136
Carbonate (CO3)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Hydroxide (OH)	<5.0		5.0	mg/L		28-AUG-20	R5204136
Iron Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Total Kjeldahl Nitrogen	0.096		0.050	mg/L		28-AUG-20	R5203509
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		02-SEP-20	R5208894
Total Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-AUG-20	29-AUG-20	R5204303
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-AUG-20	01-SEP-20	R5207158
Dissolved Mercury Filtration Location	FIELD					31-AUG-20	R5206900

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-4 GH_POTW15_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 11:40							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-AUG-20	29-AUG-20	R5204303
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Arsenic (As)-Dissolved	0.00170		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Barium (Ba)-Dissolved	0.0219		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Boron (B)-Dissolved	0.020		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cadmium (Cd)-Dissolved	0.0082		0.0050	ug/L	28-AUG-20	29-AUG-20	R5204303
Calcium (Ca)-Dissolved	129		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	28-AUG-20	29-AUG-20	R5204303
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Iron (Fe)-Dissolved	0.915		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Lithium (Li)-Dissolved	0.0160		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Magnesium (Mg)-Dissolved	46.4		0.10	mg/L	28-AUG-20	29-AUG-20	R5204303
Manganese (Mn)-Dissolved	0.195		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Molybdenum (Mo)-Dissolved	0.00235		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Nickel (Ni)-Dissolved	0.00096		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Potassium (K)-Dissolved	1.59		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	28-AUG-20	29-AUG-20	R5204303
Silicon (Si)-Dissolved	4.65		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Sodium (Na)-Dissolved	11.5		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Strontium (Sr)-Dissolved	0.395		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Uranium (U)-Dissolved	0.00142		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Hardness							
Hardness (as CaCO3)	513		0.50	mg/L		30-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-AUG-20	R5204369
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Arsenic (As)-Total	0.00171		0.00010	mg/L		29-AUG-20	R5204369
Barium (Ba)-Total	0.0222		0.00010	mg/L		29-AUG-20	R5204369
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Boron (B)-Total	0.022		0.010	mg/L		29-AUG-20	R5204369
Cadmium (Cd)-Total	0.0065		0.0050	ug/L		29-AUG-20	R5204369
Calcium (Ca)-Total	133		0.050	mg/L		29-AUG-20	R5204369
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Cobalt (Co)-Total	0.21		0.10	ug/L		29-AUG-20	R5204369
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Iron (Fe)-Total	0.981		0.010	mg/L		29-AUG-20	R5204369
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Lithium (Li)-Total	0.0151		0.0010	mg/L		29-AUG-20	R5204369
Magnesium (Mg)-Total	46.4		0.10	mg/L		29-AUG-20	R5204369

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-4 GH_POTW15_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 11:40							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	0.198		0.00010	mg/L		29-AUG-20	R5204369
Molybdenum (Mo)-Total	0.00256		0.000050	mg/L		29-AUG-20	R5204369
Nickel (Ni)-Total	0.00111		0.00050	mg/L		29-AUG-20	R5204369
Potassium (K)-Total	1.59		0.050	mg/L		29-AUG-20	R5204369
Selenium (Se)-Total	<0.050		0.050	ug/L		29-AUG-20	R5204369
Silicon (Si)-Total	4.50		0.10	mg/L		29-AUG-20	R5204369
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Sodium (Na)-Total	12.0		0.050	mg/L		29-AUG-20	R5204369
Strontium (Sr)-Total	0.382		0.00020	mg/L		29-AUG-20	R5204369
Thallium (Tl)-Total	0.000018		0.000010	mg/L		29-AUG-20	R5204369
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5204369
Uranium (U)-Total	0.00149		0.000010	mg/L		29-AUG-20	R5204369
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-AUG-20	R5207076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	229		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-20	R5204136
Alkalinity, Total (as CaCO3)	229		1.0	mg/L		28-AUG-20	R5204136
Ammonia, Total (as N)							
Ammonia as N	0.105		0.0050	mg/L		27-AUG-20	R5203161
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		03-SEP-20	R5208081
Chloride in Water by IC							
Chloride (Cl)	32.1	DLHC	2.5	mg/L		03-SEP-20	R5208081
Electrical Conductivity (EC)							
Conductivity (@ 25C)	914		2.0	uS/cm		28-AUG-20	R5204136
Fluoride in Water by IC							
Fluoride (F)	0.19	DLHC	0.10	mg/L		03-SEP-20	R5208081
Ion Balance Calculation							
Ion Balance	94.3		-100	%		03-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		03-SEP-20	
Anion Sum	11.5			meq/L		03-SEP-20	
Cation Sum	10.8			meq/L		03-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	HTD	0.025	mg/L		03-SEP-20	R5208081
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	HTD	0.0050	mg/L		03-SEP-20	R5208081
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-AUG-20	R5203043
Oxidation redution potential by elect.							
ORP	413		-1000	mV		27-AUG-20	R5203160
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-SEP-20	R5208926
Sulfate in Water by IC							
Sulfate (SO4)	289	DLHC	1.5	mg/L		03-SEP-20	R5208081
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-4 GH_POTW15_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 11:40 Matrix: WG							
Total Dissolved Solids							
Total Dissolved Solids	703	DLHC	20	mg/L		30-AUG-20	R5205825
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-AUG-20	R5205756
Turbidity							
Turbidity	14.3		0.10	NTU		27-AUG-20	R5203138
pH							
pH	8.21		0.10	pH		28-AUG-20	R5204136
L2495070-5 GH_POTW17_WG_2020-07-06_NP Sampled By: JF/SS on 26-AUG-20 @ 13:35 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	359		5.0	mg/L		31-AUG-20	R5204136
Carbonate (CO3)	<5.0		5.0	mg/L		31-AUG-20	R5204136
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Hydroxide (OH)	<5.0		5.0	mg/L		31-AUG-20	R5204136
Iron Bacteria	8.0	IRB:BC	1.0	CFU/mL		27-AUG-20	R5213660
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		27-AUG-20	R5213660
Total Kjeldahl Nitrogen	0.389		0.050	mg/L		28-AUG-20	R5203509
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		02-SEP-20	R5208894
Total Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-AUG-20	29-AUG-20	R5204303
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-20	01-SEP-20	R5207158
Dissolved Mercury Filtration Location	FIELD					31-AUG-20	R5206900
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-AUG-20	R5203916
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-AUG-20	29-AUG-20	R5204303
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Barium (Ba)-Dissolved	0.0292		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Boron (B)-Dissolved	0.021		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cadmium (Cd)-Dissolved	0.0436		0.0050	ug/L	28-AUG-20	29-AUG-20	R5204303
Calcium (Ca)-Dissolved	168		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	28-AUG-20	29-AUG-20	R5204303
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Iron (Fe)-Dissolved	0.145		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Lithium (Li)-Dissolved	0.0145		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Magnesium (Mg)-Dissolved	74.8		0.10	mg/L	28-AUG-20	29-AUG-20	R5204303
Manganese (Mn)-Dissolved	0.0745		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Molybdenum (Mo)-Dissolved	0.00104		0.000050	mg/L	28-AUG-20	29-AUG-20	R5204303
Nickel (Ni)-Dissolved	0.00918		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Potassium (K)-Dissolved	1.66		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Selenium (Se)-Dissolved	8.23		0.050	ug/L	28-AUG-20	29-AUG-20	R5204303
Silicon (Si)-Dissolved	4.88		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-5 GH_POTW17_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:35							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Sodium (Na)-Dissolved	8.55		0.050	mg/L	28-AUG-20	29-AUG-20	R5204303
Strontium (Sr)-Dissolved	0.446		0.00020	mg/L	28-AUG-20	29-AUG-20	R5204303
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-AUG-20	29-AUG-20	R5204303
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-AUG-20	29-AUG-20	R5204303
Uranium (U)-Dissolved	0.00236		0.000010	mg/L	28-AUG-20	29-AUG-20	R5204303
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-AUG-20	29-AUG-20	R5204303
Zinc (Zn)-Dissolved	0.0029		0.0010	mg/L	28-AUG-20	29-AUG-20	R5204303
Hardness							
Hardness (as CaCO3)	727		0.50	mg/L		30-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-AUG-20	R5204369
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-AUG-20	R5204369
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Arsenic (As)-Total	0.00022		0.00010	mg/L		29-AUG-20	R5204369
Barium (Ba)-Total	0.0300		0.00010	mg/L		29-AUG-20	R5204369
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Boron (B)-Total	0.022		0.010	mg/L		29-AUG-20	R5204369
Cadmium (Cd)-Total	0.0379		0.0050	ug/L		29-AUG-20	R5204369
Calcium (Ca)-Total	168		0.050	mg/L		29-AUG-20	R5204369
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Cobalt (Co)-Total	0.17		0.10	ug/L		29-AUG-20	R5204369
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Iron (Fe)-Total	0.211		0.010	mg/L		29-AUG-20	R5204369
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5204369
Lithium (Li)-Total	0.0135		0.0010	mg/L		29-AUG-20	R5204369
Magnesium (Mg)-Total	75.1		0.10	mg/L		29-AUG-20	R5204369
Manganese (Mn)-Total	0.0735		0.00010	mg/L		29-AUG-20	R5204369
Molybdenum (Mo)-Total	0.00109		0.000050	mg/L		29-AUG-20	R5204369
Nickel (Ni)-Total	0.00980		0.00050	mg/L		29-AUG-20	R5204369
Potassium (K)-Total	1.65		0.050	mg/L		29-AUG-20	R5204369
Selenium (Se)-Total	6.95		0.050	ug/L		29-AUG-20	R5204369
Silicon (Si)-Total	4.72		0.10	mg/L		29-AUG-20	R5204369
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-AUG-20	R5204369
Sodium (Na)-Total	8.75		0.050	mg/L		29-AUG-20	R5204369
Strontium (Sr)-Total	0.431		0.00020	mg/L		29-AUG-20	R5204369
Thallium (Tl)-Total	0.000013		0.000010	mg/L		29-AUG-20	R5204369
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-AUG-20	R5204369
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5204369
Uranium (U)-Total	0.00248		0.000010	mg/L		29-AUG-20	R5204369
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-AUG-20	R5204369
Zinc (Zn)-Total	0.0031		0.0030	mg/L		29-AUG-20	R5204369
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		31-AUG-20	R5207076
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	294		1.0	mg/L		31-AUG-20	R5208085
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-AUG-20	R5208085
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-AUG-20	R5208085

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495070-5 GH_POTW17_WG_2020-07-06_NP							
Sampled By: JF/SS on 26-AUG-20 @ 13:35							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Total (as CaCO3)	294		1.0	mg/L		31-AUG-20	R5208085
Ammonia, Total (as N)							
Ammonia as N	0.0952		0.0050	mg/L		27-AUG-20	R5203161
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		28-AUG-20	R5208081
Chloride in Water by IC							
Chloride (Cl)	16.9	DLHC	2.5	mg/L		28-AUG-20	R5208081
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1180		2.0	uS/cm		31-AUG-20	R5208085
Fluoride in Water by IC							
Fluoride (F)	0.17	DLHC	0.10	mg/L		28-AUG-20	R5208081
Ion Balance Calculation							
Ion Balance	94.6		-100	%		01-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		01-SEP-20	
Anion Sum	15.8			meq/L		01-SEP-20	
Cation Sum	15.0			meq/L		01-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.282	DLHC	0.025	mg/L		28-AUG-20	R5208081
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		28-AUG-20	R5208081
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-AUG-20	R5203043
Oxidation reduction potential by elect.							
ORP	417		-1000	mV		27-AUG-20	R5203160
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-SEP-20	R5208926
Sulfate in Water by IC							
Sulfate (SO4)	453	DLHC	1.5	mg/L		28-AUG-20	R5208081
Total Dissolved Solids							
Total Dissolved Solids	981	DLHC	20	mg/L		30-AUG-20	R5205825
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-AUG-20	R5205756
Turbidity							
Turbidity	1.59		0.10	NTU		27-AUG-20	R5203138
pH							
pH	7.89		0.10	pH		31-AUG-20	R5208085

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
IRB:BC	Brown Cloudy: IRB dominant
IRB:BR	Brown Ring: IRB dominant
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
Iron Related Bacteria- IRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2495070

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5207076							
WG3395419-2	LCS							
Acidity (as CaCO3)			97.9		%		85-115	31-AUG-20
WG3395419-1	MB							
Acidity (as CaCO3)			1.4		mg/L		2	31-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5204136							
WG3394208-11	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	28-AUG-20
WG3394208-8	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	28-AUG-20
WG3394208-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-20
WG3394208-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-20
Batch	R5208085							
WG3395607-5	LCS							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	31-AUG-20
WG3395607-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5204303							
WG3393963-3	DUP	L2495070-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	29-AUG-20
WG3393963-2	LCS							
Beryllium (Be)-Dissolved			102.9		%		80-120	29-AUG-20
WG3393963-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-AUG-20
WG3393963-4	MS	L2495070-2						
Beryllium (Be)-Dissolved			98.9		%		70-130	29-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5204369							
WG3393858-3	DUP	L2495070-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	29-AUG-20
WG3393858-2	LCS							
Beryllium (Be)-Total			99.6		%		80-120	29-AUG-20
WG3393858-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-AUG-20
WG3393858-4	MS	L2495070-2						



Quality Control Report

Workorder: L2495070

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BE-T-L-CCMS-VA Water								
Batch	R5204369							
WG3393858-4	MS	L2495070-2						
Beryllium (Be)-Total			95.7		%		70-130	29-AUG-20
BIC-CL Water								
Batch	R5204136							
WG3394208-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-AUG-20
WG3394208-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-AUG-20
WG3394208-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-AUG-20
BR-L-IC-N-CL Water								
Batch	R5208081							
WG3395669-6	LCS							
Bromide (Br)			107.1		%		85-115	28-AUG-20
WG3395669-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-AUG-20
C-DIS-ORG-LOW-CL Water								
Batch	R5203377							
WG3393397-7	DUP	L2495070-5						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-AUG-20
WG3393397-10	LCS							
Dissolved Organic Carbon			104.8		%		80-120	27-AUG-20
WG3393397-6	LCS							
Dissolved Organic Carbon			102.8		%		80-120	27-AUG-20
WG3393397-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
WG3393397-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
WG3393397-8	MS	L2495070-5						
Dissolved Organic Carbon			100.3		%		70-130	27-AUG-20
C-TOT-ORG-LOW-CL Water								
Batch	R5203377							
WG3393397-7	DUP	L2495070-5						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-AUG-20
WG3393397-10	LCS							
Total Organic Carbon			106.1		%		80-120	27-AUG-20
WG3393397-6	LCS							

Quality Control Report

Workorder: L2495070

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5203377							
WG3393397-6	LCS							
Total Organic Carbon			108.1		%		80-120	27-AUG-20
WG3393397-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
WG3393397-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
WG3393397-8	MS	L2495070-5						
Total Organic Carbon			103.7		%		70-130	27-AUG-20
CL-IC-N-CL								
Water								
Batch	R5208081							
WG3395669-6	LCS							
Chloride (Cl)			103.7		%		90-110	28-AUG-20
WG3395669-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-AUG-20
CO3-CL								
Water								
Batch	R5204136							
WG3394208-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-AUG-20
WG3394208-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-AUG-20
WG3394208-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-AUG-20
EC-L-PCT-CL								
Water								
Batch	R5204136							
WG3394208-11	LCS							
Conductivity (@ 25C)			97.2		%		90-110	28-AUG-20
WG3394208-8	LCS							
Conductivity (@ 25C)			95.2		%		90-110	28-AUG-20
WG3394208-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-20
WG3394208-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-20
Batch	R5208085							
WG3395607-5	LCS							
Conductivity (@ 25C)			93.0		%		90-110	31-AUG-20
WG3395607-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-AUG-20
F-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R5208081								
WG3395669-6	LCS							
Fluoride (F)			103.7		%		90-110	28-AUG-20
WG3395669-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-AUG-20
HG-D-CVAA-VA								
Batch R5207158								
WG3395110-2	LCS							
Mercury (Hg)-Dissolved			97.1		%		80-120	01-SEP-20
WG3395110-1	MB	LF						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
HG-T-U-CVAF-VA								
Batch R5208894								
WG3396764-5	DUP	L2495070-3						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	02-SEP-20
WG3396764-2	LCS							
Mercury (Hg)-Total			98.0		%		80-120	02-SEP-20
WG3396764-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	02-SEP-20
IB-BART-SQ-CL								
Batch R5213660								
WG3399737-2	DUP	L2495070-1						
Iron Bacteria		2200	2200		CFU/mL	0.0	50	27-AUG-20
WG3399737-1	MB							
Iron Bacteria			<1.0		CFU/mL		1	27-AUG-20
MET-D-CCMS-VA								
Batch R5204303								
WG3393963-2	LCS							
Aluminum (Al)-Dissolved			103.8		%		80-120	29-AUG-20
Antimony (Sb)-Dissolved			101.4		%		80-120	29-AUG-20
Arsenic (As)-Dissolved			99.8		%		80-120	29-AUG-20
Barium (Ba)-Dissolved			103.2		%		80-120	29-AUG-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	29-AUG-20
Boron (B)-Dissolved			98.0		%		80-120	29-AUG-20
Cadmium (Cd)-Dissolved			101.9		%		80-120	29-AUG-20
Calcium (Ca)-Dissolved			100.9		%		80-120	29-AUG-20
Chromium (Cr)-Dissolved			101.5		%		80-120	29-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5204303							
WG3393963-2	LCS							
Cobalt (Co)-Dissolved			100.4		%		80-120	29-AUG-20
Copper (Cu)-Dissolved			100.1		%		80-120	29-AUG-20
Iron (Fe)-Dissolved			103.7		%		80-120	29-AUG-20
Lead (Pb)-Dissolved			100.2		%		80-120	29-AUG-20
Lithium (Li)-Dissolved			106.9		%		80-120	29-AUG-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	29-AUG-20
Manganese (Mn)-Dissolved			103.1		%		80-120	29-AUG-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	29-AUG-20
Nickel (Ni)-Dissolved			99.3		%		80-120	29-AUG-20
Potassium (K)-Dissolved			101.4		%		80-120	29-AUG-20
Selenium (Se)-Dissolved			102.4		%		80-120	29-AUG-20
Silicon (Si)-Dissolved			109.9		%		60-140	29-AUG-20
Silver (Ag)-Dissolved			102.3		%		80-120	29-AUG-20
Sodium (Na)-Dissolved			104.3		%		80-120	29-AUG-20
Strontium (Sr)-Dissolved			104.2		%		80-120	29-AUG-20
Thallium (Tl)-Dissolved			98.0		%		80-120	29-AUG-20
Tin (Sn)-Dissolved			100.3		%		80-120	29-AUG-20
Titanium (Ti)-Dissolved			95.7		%		80-120	29-AUG-20
Uranium (U)-Dissolved			98.7		%		80-120	29-AUG-20
Vanadium (V)-Dissolved			101.9		%		80-120	29-AUG-20
Zinc (Zn)-Dissolved			102.9		%		80-120	29-AUG-20
WG3393963-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5204303							
WG3393963-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-AUG-20
WG3393963-4	MS	L2495070-2						
Aluminum (Al)-Dissolved			102.3		%		70-130	29-AUG-20
Antimony (Sb)-Dissolved			100.2		%		70-130	29-AUG-20
Arsenic (As)-Dissolved			103.1		%		70-130	29-AUG-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	29-AUG-20
Bismuth (Bi)-Dissolved			88.8		%		70-130	29-AUG-20
Boron (B)-Dissolved			92.4		%		70-130	29-AUG-20
Cadmium (Cd)-Dissolved			100.3		%		70-130	29-AUG-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	29-AUG-20
Chromium (Cr)-Dissolved			98.3		%		70-130	29-AUG-20
Cobalt (Co)-Dissolved			93.5		%		70-130	29-AUG-20
Copper (Cu)-Dissolved			91.0		%		70-130	29-AUG-20
Iron (Fe)-Dissolved			97.2		%		70-130	29-AUG-20
Lead (Pb)-Dissolved			95.3		%		70-130	29-AUG-20
Lithium (Li)-Dissolved			96.1		%		70-130	29-AUG-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5204303							
WG3393963-4	MS	L2495070-2						
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	29-AUG-20
Molybdenum (Mo)-Dissolved			100.5		%		70-130	29-AUG-20
Nickel (Ni)-Dissolved			90.3		%		70-130	29-AUG-20
Potassium (K)-Dissolved			98.0		%		70-130	29-AUG-20
Selenium (Se)-Dissolved			113.6		%		70-130	29-AUG-20
Silicon (Si)-Dissolved			92.6		%		70-130	29-AUG-20
Silver (Ag)-Dissolved			96.5		%		70-130	29-AUG-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	29-AUG-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	29-AUG-20
Thallium (Tl)-Dissolved			94.0		%		70-130	29-AUG-20
Tin (Sn)-Dissolved			99.7		%		70-130	29-AUG-20
Titanium (Ti)-Dissolved			95.3		%		70-130	29-AUG-20
Uranium (U)-Dissolved			94.9		%		70-130	29-AUG-20
Vanadium (V)-Dissolved			101.1		%		70-130	29-AUG-20
Zinc (Zn)-Dissolved			96.8		%		70-130	29-AUG-20
Batch	R5206238							
WG3394790-2	LCS							
Aluminum (Al)-Dissolved			98.6		%		80-120	31-AUG-20
Antimony (Sb)-Dissolved			98.6		%		80-120	31-AUG-20
Arsenic (As)-Dissolved			101.5		%		80-120	31-AUG-20
Barium (Ba)-Dissolved			99.0		%		80-120	31-AUG-20
Bismuth (Bi)-Dissolved			108.1		%		80-120	31-AUG-20
Boron (B)-Dissolved			100.4		%		80-120	31-AUG-20
Cadmium (Cd)-Dissolved			99.7		%		80-120	31-AUG-20
Calcium (Ca)-Dissolved			104.1		%		80-120	31-AUG-20
Chromium (Cr)-Dissolved			96.6		%		80-120	31-AUG-20
Cobalt (Co)-Dissolved			96.3		%		80-120	31-AUG-20
Copper (Cu)-Dissolved			95.4		%		80-120	31-AUG-20
Iron (Fe)-Dissolved			96.0		%		80-120	31-AUG-20
Lead (Pb)-Dissolved			101.6		%		80-120	31-AUG-20
Lithium (Li)-Dissolved			103.5		%		80-120	31-AUG-20
Magnesium (Mg)-Dissolved			94.9		%		80-120	31-AUG-20
Manganese (Mn)-Dissolved			97.9		%		80-120	31-AUG-20
Molybdenum (Mo)-Dissolved			104.2		%		80-120	31-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5206238							
WG3394790-2	LCS							
Nickel (Ni)-Dissolved			95.8		%		80-120	31-AUG-20
Potassium (K)-Dissolved			98.5		%		80-120	31-AUG-20
Selenium (Se)-Dissolved			109.7		%		80-120	31-AUG-20
Silicon (Si)-Dissolved			108.2		%		60-140	31-AUG-20
Silver (Ag)-Dissolved			104.1		%		80-120	31-AUG-20
Sodium (Na)-Dissolved			95.9		%		80-120	31-AUG-20
Strontium (Sr)-Dissolved			105.1		%		80-120	31-AUG-20
Thallium (Tl)-Dissolved			102.7		%		80-120	31-AUG-20
Tin (Sn)-Dissolved			95.4		%		80-120	31-AUG-20
Titanium (Ti)-Dissolved			91.4		%		80-120	31-AUG-20
Uranium (U)-Dissolved			110.1		%		80-120	31-AUG-20
Vanadium (V)-Dissolved			98.7		%		80-120	31-AUG-20
Zinc (Zn)-Dissolved			101.6		%		80-120	31-AUG-20
WG3394790-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-20



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MET-D-CCMS-VA								
	Water							
Batch	R5206238							
WG3394790-1 MB		NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5204369							
WG3393858-3 DUP		L2495070-1						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	29-AUG-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-20
Arsenic (As)-Total		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-20
Barium (Ba)-Total		0.0550	0.0551		mg/L	0.2	20	29-AUG-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-AUG-20
Boron (B)-Total		0.016	0.015		mg/L	2.1	20	29-AUG-20
Cadmium (Cd)-Total		0.0000425	0.0000449		mg/L	5.5	20	29-AUG-20
Calcium (Ca)-Total		164	161		mg/L	1.9	20	29-AUG-20
Chromium (Cr)-Total		0.00018	0.00022	J	mg/L	0.00004	0.0002	29-AUG-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-AUG-20
Copper (Cu)-Total		0.00510	0.00508		mg/L	0.5	20	29-AUG-20
Iron (Fe)-Total		0.021	0.022		mg/L	2.8	20	29-AUG-20
Lead (Pb)-Total		0.000504	0.000497		mg/L	1.3	20	29-AUG-20
Lithium (Li)-Total		0.0122	0.0118		mg/L	2.9	20	29-AUG-20
Magnesium (Mg)-Total		91.9	89.9		mg/L	2.2	20	29-AUG-20
Manganese (Mn)-Total		0.00160	0.00165		mg/L	3.5	20	29-AUG-20
Molybdenum (Mo)-Total		0.000862	0.000911		mg/L	5.5	20	29-AUG-20
Nickel (Ni)-Total		0.00100	0.00100		mg/L	0.8	20	29-AUG-20
Potassium (K)-Total		1.60	1.59		mg/L	0.7	20	29-AUG-20
Selenium (Se)-Total		0.0257	0.0259		mg/L	1.0	20	29-AUG-20
Silicon (Si)-Total		4.34	4.23		mg/L	2.5	20	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5204369							
WG3393858-3	DUP	L2495070-1						
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-AUG-20
Sodium (Na)-Total		7.73	7.71		mg/L	0.2	20	29-AUG-20
Strontium (Sr)-Total		0.288	0.292		mg/L	1.2	20	29-AUG-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-AUG-20
Tin (Sn)-Total		0.00019	0.00019		mg/L	1.2	20	29-AUG-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-AUG-20
Uranium (U)-Total		0.00380	0.00379		mg/L	0.0	20	29-AUG-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-AUG-20
Zinc (Zn)-Total		0.0066	0.0059		mg/L	12	20	29-AUG-20
WG3393858-2	LCS							
Aluminum (Al)-Total			101.6		%		80-120	29-AUG-20
Antimony (Sb)-Total			110.1		%		80-120	29-AUG-20
Arsenic (As)-Total			99.9		%		80-120	29-AUG-20
Barium (Ba)-Total			99.1		%		80-120	29-AUG-20
Bismuth (Bi)-Total			99.1		%		80-120	29-AUG-20
Boron (B)-Total			97.9		%		80-120	29-AUG-20
Cadmium (Cd)-Total			94.9		%		80-120	29-AUG-20
Calcium (Ca)-Total			104.0		%		80-120	29-AUG-20
Chromium (Cr)-Total			98.8		%		80-120	29-AUG-20
Cobalt (Co)-Total			98.0		%		80-120	29-AUG-20
Copper (Cu)-Total			99.1		%		80-120	29-AUG-20
Iron (Fe)-Total			104.9		%		80-120	29-AUG-20
Lead (Pb)-Total			104.1		%		80-120	29-AUG-20
Lithium (Li)-Total			98.0		%		80-120	29-AUG-20
Magnesium (Mg)-Total			98.9		%		80-120	29-AUG-20
Manganese (Mn)-Total			96.2		%		80-120	29-AUG-20
Molybdenum (Mo)-Total			106.0		%		80-120	29-AUG-20
Nickel (Ni)-Total			99.96		%		80-120	29-AUG-20
Potassium (K)-Total			99.1		%		80-120	29-AUG-20
Selenium (Se)-Total			106.5		%		80-120	29-AUG-20
Silicon (Si)-Total			99.3		%		80-120	29-AUG-20
Silver (Ag)-Total			109.6		%		80-120	29-AUG-20
Sodium (Na)-Total			98.9		%		80-120	29-AUG-20
Strontium (Sr)-Total			106.5		%		80-120	29-AUG-20



Quality Control Report

Workorder: L2495070

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5204369							
WG3393858-2	LCS							
Thallium (Tl)-Total			104.1		%		80-120	29-AUG-20
Tin (Sn)-Total			101.0		%		80-120	29-AUG-20
Titanium (Ti)-Total			96.4		%		80-120	29-AUG-20
Uranium (U)-Total			108.2		%		80-120	29-AUG-20
Vanadium (V)-Total			101.4		%		80-120	29-AUG-20
Zinc (Zn)-Total			100.7		%		80-120	29-AUG-20
WG3393858-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	29-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	29-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	29-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	29-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	29-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	29-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-AUG-20



Quality Control Report

Workorder: L2495070

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5204369							
WG3393858-1	MB							
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-AUG-20
WG3393858-4	MS	L2495070-2						
Aluminum (Al)-Total			97.7		%		70-130	29-AUG-20
Antimony (Sb)-Total			107.7		%		70-130	29-AUG-20
Arsenic (As)-Total			103.2		%		70-130	29-AUG-20
Barium (Ba)-Total			N/A	MS-B	%		-	29-AUG-20
Bismuth (Bi)-Total			99.6		%		70-130	29-AUG-20
Boron (B)-Total			92.1		%		70-130	29-AUG-20
Cadmium (Cd)-Total			97.9		%		70-130	29-AUG-20
Calcium (Ca)-Total			N/A	MS-B	%		-	29-AUG-20
Chromium (Cr)-Total			101.0		%		70-130	29-AUG-20
Cobalt (Co)-Total			96.1		%		70-130	29-AUG-20
Copper (Cu)-Total			94.9		%		70-130	29-AUG-20
Iron (Fe)-Total			102.7		%		70-130	29-AUG-20
Lead (Pb)-Total			95.7		%		70-130	29-AUG-20
Lithium (Li)-Total			86.3		%		70-130	29-AUG-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	29-AUG-20
Manganese (Mn)-Total			N/A	MS-B	%		-	29-AUG-20
Molybdenum (Mo)-Total			104.6		%		70-130	29-AUG-20
Nickel (Ni)-Total			94.3		%		70-130	29-AUG-20
Potassium (K)-Total			95.8		%		70-130	29-AUG-20
Selenium (Se)-Total			109.3		%		70-130	29-AUG-20
Silicon (Si)-Total			93.9		%		70-130	29-AUG-20
Silver (Ag)-Total			104.8		%		70-130	29-AUG-20
Sodium (Na)-Total			N/A	MS-B	%		-	29-AUG-20
Strontium (Sr)-Total			N/A	MS-B	%		-	29-AUG-20
Thallium (Tl)-Total			95.4		%		70-130	29-AUG-20
Tin (Sn)-Total			105.3		%		70-130	29-AUG-20
Titanium (Ti)-Total			100.7		%		70-130	29-AUG-20
Uranium (U)-Total			101.9		%		70-130	29-AUG-20
Vanadium (V)-Total			103.6		%		70-130	29-AUG-20
Zinc (Zn)-Total			95.2		%		70-130	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch	R5204392							
WG3393858-1 MB								
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-AUG-20
NH3-L-F-CL	Water							
Batch	R5203161							
WG3393063-14 LCS								
Ammonia as N			100.2		%		85-115	27-AUG-20
WG3393063-13 MB								
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-20
NO2-L-IC-N-CL	Water							
Batch	R5208081							
WG3395669-6 LCS								
Nitrite (as N)			99.9		%		90-110	28-AUG-20
WG3395669-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	28-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5208081							
WG3395669-6 LCS								
Nitrate (as N)			105.4		%		90-110	28-AUG-20
WG3395669-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	28-AUG-20
OH-CL	Water							
Batch	R5204136							
WG3394208-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-AUG-20
WG3394208-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-AUG-20
WG3394208-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-AUG-20
ORP-CL	Water							
Batch	R5203160							
WG3393003-5 CRM		CL-ORP						
ORP			220		mV		210-230	27-AUG-20
WG3393003-7 CRM		CL-ORP						
ORP			220		mV		210-230	27-AUG-20
WG3393003-9 CRM		CL-ORP						
ORP			221		mV		210-230	27-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch R5203160								
WG3393003-10 DUP		L2495070-5						
ORP		417	419	J	mV	2.6	15	27-AUG-20
P-T-L-COL-CL	Water							
Batch R5208926								
WG3395775-14 LCS								
Phosphorus (P)-Total			103.2		%		80-120	01-SEP-20
WG3395775-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-SEP-20
PH-CL	Water							
Batch R5204136								
WG3394208-11 LCS								
pH			7.00		pH		6.9-7.1	28-AUG-20
WG3394208-8 LCS								
pH			7.00		pH		6.9-7.1	28-AUG-20
Batch R5208085								
WG3395607-5 LCS								
pH			7.00		pH		6.9-7.1	31-AUG-20
PO4-DO-L-COL-CL	Water							
Batch R5203043								
WG3392814-4 LCS								
Orthophosphate-Dissolved (as P)			98.7		%		80-120	27-AUG-20
WG3392814-3 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-AUG-20
SO4-IC-N-CL	Water							
Batch R5208081								
WG3395669-6 LCS								
Sulfate (SO4)			100.8		%		90-110	28-AUG-20
WG3395669-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	28-AUG-20
SOLIDS-TDS-CL	Water							
Batch R5205825								
WG3394416-3 DUP		L2495070-1						
Total Dissolved Solids		1020	1020		mg/L	0.0	20	30-AUG-20
WG3394416-2 LCS								
Total Dissolved Solids			103.3		%		85-115	30-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5203509							
WG3393560-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-22	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-24	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
WG3393560-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-20
TSS-L-CL								
	Water							
Batch	R5205756							
WG3394415-2	LCS							
Total Suspended Solids			112.0		%		85-115	30-AUG-20
WG3394415-1	MB							
Total Suspended Solids			<1.0		mg/L		1	30-AUG-20
TURBIDITY-CL								
	Water							
Batch	R5203138							
WG3392952-9	DUP	L2495070-5						
Turbidity		1.59	1.58		NTU	0.6	15	27-AUG-20
WG3392952-2	LCS							
Turbidity			96.4		%		85-115	27-AUG-20
WG3392952-8	LCS							
Turbidity			96.4		%		85-115	27-AUG-20
WG3392952-1	MB							
Turbidity			<0.10		NTU		0.1	27-AUG-20
WG3392952-7	MB							
Turbidity			<0.10		NTU		0.1	27-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	26-AUG-20 13:15	27-AUG-20 20:00	0.25	31	hours	EHTR-FM
	2	26-AUG-20 13:50	27-AUG-20 20:00	0.25	30	hours	EHTR-FM
	3	26-AUG-20 11:55	27-AUG-20 20:00	0.25	32	hours	EHTR-FM
	4	26-AUG-20 11:40	27-AUG-20 20:00	0.25	32	hours	EHTR-FM
	5	26-AUG-20 13:35	27-AUG-20 20:00	0.25	30	hours	EHTR-FM
pH							
	1	26-AUG-20 13:15	28-AUG-20 12:00	0.25	47	hours	EHTR-FM
	2	26-AUG-20 13:50	28-AUG-20 12:00	0.25	46	hours	EHTR-FM
	3	26-AUG-20 11:55	28-AUG-20 12:00	0.25	48	hours	EHTR-FM
	4	26-AUG-20 11:40	28-AUG-20 12:00	0.25	48	hours	EHTR-FM
	5	26-AUG-20 13:35	31-AUG-20 13:00	0.25	120	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	4	26-AUG-20 11:40	03-SEP-20 10:21	3	8	days	EHT
Nitrite in Water by IC (Low Level)							
	4	26-AUG-20 11:40	03-SEP-20 10:21	3	8	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
 EHT: Exceeded ALS recommended hold time prior to analysis.
 Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2495070 were received on 27-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Leigh Stickney			Lab Contact	Justine Buma-a		Email 1:	Leigh.Stickney@teck.com	X	X	X	
Email	leigh.stickney@teck.com			Email	Justine.Bumaa@ALSGlobal.com		Email 2:	Jeremy.Enns@teck.com	X	X	X	
Address	P.O. BOX 5000			Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com			X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794		PO number	684125				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2495070-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILE	Y	Y	Y									
								PRESERV.	H2SO4	HCL	N	HNO3	HNO3	N	H2SO4					
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	Sulphur bacteria	Iron Bacteria	PAH	TSS/TURB	SULFIDES
GH_POTW06_WG_2020-07-06_NP	GH_POTW06	WG		8/26/2020	13:15	G	8		1	1	1	1		1	1	1	1			
GH_POTW09_WG_2020-07-06_NP	GH_POTW09	WG		8/26/2020	13:50	G	8		1	1	1	1		1	1	1	1			
GH_POTW10_WG_2020-07-06_NP	GH_POTW10	WG		8/26/2020	11:55	G	8		1	1	1	1		1	1	1	1			
GH_POTW15_WG_2020-07-06_NP	GH_POTW15	WG		8/26/2020	11:40	G	8		1	1	1	1		1	1	1	1			
GH_POTW17_WG_2020-07-06_NP	GH_POTW17	WG		8/26/2020	13:35	G	8		1	1	1	1		1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

JF/SS

Mobile #

Sampler's Signature

Date/Time

9a



SNC-Lavalin
ATTN: Mark Newman
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 03-SEP-20
Report Date: 06-NOV-20 12:08 (MT)
Version: FINAL REV. 2

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2498686
Project P.O. #: 672225
Job Reference: GREENHILLS OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

06-NOV-20 12:08 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2498686-1 WG 02-SEP-20 09:04 GH_MW_EF1A_W G_2020_09_02_NP	L2498686-2 WG 02-SEP-20 11:00 GH_MW_EF1B_W G_2020_09_02_NP	L2498686-3 WG 02-SEP-20 10:00 GH_MW_MC10- A_WG_2020_09_0 2_NP	L2498686-4 WG 02-SEP-20 10:30 GH_MW_MC10- B_WG_2020_09_0 2_NP	L2498686-5 WG 02-SEP-20 14:00 GH_MW_MC10- C_WG_2020_09_0 2_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	313	300	311	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	169	163	169	<0.50	<0.50
	pH (pH)	8.37	8.35	8.36	5.63	5.57
	ORP (mV)	460	554	483	446	556
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	200 ^{DLHC}	197 ^{DLHC}	201 ^{DLHC}	<10	<10
	Turbidity (NTU)	0.20	<0.10	0.11	<0.10	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	1.1	<1.0	1.7	1.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152	148	146	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	4.6	3.0	3.2	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	157	151	149	<1.0	<1.0
	Ammonia as N (mg/L)	0.0207	0.0219	0.0416	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	186	180	178	<5.0	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.88	0.51	0.88	<0.10	<0.10
	Fluoride (F) (mg/L)	0.154	0.159	0.154	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	91.5	90.1	95.0	0.0	0.0
	Nitrate and Nitrite (as N) (mg/L)	0.380	0.451	0.383	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	0.380	0.451	0.383	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.113	0.107	0.149	<0.050	<0.050
	Total Nitrogen (mg/L)	0.493	0.558	0.532	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	0.0017	0.0011	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	27.8	29.4	27.9	<0.30	<0.30
	Anion Sum (meq/L)	3.77	3.68	3.63	<0.10	<0.10
	Cation Sum (meq/L)	3.45	3.31	3.44	<0.10	<0.10
	Cation - Anion Balance (%)	-4.4	-5.2	-2.6	0.0	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.10
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0013	0.0011	0.0011	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

06-NOV-20 12:08 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2498686-1 WG 02-SEP-20 09:04 GH_MW_EF1A_W G_2020_09_02_NP	L2498686-2 WG 02-SEP-20 11:00 GH_MW_EF1B_W G_2020_09_02_NP	L2498686-3 WG 02-SEP-20 10:00 GH_MW_MC10- A_WG_2020_09_0 2_NP	L2498686-4 WG 02-SEP-20 10:30 GH_MW_MC10- B_WG_2020_09_0 2_NP	L2498686-5 WG 02-SEP-20 14:00 GH_MW_MC10- C_WG_2020_09_0 2_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0606	0.0602	0.0592	<0.00010
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000059	0.0000079	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	47.7	46.4	47.2	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00021	0.00021	0.00023	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0029	0.0026	0.0029	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	12.1	11.6	12.4	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00103	0.00110	0.00107	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.45	0.37	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.00207	0.00164	0.00202	<0.000050
	Silicon (Si)-Dissolved (mg/L)	2.00	2.21	2.00	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.43	0.804	1.43	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.197	0.213	0.207	<0.00020
	Sulfur (S)-Dissolved (mg/L)	9.38	8.94	9.49	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000759	0.000679	0.000776	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2498686-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2498686-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2498686-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2498686-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2498686

Report Date: 06-NOV-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Mark Newman

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5214848							
WG3400036-2	LCS							
Acidity (as CaCO3)			95.0		%		85-115	08-SEP-20
WG3400036-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	08-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5217376							
WG3400821-7	LCS							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	09-SEP-20
WG3400821-8	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-10	LCS							
Beryllium (Be)-Dissolved			96.5		%		80-120	04-SEP-20
WG3399019-2	LCS	TMRM						
Beryllium (Be)-Dissolved			106.4		%		80-120	04-SEP-20
WG3399019-6	LCS	TMRM						
Beryllium (Be)-Dissolved			97.1		%		80-120	04-SEP-20
WG3399019-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-SEP-20
WG3399019-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-SEP-20
WG3399019-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-SEP-20
WG3399019-4	MS	L2498686-5						
Beryllium (Be)-Dissolved			99.5		%		70-130	04-SEP-20
BIC-CL								
	Water							
Batch	R5217376							
WG3400821-8	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5211759							
WG3399146-3	DUP	L2498686-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2	LCS							
Bromide (Br)			104.1		%		85-115	04-SEP-20
WG3399146-6	LCS							

Quality Control Report

Workorder: L2498686

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
	Water							
Batch	R5211759							
WG3399146-6	LCS							
Bromide (Br)			104.6		%		85-115	04-SEP-20
WG3399146-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-SEP-20
WG3399146-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-SEP-20
WG3399146-4	MS	L2498686-5						
Bromide (Br)			113.3		%		75-125	04-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5212641							
WG3399411-2	LCS							
Dissolved Organic Carbon			92.0		%		80-120	05-SEP-20
WG3399411-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5212641							
WG3399411-2	LCS							
Total Organic Carbon			91.9		%		80-120	05-SEP-20
WG3399411-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
CL-L-IC-N-CL								
	Water							
Batch	R5211759							
WG3399146-3	DUP	L2498686-5						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2	LCS							
Chloride (Cl)			104.7		%		85-115	04-SEP-20
WG3399146-6	LCS							
Chloride (Cl)			104.8		%		85-115	04-SEP-20
WG3399146-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-SEP-20
WG3399146-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-SEP-20
WG3399146-4	MS	L2498686-5						
Chloride (Cl)			112.6		%		75-125	04-SEP-20
CO3-CL	Water							

Quality Control Report

Workorder: L2498686

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5217376							
WG3400821-8 MB								
Carbonate (CO3)			<5.0		mg/L		5	09-SEP-20
EC-L-PCT-CL	Water							
Batch	R5217376							
WG3400821-7 LCS								
Conductivity (@ 25C)			97.6		%		90-110	09-SEP-20
WG3400821-8 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	09-SEP-20
F-IC-N-CL	Water							
Batch	R5211759							
WG3399146-3 DUP		L2498686-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2 LCS								
Fluoride (F)			99.2		%		90-110	04-SEP-20
WG3399146-6 LCS								
Fluoride (F)			98.9		%		90-110	04-SEP-20
WG3399146-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-SEP-20
WG3399146-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-SEP-20
WG3399146-4 MS		L2498686-5						
Fluoride (F)			106.1		%		75-125	04-SEP-20
HG-D-CVAA-CL	Water							
Batch	R5221236							
WG3402039-2 LCS								
Mercury (Hg)-Dissolved			111.0		%		80-120	10-SEP-20
WG3402039-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-SEP-20
MET-D-CCMS-CL	Water							
Batch	R5211416							
WG3399019-10 LCS								
Aluminum (Al)-Dissolved			104.6		%		80-120	04-SEP-20
Antimony (Sb)-Dissolved			95.2		%		80-120	04-SEP-20
Arsenic (As)-Dissolved			103.2		%		80-120	04-SEP-20
Barium (Ba)-Dissolved			104.0		%		80-120	04-SEP-20
Bismuth (Bi)-Dissolved			95.9		%		80-120	04-SEP-20

Quality Control Report

Workorder: L2498686

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-10	LCS							
Boron (B)-Dissolved			100.4		%		80-120	04-SEP-20
Cadmium (Cd)-Dissolved			100.3		%		80-120	04-SEP-20
Calcium (Ca)-Dissolved			98.1		%		80-120	04-SEP-20
Chromium (Cr)-Dissolved			98.5		%		80-120	04-SEP-20
Cobalt (Co)-Dissolved			98.0		%		80-120	04-SEP-20
Copper (Cu)-Dissolved			97.0		%		80-120	04-SEP-20
Iron (Fe)-Dissolved			114.1		%		80-120	04-SEP-20
Lead (Pb)-Dissolved			96.6		%		80-120	04-SEP-20
Lithium (Li)-Dissolved			93.3		%		80-120	04-SEP-20
Magnesium (Mg)-Dissolved			96.5		%		80-120	04-SEP-20
Manganese (Mn)-Dissolved			100.2		%		80-120	04-SEP-20
Molybdenum (Mo)-Dissolved			98.8		%		80-120	04-SEP-20
Nickel (Ni)-Dissolved			101.2		%		80-120	04-SEP-20
Phosphorus (P)-Dissolved			108.5		%		70-130	04-SEP-20
Potassium (K)-Dissolved			98.0		%		80-120	04-SEP-20
Selenium (Se)-Dissolved			96.1		%		80-120	04-SEP-20
Silicon (Si)-Dissolved			101.8		%		60-140	04-SEP-20
Silver (Ag)-Dissolved			93.3		%		80-120	04-SEP-20
Sodium (Na)-Dissolved			99.1		%		80-120	04-SEP-20
Strontium (Sr)-Dissolved			98.6		%		80-120	04-SEP-20
Sulfur (S)-Dissolved			101.6		%		80-120	04-SEP-20
Thallium (Tl)-Dissolved			95.9		%		80-120	04-SEP-20
Tin (Sn)-Dissolved			90.4		%		80-120	04-SEP-20
Titanium (Ti)-Dissolved			99.2		%		80-120	04-SEP-20
Uranium (U)-Dissolved			94.1		%		80-120	04-SEP-20
Vanadium (V)-Dissolved			99.8		%		80-120	04-SEP-20
Zinc (Zn)-Dissolved			100.0		%		80-120	04-SEP-20
Zirconium (Zr)-Dissolved			94.8		%		80-120	04-SEP-20
WG3399019-2	LCS	TMRM						
Aluminum (Al)-Dissolved			109.2		%		80-120	04-SEP-20
Antimony (Sb)-Dissolved			105.5		%		80-120	04-SEP-20
Arsenic (As)-Dissolved			112.5		%		80-120	04-SEP-20
Barium (Ba)-Dissolved			111.0		%		80-120	04-SEP-20
Bismuth (Bi)-Dissolved			101.2		%		80-120	04-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-2	LCS	TMRM						
Boron (B)-Dissolved			110.1		%		80-120	04-SEP-20
Cadmium (Cd)-Dissolved			110.2		%		80-120	04-SEP-20
Calcium (Ca)-Dissolved			107.5		%		80-120	04-SEP-20
Chromium (Cr)-Dissolved			108.7		%		80-120	04-SEP-20
Cobalt (Co)-Dissolved			108.1		%		80-120	04-SEP-20
Copper (Cu)-Dissolved			106.2		%		80-120	04-SEP-20
Iron (Fe)-Dissolved			110.8		%		80-120	04-SEP-20
Lead (Pb)-Dissolved			101.8		%		80-120	04-SEP-20
Lithium (Li)-Dissolved			108.2		%		80-120	04-SEP-20
Magnesium (Mg)-Dissolved			104.1		%		80-120	04-SEP-20
Manganese (Mn)-Dissolved			108.7		%		80-120	04-SEP-20
Molybdenum (Mo)-Dissolved			105.8		%		80-120	04-SEP-20
Nickel (Ni)-Dissolved			104.9		%		80-120	04-SEP-20
Phosphorus (P)-Dissolved			111.1		%		70-130	04-SEP-20
Potassium (K)-Dissolved			108.8		%		80-120	04-SEP-20
Selenium (Se)-Dissolved			104.7		%		80-120	04-SEP-20
Silicon (Si)-Dissolved			111.8		%		60-140	04-SEP-20
Silver (Ag)-Dissolved			99.99		%		80-120	04-SEP-20
Sodium (Na)-Dissolved			110.8		%		80-120	04-SEP-20
Strontium (Sr)-Dissolved			107.0		%		80-120	04-SEP-20
Sulfur (S)-Dissolved			109.5		%		80-120	04-SEP-20
Thallium (Tl)-Dissolved			101.0		%		80-120	04-SEP-20
Tin (Sn)-Dissolved			102.3		%		80-120	04-SEP-20
Titanium (Ti)-Dissolved			95.7		%		80-120	04-SEP-20
Uranium (U)-Dissolved			97.6		%		80-120	04-SEP-20
Vanadium (V)-Dissolved			111.0		%		80-120	04-SEP-20
Zinc (Zn)-Dissolved			114.0		%		80-120	04-SEP-20
Zirconium (Zr)-Dissolved			99.6		%		80-120	04-SEP-20
WG3399019-6	LCS	TMRM						
Aluminum (Al)-Dissolved			104.1		%		80-120	04-SEP-20
Antimony (Sb)-Dissolved			100.0		%		80-120	04-SEP-20
Arsenic (As)-Dissolved			104.2		%		80-120	04-SEP-20
Barium (Ba)-Dissolved			104.6		%		80-120	04-SEP-20
Bismuth (Bi)-Dissolved			97.1		%		80-120	04-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-6	LCS	TMRM						
Boron (B)-Dissolved			101.8		%		80-120	04-SEP-20
Cadmium (Cd)-Dissolved			101.0		%		80-120	04-SEP-20
Calcium (Ca)-Dissolved			100.7		%		80-120	04-SEP-20
Chromium (Cr)-Dissolved			100.8		%		80-120	04-SEP-20
Cobalt (Co)-Dissolved			99.3		%		80-120	04-SEP-20
Copper (Cu)-Dissolved			99.4		%		80-120	04-SEP-20
Iron (Fe)-Dissolved			105.1		%		80-120	04-SEP-20
Lead (Pb)-Dissolved			99.7		%		80-120	04-SEP-20
Lithium (Li)-Dissolved			98.5		%		80-120	04-SEP-20
Magnesium (Mg)-Dissolved			97.7		%		80-120	04-SEP-20
Manganese (Mn)-Dissolved			100.4		%		80-120	04-SEP-20
Molybdenum (Mo)-Dissolved			99.7		%		80-120	04-SEP-20
Nickel (Ni)-Dissolved			101.3		%		80-120	04-SEP-20
Phosphorus (P)-Dissolved			107.2		%		70-130	04-SEP-20
Potassium (K)-Dissolved			101.4		%		80-120	04-SEP-20
Selenium (Se)-Dissolved			100.5		%		80-120	04-SEP-20
Silicon (Si)-Dissolved			105.9		%		60-140	04-SEP-20
Silver (Ag)-Dissolved			93.3		%		80-120	04-SEP-20
Sodium (Na)-Dissolved			101.4		%		80-120	04-SEP-20
Strontium (Sr)-Dissolved			101.4		%		80-120	04-SEP-20
Sulfur (S)-Dissolved			113.5		%		80-120	04-SEP-20
Thallium (Tl)-Dissolved			98.5		%		80-120	04-SEP-20
Tin (Sn)-Dissolved			96.2		%		80-120	04-SEP-20
Titanium (Ti)-Dissolved			95.1		%		80-120	04-SEP-20
Uranium (U)-Dissolved			96.8		%		80-120	04-SEP-20
Vanadium (V)-Dissolved			101.7		%		80-120	04-SEP-20
Zinc (Zn)-Dissolved			101.0		%		80-120	04-SEP-20
Zirconium (Zr)-Dissolved			94.3		%		80-120	04-SEP-20
WG3399019-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5211416							
WG3399019-1 MB								
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	04-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
WG3399019-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5211416							
WG3399019-5 MB								
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	04-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
WG3399019-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-9	MB							
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	04-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
WG3399019-4	MS	L2498686-5						
Aluminum (Al)-Dissolved			103.5		%		70-130	04-SEP-20
Antimony (Sb)-Dissolved			94.9		%		70-130	04-SEP-20
Arsenic (As)-Dissolved			104.4		%		70-130	04-SEP-20
Barium (Ba)-Dissolved			102.4		%		70-130	04-SEP-20
Bismuth (Bi)-Dissolved			97.2		%		70-130	04-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5211416							
WG3399019-4	MS	L2498686-5						
Boron (B)-Dissolved			103.9		%		70-130	04-SEP-20
Cadmium (Cd)-Dissolved			102.6		%		70-130	04-SEP-20
Calcium (Ca)-Dissolved			101.3		%		70-130	04-SEP-20
Chromium (Cr)-Dissolved			98.2		%		70-130	04-SEP-20
Cobalt (Co)-Dissolved			101.8		%		70-130	04-SEP-20
Copper (Cu)-Dissolved			100.0		%		70-130	04-SEP-20
Iron (Fe)-Dissolved			102.8		%		70-130	04-SEP-20
Lead (Pb)-Dissolved			96.9		%		70-130	04-SEP-20
Lithium (Li)-Dissolved			101.8		%		70-130	04-SEP-20
Magnesium (Mg)-Dissolved			95.3		%		70-130	04-SEP-20
Manganese (Mn)-Dissolved			102.8		%		70-130	04-SEP-20
Molybdenum (Mo)-Dissolved			99.3		%		70-130	04-SEP-20
Nickel (Ni)-Dissolved			100.3		%		70-130	04-SEP-20
Phosphorus (P)-Dissolved			102.1		%		70-130	04-SEP-20
Potassium (K)-Dissolved			99.8		%		70-130	04-SEP-20
Selenium (Se)-Dissolved			100.4		%		70-130	04-SEP-20
Silicon (Si)-Dissolved			104.6		%		70-130	04-SEP-20
Silver (Ag)-Dissolved			96.1		%		70-130	04-SEP-20
Sodium (Na)-Dissolved			97.1		%		70-130	04-SEP-20
Strontium (Sr)-Dissolved			100.0		%		70-130	04-SEP-20
Thallium (Tl)-Dissolved			95.5		%		70-130	04-SEP-20
Tin (Sn)-Dissolved			92.1		%		70-130	04-SEP-20
Titanium (Ti)-Dissolved			96.8		%		70-130	04-SEP-20
Uranium (U)-Dissolved			95.0		%		70-130	04-SEP-20
Vanadium (V)-Dissolved			98.9		%		70-130	04-SEP-20
Zinc (Zn)-Dissolved			104.5		%		70-130	04-SEP-20
Zirconium (Zr)-Dissolved			100.9		%		70-130	04-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5214846							
WG3398942-6	LCS							
Ammonia as N			114.2		%		85-115	04-SEP-20
WG3398942-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-SEP-20
NO2-L-IC-N-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch	R5211759							
WG3399146-3	DUP	L2498686-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2	LCS							
Nitrite (as N)			102.6		%		90-110	04-SEP-20
WG3399146-6	LCS							
Nitrite (as N)			102.3		%		90-110	04-SEP-20
WG3399146-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-SEP-20
WG3399146-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-SEP-20
WG3399146-4	MS	L2498686-5						
Nitrite (as N)			114.7		%		75-125	04-SEP-20
NO3-L-IC-N-CL								
Water								
Batch	R5211759							
WG3399146-3	DUP	L2498686-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2	LCS							
Nitrate (as N)			105.5		%		90-110	04-SEP-20
WG3399146-6	LCS							
Nitrate (as N)			105.8		%		90-110	04-SEP-20
WG3399146-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-SEP-20
WG3399146-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-SEP-20
WG3399146-4	MS	L2498686-5						
Nitrate (as N)			113.0		%		75-125	04-SEP-20
OH-CL								
Water								
Batch	R5217376							
WG3400821-8	MB							
Hydroxide (OH)			<5.0		mg/L		5	09-SEP-20
ORP-CL								
Water								
Batch	R5216098							
WG3400331-1	CRM	CL-ORP						
ORP			221		mV		210-230	08-SEP-20
WG3400331-3	CRM	CL-ORP						
ORP			223		mV		210-230	08-SEP-20
P-T-L-COL-CL								
Water								



Quality Control Report

Workorder: L2498686

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5210664							
WG3398750-18	LCS							
Phosphorus (P)-Total			107.3		%		80-120	04-SEP-20
WG3398750-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-20
Batch	R5218176							
WG3401003-10	LCS							
Phosphorus (P)-Total			101.4		%		80-120	09-SEP-20
WG3401003-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-SEP-20
PH-CL								
Water								
Batch	R5217376							
WG3400821-7	LCS							
pH			7.00		pH		6.9-7.1	09-SEP-20
PO4-DO-L-COL-CL								
Water								
Batch	R5210049							
WG3397927-18	LCS							
Orthophosphate-Dissolved (as P)			99.6		%		80-120	03-SEP-20
WG3397927-22	LCS							
Orthophosphate-Dissolved (as P)			105.6		%		80-120	03-SEP-20
WG3397927-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
WG3397927-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
SO4-IC-N-CL								
Water								
Batch	R5211759							
WG3399146-3	DUP	L2498686-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	04-SEP-20
WG3399146-2	LCS							
Sulfate (SO4)			105.2		%		90-110	04-SEP-20
WG3399146-6	LCS							
Sulfate (SO4)			105.4		%		90-110	04-SEP-20
WG3399146-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-SEP-20
WG3399146-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-SEP-20
WG3399146-4	MS	L2498686-5						
Sulfate (SO4)			113.8		%		75-125	04-SEP-20

Quality Control Report

Workorder: L2498686

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R5221200							
WG3400522-5 LCS								
Total Dissolved Solids			102.5		%		85-115	09-SEP-20
WG3400522-4 MB								
Total Dissolved Solids			<10		mg/L		10	09-SEP-20
TKN-L-F-CL								
Water								
Batch	R5212121							
WG3399260-9 DUP		L2498686-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	05-SEP-20
WG3399260-14 LCS								
Total Kjeldahl Nitrogen			90.6		%		75-125	05-SEP-20
WG3399260-18 LCS								
Total Kjeldahl Nitrogen			90.3		%		75-125	05-SEP-20
WG3399260-2 LCS								
Total Kjeldahl Nitrogen			94.6		%		75-125	05-SEP-20
WG3399260-23 LCS								
Total Kjeldahl Nitrogen			87.0		%		75-125	05-SEP-20
WG3399260-6 LCS								
Total Kjeldahl Nitrogen			92.2		%		75-125	05-SEP-20
WG3399260-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-10 MS		L2498686-4						
Total Kjeldahl Nitrogen			127.2		%		70-130	05-SEP-20
TSS-L-CL								
Water								
Batch	R5220837							
WG3400512-4 LCS								
Total Suspended Solids			88.4		%		85-115	09-SEP-20
WG3400512-3 MB								
Total Suspended Solids			<1.0		mg/L		1	09-SEP-20
TURBIDITY-CL								
Water								



Quality Control Report

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Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5210048							
WG3397976-11	LCS							
Turbidity			96.4		%		85-115	03-SEP-20
WG3397976-10	MB							
Turbidity			<0.10		NTU		0.1	03-SEP-20

Quality Control Report

Workorder: L2498686

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	02-SEP-20 09:04	08-SEP-20 13:30	0.25	148	hours	EHTR-FM
	2	02-SEP-20 11:00	08-SEP-20 13:30	0.25	146	hours	EHTR-FM
	3	02-SEP-20 10:00	08-SEP-20 13:30	0.25	148	hours	EHTR-FM
	4	02-SEP-20 10:30	08-SEP-20 13:30	0.25	147	hours	EHTR-FM
	5	02-SEP-20 14:00	08-SEP-20 13:30	0.25	144	hours	EHTR-FM
pH							
	1	02-SEP-20 09:04	09-SEP-20 12:00	0.25	171	hours	EHTR-FM
	2	02-SEP-20 11:00	09-SEP-20 12:00	0.25	169	hours	EHTR-FM
	3	02-SEP-20 10:00	09-SEP-20 12:00	0.25	170	hours	EHTR-FM
	4	02-SEP-20 10:30	09-SEP-20 12:00	0.25	169	hours	EHTR-FM
	5	02-SEP-20 14:00	09-SEP-20 12:00	0.25	166	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498686 were received on 03-SEP-20 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2498686-COFC

COC Number: 19 -

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Report To Contact and company name below will appear on the final report		Report Format / Distribution				Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)															
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply															
Contact: Mark Newman		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				4 day [P4-20%] <input type="checkbox"/>					1 Business day [E1 - 100%] <input type="checkbox"/>										
Phone: Tel.:250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>										
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				2 day [P2-50%] <input type="checkbox"/>					EMERGENCY										
Street: 520 Lake Street		E-mails: SNC - 'Mark Newman' XXXXXXXXXX				Date and Time Required for all E&P TATs:															
City/Province: Nelson, BC		E-mails: 'Vicky.Lipinski@snc-lavalin.com'				For tests that can not be performed according to the service level selected, you will be contacted.															
Postal Code: V1L 4C6		Teck: SEE DIGITAL COC				Analysis Request															
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below															
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				F/P P F/P															
Company:		E-mails: Mark.Newman@snc-lavalin.com				DOC (C-DIS-ORG-LOW-CL)															
Contact:		payables@snc-lavalin.com				TOC (C-TOT-ORG-LOW-CL)															
Project Information		Oil and Gas Required Fields (client use)				BC MDG D-Met + Hg (MET-D-BCMDG-CL)															
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center:		PO#		Total N Calc. (N-T-CALC-CL)															
Job #: 570023 GH0-Greenhills Operation		Major/Minor Code:		Routing Code:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)															
PO / AFE: 672225		Requisitioner:		Location:		Teck Routine (TECKCOAL-ROUTINE-CL)															
LSD:		ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB40		TKN (TKN-L-F-CL)													
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Bicarbonate (BIC-CL)									
GH_MW_ERIA_WG_2020_09_02_NP		GH_MW_ERIA		GH_MW_ERIA		02-Sep-20		9:40		WG		Carbonate (CO3-CL)									
GH_MW_ERIB_WG_2020_09_02_NP		GH_MW_ERIB		GH_MW_ERIB		02-Sep-20		11:00		WG		Hydroxide (OH-CL)									
GH_MW_MC10-A_WG_2020_09_02_NP		GH_MW_MC10-A		GH_MW_MC10-A		02-Sep-20		10:00		WG		SAMPLES ON HOLD									
GH_MW_MC10-B_WG_2020_09_02_NP		GH_MW_MC10-B		GH_MW_MC10-B		02-Sep-20		10:30		WG		Sample is hazardous (please provide further details)									
GH_MW_MC10-C_WG_2020_09_02_NP		GH_MW_MC10-C		GH_MW_MC10-C		02-Sep-20		14:00		WG		NUMBER OF CONTAINERS									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
										WG		5									
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)															
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO						Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
						Cooling Initiated <input checked="" type="checkbox"/>															
						INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C										
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)															
Released by: Marc Beaton		Date: 02-Sep-20		Time: 1400		Received by: [Signature]		Date: 9/3		Time: 1115		Received by:		Date:		Time:					



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 12-SEP-20
Report Date: 22-SEP-20 09:53 (MT)
Version: FINAL

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2502314
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Justine Buma-a
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2502314-1 GH_MW-GHC-1D_WG_2020-07-06_NP							
Sampled By: JF/KM on 11-SEP-20 @ 13:00							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.97		0.50	mg/L		15-SEP-20	R5224686
Total Kjeldahl Nitrogen	0.257		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	1.03		0.50	mg/L		15-SEP-20	R5224686
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5230167
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224963
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-SEP-20	19-SEP-20	R5230992
Dissolved Mercury Filtration Location	FIELD					18-SEP-20	R5230417
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224963
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	18-SEP-20	R5230167
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Barium (Ba)-Dissolved	0.0937		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Boron (B)-Dissolved	0.032		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Cadmium (Cd)-Dissolved	0.0257		0.0050	ug/L	16-SEP-20	18-SEP-20	R5230167
Calcium (Ca)-Dissolved	173		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	18-SEP-20	R5230167
Copper (Cu)-Dissolved	0.00065		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230167
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Lithium (Li)-Dissolved	0.0176		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230167
Magnesium (Mg)-Dissolved	53.8		0.10	mg/L	16-SEP-20	18-SEP-20	R5230167
Manganese (Mn)-Dissolved	0.00042		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Molybdenum (Mo)-Dissolved	0.000712		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Nickel (Ni)-Dissolved	0.00279		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230167
Potassium (K)-Dissolved	1.42		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Selenium (Se)-Dissolved	4.26		0.050	ug/L	16-SEP-20	18-SEP-20	R5230167
Silicon (Si)-Dissolved	4.51		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Sodium (Na)-Dissolved	4.93		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Strontium (Sr)-Dissolved	0.514		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230167
Thallium (Tl)-Dissolved	0.000025		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Uranium (U)-Dissolved	0.00295		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230167
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230167
Hardness							
Hardness (as CaCO3)	654		0.50	mg/L		18-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.0		1.0	mg/L		15-SEP-20	R5224327
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	246		1.0	mg/L		18-SEP-20	R5229761
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-SEP-20	R5229761

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2502314-1 GH_MW-GHC-1D_WG_2020-07-06_NP							
Sampled By: JF/KM on 11-SEP-20 @ 13:00							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-SEP-20	R5229761
Alkalinity, Total (as CaCO3)	246		1.0	mg/L		18-SEP-20	R5229761
Ammonia, Total (as N)							
Ammonia as N	0.229		0.0050	mg/L		14-SEP-20	R5224062
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		12-SEP-20	R5223278
Chloride in Water by IC							
Chloride (Cl)	2.71	DLHC	0.50	mg/L		12-SEP-20	R5223278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	906		2.0	uS/cm		18-SEP-20	R5229761
Fluoride in Water by IC							
Fluoride (F)	0.46	DLHC	0.10	mg/L		12-SEP-20	R5223278
Ion Balance Calculation							
Cation - Anion Balance	3.6			%		18-SEP-20	
Anion Sum	12.4			meq/L		18-SEP-20	
Cation Sum	13.3			meq/L		18-SEP-20	
Ion Balance Calculation							
Ion Balance	107		-100	%		18-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.381	DLHC	0.025	mg/L		12-SEP-20	R5223278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		12-SEP-20	R5223278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-SEP-20	R5222820
Oxidation redution potential by elect.							
ORP	345		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0049		0.0020	mg/L		18-SEP-20	R5229838
Sulfate in Water by IC							
Sulfate (SO4)	354	DLHC	1.5	mg/L		12-SEP-20	R5223278
Total Dissolved Solids							
Total Dissolved Solids	784	DLHC	20	mg/L		16-SEP-20	R5226876
Total Suspended Solids							
Total Suspended Solids	3.1		1.0	mg/L		16-SEP-20	R5226690
Turbidity							
Turbidity	1.93		0.10	NTU		12-SEP-20	R5222915
pH							
pH	8.01		0.10	pH		18-SEP-20	R5229761
L2502314-2 GH_MW-GHC-1S_WG_2020-07-06_NP							
Sampled By: JF/KM on 11-SEP-20 @ 14:50							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	2.03		0.50	mg/L		15-SEP-20	R5224686
Total Kjeldahl Nitrogen	0.103		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	0.00072		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	2.17		0.50	mg/L		15-SEP-20	R5224686
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5230167
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224963
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2502314-2 GH_MW-GHC-1S_WG_2020-07-06_NP							
Sampled By: JF/KM on 11-SEP-20 @ 14:50							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	18-SEP-20	19-SEP-20	R5230992
Dissolved Mercury Filtration Location	FIELD					18-SEP-20	R5230417
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224963
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	18-SEP-20	R5230167
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Arsenic (As)-Dissolved	0.00082		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Barium (Ba)-Dissolved	0.0330		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Boron (B)-Dissolved	0.041		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Cadmium (Cd)-Dissolved	0.0292		0.0050	ug/L	16-SEP-20	18-SEP-20	R5230167
Calcium (Ca)-Dissolved	268		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Cobalt (Co)-Dissolved	0.53		0.10	ug/L	16-SEP-20	18-SEP-20	R5230167
Copper (Cu)-Dissolved	0.00045		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230167
Iron (Fe)-Dissolved	0.473		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Lithium (Li)-Dissolved	0.0229		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230167
Magnesium (Mg)-Dissolved	59.7		0.10	mg/L	16-SEP-20	18-SEP-20	R5230167
Manganese (Mn)-Dissolved	0.275		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Molybdenum (Mo)-Dissolved	0.00104		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230167
Nickel (Ni)-Dissolved	0.00266		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230167
Potassium (K)-Dissolved	2.06		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	16-SEP-20	18-SEP-20	R5230167
Silicon (Si)-Dissolved	6.11		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Sodium (Na)-Dissolved	5.03		0.050	mg/L	16-SEP-20	18-SEP-20	R5230167
Strontium (Sr)-Dissolved	0.769		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230167
Thallium (Tl)-Dissolved	0.000015		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230167
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	18-SEP-20	R5230167
Uranium (U)-Dissolved	0.00200		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230167
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230167
Zinc (Zn)-Dissolved	0.0190		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230167
Hardness							
Hardness (as CaCO3)	914		0.50	mg/L		18-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.4		1.0	mg/L		15-SEP-20	R5224327
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	272		1.0	mg/L		18-SEP-20	R5229761
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-SEP-20	R5229761
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-SEP-20	R5229761
Alkalinity, Total (as CaCO3)	272		1.0	mg/L		18-SEP-20	R5229761
Ammonia, Total (as N)							
Ammonia as N	0.0431		0.0050	mg/L		14-SEP-20	R5224062
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		12-SEP-20	R5223278
Chloride in Water by IC							
Chloride (Cl)	10.5	DLHC	0.50	mg/L		12-SEP-20	R5223278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1290		2.0	uS/cm		18-SEP-20	R5229761

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2502314-2 GH_MW-GHC-1S_WG_2020-07-06_NP							
Sampled By: JF/KM on 11-SEP-20 @ 14:50							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	0.17	DLHC	0.10	mg/L		12-SEP-20	R5223278
Ion Balance Calculation							
Ion Balance	98.8		-100	%		18-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.6			%		18-SEP-20	
Anion Sum	18.8			meq/L		18-SEP-20	
Cation Sum	18.6			meq/L		18-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		12-SEP-20	R5223278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		12-SEP-20	R5223278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-SEP-20	R5222820
Oxidation redution potential by elect.							
ORP	237		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0077		0.0020	mg/L		18-SEP-20	R5229838
Sulfate in Water by IC							
Sulfate (SO4)	628	DLHC	1.5	mg/L		12-SEP-20	R5223278
Total Dissolved Solids							
Total Dissolved Solids	1170	DLHC	20	mg/L		16-SEP-20	R5226876
Total Suspended Solids							
Total Suspended Solids	9.5		1.0	mg/L		16-SEP-20	R5226690
Turbidity							
Turbidity	6.58		0.10	NTU		12-SEP-20	R5222915
pH							
pH	7.71		0.10	pH		18-SEP-20	R5229761

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2502314

Report Date: 22-SEP-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5224327							
WG3405383-11	LCS							
Acidity (as CaCO3)			99.0		%		85-115	15-SEP-20
WG3405383-10	MB							
Acidity (as CaCO3)			1.7		mg/L		2	15-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5229761							
WG3407727-3	DUP	L2502314-2						
Alkalinity, Total (as CaCO3)		272	268		mg/L	1.4	20	18-SEP-20
WG3407727-2	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	18-SEP-20
WG3407727-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5230167							
WG3405987-2	LCS							
Beryllium (Be)-Dissolved			96.9		%		80-120	18-SEP-20
WG3405987-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5223278							
WG3404056-6	LCS							
Bromide (Br)			102.0		%		85-115	12-SEP-20
WG3404056-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5224686							
WG3405583-6	LCS							
Dissolved Organic Carbon			98.4		%		80-120	15-SEP-20
WG3405583-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-SEP-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5224686							
WG3405583-6	LCS							
Total Organic Carbon			100.1		%		80-120	15-SEP-20
WG3405583-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	15-SEP-20
CL-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2502314

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-L-IC-N-CL								
Batch	R5223278							
WG3404056-6	LCS							
Chloride (Cl)			101.1		%		85-115	12-SEP-20
WG3404056-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	12-SEP-20
EC-L-PCT-CL								
Batch	R5229761							
WG3407727-3	DUP	L2502314-2						
Conductivity (@ 25C)		1290	1300		uS/cm	1.0	10	18-SEP-20
WG3407727-2	LCS							
Conductivity (@ 25C)			94.2		%		90-110	18-SEP-20
WG3407727-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-SEP-20
F-IC-N-CL								
Batch	R5223278							
WG3404056-6	LCS							
Fluoride (F)			100.0		%		90-110	12-SEP-20
WG3404056-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	12-SEP-20
HG-D-CVAA-VA								
Batch	R5230992							
WG3407889-2	LCS							
Mercury (Hg)-Dissolved			96.8		%		80-120	19-SEP-20
WG3407889-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-SEP-20
HG-T-U-CVAF-VA								
Batch	R5226825							
WG3406751-2	LCS							
Mercury (Hg)-Total			91.8		%		80-120	17-SEP-20
WG3406751-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-SEP-20
MET-D-CCMS-VA								
Batch	R5230167							
WG3405987-2	LCS							
Aluminum (Al)-Dissolved			102.3		%		80-120	18-SEP-20
Antimony (Sb)-Dissolved			97.4		%		80-120	18-SEP-20
Arsenic (As)-Dissolved			96.7		%		80-120	18-SEP-20
Barium (Ba)-Dissolved			105.1		%		80-120	18-SEP-20



Quality Control Report

Workorder: L2502314

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5230167							
WG3405987-2	LCS							
Bismuth (Bi)-Dissolved			108.3		%		80-120	18-SEP-20
Boron (B)-Dissolved			93.7		%		80-120	18-SEP-20
Cadmium (Cd)-Dissolved			98.1		%		80-120	18-SEP-20
Calcium (Ca)-Dissolved			101.2		%		80-120	18-SEP-20
Chromium (Cr)-Dissolved			96.0		%		80-120	18-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	18-SEP-20
Copper (Cu)-Dissolved			96.7		%		80-120	18-SEP-20
Iron (Fe)-Dissolved			92.9		%		80-120	18-SEP-20
Lead (Pb)-Dissolved			98.1		%		80-120	18-SEP-20
Lithium (Li)-Dissolved			97.8		%		80-120	18-SEP-20
Magnesium (Mg)-Dissolved			96.3		%		80-120	18-SEP-20
Manganese (Mn)-Dissolved			95.5		%		80-120	18-SEP-20
Molybdenum (Mo)-Dissolved			102.9		%		80-120	18-SEP-20
Nickel (Ni)-Dissolved			96.9		%		80-120	18-SEP-20
Potassium (K)-Dissolved			94.1		%		80-120	18-SEP-20
Selenium (Se)-Dissolved			104.0		%		80-120	18-SEP-20
Silicon (Si)-Dissolved			98.0		%		60-140	18-SEP-20
Silver (Ag)-Dissolved			101.9		%		80-120	18-SEP-20
Sodium (Na)-Dissolved			98.3		%		80-120	18-SEP-20
Strontium (Sr)-Dissolved			99.98		%		80-120	18-SEP-20
Thallium (Tl)-Dissolved			100.4		%		80-120	18-SEP-20
Tin (Sn)-Dissolved			99.7		%		80-120	18-SEP-20
Titanium (Ti)-Dissolved			95.8		%		80-120	18-SEP-20
Uranium (U)-Dissolved			97.5		%		80-120	18-SEP-20
Vanadium (V)-Dissolved			97.7		%		80-120	18-SEP-20
Zinc (Zn)-Dissolved			95.5		%		80-120	18-SEP-20
WG3405987-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5230167							
WG3405987-1	MB	NP						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5224062							
WG3404326-11	DUP	L2502314-2						
Ammonia as N		0.0431	0.0443		mg/L	2.7	20	14-SEP-20
WG3404326-10	LCS							
Ammonia as N			111.3		%		85-115	14-SEP-20
WG3404326-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-SEP-20
WG3404326-12	MS	L2502314-2						
Ammonia as N			107.7		%		75-125	14-SEP-20
NO2-L-IC-N-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5223278							
WG3404056-6	LCS							
Nitrite (as N)			99.9		%		90-110	12-SEP-20
WG3404056-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-SEP-20
NO3-L-IC-N-CL	Water							
Batch	R5223278							
WG3404056-6	LCS							
Nitrate (as N)			101.6		%		90-110	12-SEP-20
WG3404056-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-SEP-20
ORP-CL	Water							
Batch	R5224232							
WG3404997-2	CRM	CL-ORP						
ORP			220		mV		210-230	15-SEP-20
P-T-L-COL-CL	Water							
Batch	R5229838							
WG3407574-10	LCS							
Phosphorus (P)-Total			100.2		%		80-120	18-SEP-20
WG3407574-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-SEP-20
PH-CL	Water							
Batch	R5229761							
WG3407727-3	DUP	L2502314-2						
pH		7.71	7.72	J	pH	0.01	0.2	18-SEP-20
WG3407727-2	LCS							
pH			6.98		pH		6.9-7.1	18-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5222820							
WG3403419-2	LCS							
Orthophosphate-Dissolved (as P)			98.8		%		80-120	12-SEP-20
WG3403419-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-SEP-20
SO4-IC-N-CL	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5223278							
WG3404056-6	LCS							
Sulfate (SO4)			101.4		%		90-110	12-SEP-20
WG3404056-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5226876							
WG3405388-11	LCS							
Total Dissolved Solids			101.3		%		85-115	16-SEP-20
WG3405388-8	LCS							
Total Dissolved Solids			101.4		%		85-115	16-SEP-20
WG3405388-10	MB							
Total Dissolved Solids			<10		mg/L		10	16-SEP-20
WG3405388-7	MB							
Total Dissolved Solids			<10		mg/L		10	16-SEP-20
TKN-L-F-CL	Water							
Batch	R5224612							
WG3405544-2	LCS							
Total Kjeldahl Nitrogen			108.2		%		75-125	16-SEP-20
WG3405544-4	LCS							
Total Kjeldahl Nitrogen			111.8		%		75-125	16-SEP-20
WG3405544-6	LCS							
Total Kjeldahl Nitrogen			110.4		%		75-125	16-SEP-20
WG3405544-8	LCS							
Total Kjeldahl Nitrogen			110.5		%		75-125	16-SEP-20
WG3405544-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
TSS-L-CL	Water							
Batch	R5226690							
WG3405393-2	LCS							
Total Suspended Solids			94.8		%		85-115	16-SEP-20
WG3405393-1	MB							
Total Suspended Solids			<1.0		mg/L		1	16-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5222915							
WG3403353-8	LCS							
Turbidity			97.0		%		85-115	12-SEP-20
WG3403353-7	MB							
Turbidity			<0.10		NTU		0.1	12-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-SEP-20 13:00	15-SEP-20 12:45	0.25	96	hours	EHTR-FM
	2	11-SEP-20 14:50	15-SEP-20 12:45	0.25	94	hours	EHTR-FM
pH	1	11-SEP-20 13:00	18-SEP-20 12:00	0.25	167	hours	EHTR-FM
	2	11-SEP-20 14:50	18-SEP-20 12:00	0.25	165	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2502314 were received on 12-SEP-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:				TURNAROUND TIME:				RUSH:			
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Leigh Stickney				Lab Contact Justine Buma-a				Excel PDF EDD			
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								Email 3: teckcoal@equisonline.com X X X			
City Elkford Province BC				City Calgary Province AB				Email 4: jaydon.francis@teck.com X X X			
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5: Brendan.Peachey@teck.com X X X			
Phone Number 250-865-3048				Phone Number 403 407 1794				Email 6: DL-Equis-GHO.Field@teck.com X X X			
								PO number 684125			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y	Y									
								H2SO4	HCL	N	HNO3	HNO3	N	H2SO4					
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH	TSS/TURB	SULFIDES
GH_MW-GHC-1D_WG_2020-07-06_NP	GH_MW-GHC-1D	WG		9/11/2020	13:00	G	6	1	1	1	1		1	1					
GH_MW-GHC-1S_WG_2020-07-06_NP	GH_MW-GHC-1S	WG		9/11/2020	14:50	G	6	1	1	1	1		1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				9/12/2020
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	JF/KM	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

100



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

Date Received: 15-SEP-20
Report Date: 08-FEB-21 16:50 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2503105
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 8-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.

Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-1 GH_GA-MW-3_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 10:55							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	354		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	0.52		0.10	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	<0.50		0.50	mg/L		16-SEP-20	R5224806
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000025	DLM	0.000025	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-SEP-20	R5225879
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	0.0860		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	0.273		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137
Calcium (Ca)-Dissolved	45.4		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	0.0973		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Magnesium (Mg)-Dissolved	32.1		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	0.00636		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	2.54		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	5.69		0.050	ug/L	17-SEP-20	17-SEP-20	R5226820
Silicon (Si)-Dissolved	4.58		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Sodium (Na)-Dissolved	37.5		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Strontium (Sr)-Dissolved	2.23		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	0.000039		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	0.0010		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	246		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224717

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-1 GH_GA-MW-3_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 10:55 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	290		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	290		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	0.535	DLHC	0.050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527
Chloride in Water by IC							
Chloride (Cl)	6.22		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC)							
Conductivity (@ 25C)	537		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC							
Fluoride (F)	0.774		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation							
Cation - Anion Balance	-0.3			%		17-SEP-20	
Anion Sum	6.69			meq/L		17-SEP-20	
Cation Sum	6.65			meq/L		17-SEP-20	
Ion Balance Calculation							
Ion Balance	99.4		-100	%		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0033		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	392		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0118		0.0020	mg/L		16-SEP-20	R5224813
Sulfate in Water by IC							
Sulfate (SO4)	32.2		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids							
Total Dissolved Solids	384	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	4.7		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	68.8		0.10	NTU		15-SEP-20	R5224219
pH							
pH	8.27		0.10	pH		16-SEP-20	R5224756
L2503105-2 GH_MW-ERSC-1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 12:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	208		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	0.58		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	0.332		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	0.64		0.50	mg/L		16-SEP-20	R5224806

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-2 GH_MW-ERSC-1_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 12:10							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	0.115		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	0.013		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	0.0098		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137
Calcium (Ca)-Dissolved	78.2		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	0.048		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	0.0114		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Magnesium (Mg)-Dissolved	24.4		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	0.00611		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	0.00183		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	0.00086		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	0.916		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	15.5		0.050	ug/L	16-SEP-20	16-SEP-20	R5225137
Silicon (Si)-Dissolved	2.44		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000050	DLM	0.000050	mg/L	16-SEP-20	17-SEP-20	R5226820
Sodium (Na)-Dissolved	3.56		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Strontium (Sr)-Dissolved	0.288		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	0.00105		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.000050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	296		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.7		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	170		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	170		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	0.178		0.0050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-2 GH_MW-ERSC-1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 12:10 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	2.26		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC) Conductivity (@ 25C)	514		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC Fluoride (F)	0.208		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation Ion Balance	96.3		-100	%		17-SEP-20	
Ion Balance Calculation Cation - Anion Balance	-1.9			%		17-SEP-20	
Anion Sum	6.34			meq/L		17-SEP-20	
Cation Sum	6.10			meq/L		17-SEP-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	2.29		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0045		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect. ORP	437		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total Phosphorus (P)-Total	0.0152		0.0020	mg/L		16-SEP-20	R5224813
Sulfate in Water by IC Sulfate (SO4)	130		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids Total Dissolved Solids	390	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids Total Suspended Solids	8.1		1.0	mg/L		15-SEP-20	R5224785
Turbidity Turbidity	1.21		0.10	NTU		15-SEP-20	R5224219
pH pH	7.91		0.10	pH		16-SEP-20	R5224756
L2503105-3 GH_MW-UTC-1B_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	270		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	0.71		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	0.082		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	0.00057		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	0.92		0.50	mg/L		16-SEP-20	R5224806
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-3 GH_MW-UTC-1B_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	0.0699		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	0.079		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	0.0101		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137
Calcium (Ca)-Dissolved	61.2		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	0.0333		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Magnesium (Mg)-Dissolved	17.7		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	0.00519		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	0.00134		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	0.00065		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	1.16		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	2.52		0.050	ug/L	16-SEP-20	16-SEP-20	R5225137
Silicon (Si)-Dissolved	4.06		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Sodium (Na)-Dissolved	15.6		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Strontium (Sr)-Dissolved	0.955		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	0.000290		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	0.0034		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	226		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.7		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	221		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	221		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	0.0661		0.0050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527
Chloride in Water by IC							
Chloride (Cl)	7.83		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC)							
Conductivity (@ 25C)	431		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC							
Fluoride (F)	0.176		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation							
Cation - Anion Balance	-1.9			%		17-SEP-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-3 GH_MW-UTC-1B_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG							
Ion Balance Calculation							
Anion Sum	5.43			meq/L		17-SEP-20	
Cation Sum	5.22			meq/L		17-SEP-20	
Ion Balance Calculation							
Ion Balance	96.2		-100	%		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0803		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	421		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		16-SEP-20	R5224813
Sulfate in Water by IC							
Sulfate (SO4)	37.2		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids							
Total Dissolved Solids	305	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	3.5		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	4.18		0.10	NTU		15-SEP-20	R5224219
pH							
pH	7.98		0.10	pH		16-SEP-20	R5224756
L2503105-4 GH_MW-TD_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 15:12 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	428		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	0.195		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	0.65		0.50	mg/L		16-SEP-20	R5224806
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	0.0235		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	0.331		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	0.621		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-4 GH_MW-TD_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 15:12							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Calcium (Ca)-Dissolved	87.0		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	0.47		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	0.465		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	0.0372		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Magnesium (Mg)-Dissolved	34.3		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	0.765		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	0.00280		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	0.00122		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	2.40		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	0.382		0.050	ug/L	16-SEP-20	16-SEP-20	R5225137
Silicon (Si)-Dissolved	6.10		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Sodium (Na)-Dissolved	27.9		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Strontium (Sr)-Dissolved	1.11		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	0.000186		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	0.00105		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	358		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.6		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	351		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	351		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	0.226		0.0050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527
Chloride in Water by IC							
Chloride (Cl)	0.31		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC)							
Conductivity (@ 25C)	670		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC							
Fluoride (F)	0.300		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation							
Ion Balance	96.2		-100	%		17-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.9			%		17-SEP-20	
Anion Sum	8.84			meq/L		17-SEP-20	
Cation Sum	8.50			meq/L		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0051		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-4 GH_MW-TD_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 15:12 Matrix: WG							
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect. ORP	311		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-SEP-20	R5224813
Sulfate in Water by IC Sulfate (SO4)	86.8		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids Total Dissolved Solids	491	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		15-SEP-20	R5224785
Turbidity Turbidity	5.99		0.10	NTU		15-SEP-20	R5224219
pH pH	7.81		0.10	pH		16-SEP-20	R5224756
L2503105-5 GH_BLNK1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	<0.50		0.50	mg/L		16-SEP-20	R5224806
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-5 GH_BLNK1_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	<0.050		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	16-SEP-20	16-SEP-20	R5225137
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	16-SEP-20	17-SEP-20	R5226820
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation							
Ion Balance	0.0		-100	%		18-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		18-SEP-20	
Anion Sum	<0.10			meq/L		18-SEP-20	
Cation Sum	<0.10			meq/L		18-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	447		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-SEP-20	R5224813

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-5 GH_BLNK1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG							
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	<0.10		0.10	NTU		15-SEP-20	R5224219
pH							
pH	5.67		0.10	pH		16-SEP-20	R5224756
L2503105-6 GH_DUP1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	131		5.0	mg/L		16-SEP-20	R5224756
Carbonate (CO3)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Dissolved Organic Carbon	1.01		0.50	mg/L		16-SEP-20	R5224806
Hydroxide (OH)	<5.0		5.0	mg/L		16-SEP-20	R5224756
Total Kjeldahl Nitrogen	0.208		0.050	mg/L		16-SEP-20	R5224612
Mercury (Hg)-Total	0.00053		0.00050	ug/L		17-SEP-20	R5226825
Total Organic Carbon	0.97		0.50	mg/L		16-SEP-20	R5224806
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-SEP-20	16-SEP-20	R5225137
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-SEP-20	17-SEP-20	R5225558
Dissolved Mercury Filtration Location	FIELD					17-SEP-20	R5225161
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-SEP-20	R5224900
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225137
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Barium (Ba)-Dissolved	0.0721		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Boron (B)-Dissolved	0.077		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cadmium (Cd)-Dissolved	0.0083		0.0050	ug/L	16-SEP-20	16-SEP-20	R5225137
Calcium (Ca)-Dissolved	63.1		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-SEP-20	16-SEP-20	R5225137
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Lithium (Li)-Dissolved	0.0343		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Magnesium (Mg)-Dissolved	18.3		0.10	mg/L	16-SEP-20	16-SEP-20	R5225137
Manganese (Mn)-Dissolved	0.00566		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Molybdenum (Mo)-Dissolved	0.00135		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225137
Nickel (Ni)-Dissolved	0.00062		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Potassium (K)-Dissolved	1.16		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Selenium (Se)-Dissolved	2.32		0.050	ug/L	16-SEP-20	16-SEP-20	R5225137
Silicon (Si)-Dissolved	3.95		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-6 GH_DUP1_WG_2020-07-06_NP							
Sampled By: JF/KM on 13-SEP-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Sodium (Na)-Dissolved	15.1		0.050	mg/L	16-SEP-20	16-SEP-20	R5225137
Strontium (Sr)-Dissolved	1.01		0.00020	mg/L	16-SEP-20	16-SEP-20	R5225137
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225137
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-SEP-20	16-SEP-20	R5225137
Uranium (U)-Dissolved	0.000284		0.000010	mg/L	16-SEP-20	16-SEP-20	R5225137
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225137
Zinc (Zn)-Dissolved	0.0029		0.0010	mg/L	16-SEP-20	16-SEP-20	R5225137
Hardness							
Hardness (as CaCO3)	233		0.50	mg/L		17-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	213		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-SEP-20	R5224756
Alkalinity, Total (as CaCO3)	213		1.0	mg/L		16-SEP-20	R5224756
Ammonia, Total (as N)							
Ammonia as N	0.225		0.0050	mg/L		15-SEP-20	R5224751
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224527
Chloride in Water by IC							
Chloride (Cl)	8.00		0.10	mg/L		15-SEP-20	R5224527
Electrical Conductivity (EC)							
Conductivity (@ 25C)	432		2.0	uS/cm		16-SEP-20	R5224756
Fluoride in Water by IC							
Fluoride (F)	0.183		0.020	mg/L		15-SEP-20	R5224527
Ion Balance Calculation							
Cation - Anion Balance	0.8			%		17-SEP-20	
Anion Sum	5.27			meq/L		17-SEP-20	
Cation Sum	5.36			meq/L		17-SEP-20	
Ion Balance Calculation							
Ion Balance	102		-100	%		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0832		0.0050	mg/L		15-SEP-20	R5224527
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224527
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0026		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	446		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0028		0.0020	mg/L		16-SEP-20	R5224813
Sulfate in Water by IC							
Sulfate (SO4)	37.6		0.30	mg/L		15-SEP-20	R5224527
Total Dissolved Solids							
Total Dissolved Solids	295	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	7.7		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	4.04		0.10	NTU		15-SEP-20	R5224219

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503105-6 GH_DUP1_WG_2020-07-06_NP Sampled By: JF/KM on 13-SEP-20 @ 14:00 Matrix: WG pH pH	8.13		0.10	pH		16-SEP-20	R5224756

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.*

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2503105

Report Date: 08-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5224717							
WG3405808-2	LCS							
Acidity (as CaCO3)			100.9		%		85-115	16-SEP-20
WG3405808-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	16-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5224756							
WG3405824-2	LCS							
Alkalinity, Total (as CaCO3)			101.6		%		85-115	16-SEP-20
WG3405824-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5225137							
WG3405956-3	DUP	L2503105-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-SEP-20
WG3405956-2	LCS							
Beryllium (Be)-Dissolved			97.2		%		80-120	16-SEP-20
WG3405956-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-SEP-20
WG3405956-4	MS	L2503105-2						
Beryllium (Be)-Dissolved			98.5		%		70-130	16-SEP-20
BIC-CL								
	Water							
Batch	R5224756							
WG3405824-3	DUP	L2503105-6						
Bicarbonate (HCO3)		131	132		mg/L	0.6	20	16-SEP-20
WG3405824-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	16-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5224527							
WG3405572-7	DUP	L2503105-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS							
Bromide (Br)			101.0		%		85-115	15-SEP-20
WG3405572-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-SEP-20
WG3405572-8	MS	L2503105-5						
Bromide (Br)			99.0		%		75-125	15-SEP-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
C-DIS-ORG-LOW-CL Water									
Batch	R5224806								
WG3405868-2	LCS								
Dissolved Organic Carbon			107.5		%		80-120	16-SEP-20	
WG3405868-1	MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-SEP-20	
C-TOT-ORG-LOW-CL Water									
Batch	R5224806								
WG3405868-2	LCS								
Total Organic Carbon			110.1		%		80-120	16-SEP-20	
WG3405868-1	MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-SEP-20	
CL-L-IC-N-CL Water									
Batch	R5224527								
WG3405572-7	DUP	L2503105-5							
Chloride (Cl)			<0.10	<0.10	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS								
Chloride (Cl)			100.6		%		85-115	15-SEP-20	
WG3405572-5	MB								
Chloride (Cl)			<0.10		mg/L		0.1	15-SEP-20	
WG3405572-8	MS	L2503105-5							
Chloride (Cl)			101.5		%		75-125	15-SEP-20	
CO3-CL Water									
Batch	R5224756								
WG3405824-3	DUP	L2503105-6							
Carbonate (CO3)			<5.0	<5.0	RPD-NA	mg/L	N/A	20	16-SEP-20
WG3405824-1	MB								
Carbonate (CO3)			<5.0		mg/L		5	16-SEP-20	
EC-L-PCT-CL Water									
Batch	R5224756								
WG3405824-2	LCS								
Conductivity (@ 25C)			93.7		%		90-110	16-SEP-20	
WG3405824-1	MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	16-SEP-20	
F-IC-N-CL Water									
Batch	R5224527								
WG3405572-7	DUP	L2503105-5							
Fluoride (F)			<0.020	<0.020	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5224527							
WG3405572-6	LCS							
Fluoride (F)			110.0		%		90-110	15-SEP-20
WG3405572-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	15-SEP-20
WG3405572-8	MS	L2503105-5						
Fluoride (F)			110.2		%		75-125	15-SEP-20
HG-D-CVAA-VA								
Water								
Batch	R5225558							
WG3406211-10	LCS							
Mercury (Hg)-Dissolved			96.5		%		80-120	17-SEP-20
WG3406211-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-SEP-20
HG-T-U-CVAF-VA								
Water								
Batch	R5226825							
WG3406751-2	LCS							
Mercury (Hg)-Total			91.8		%		80-120	17-SEP-20
WG3406751-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5225137							
WG3405956-3	DUP	L2503105-1						
Aluminum (Al)-Dissolved			<0.0030	RPD-NA	mg/L	N/A	20	16-SEP-20
Antimony (Sb)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-20
Arsenic (As)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-20
Barium (Ba)-Dissolved			0.0860		mg/L	1.9	20	16-SEP-20
Bismuth (Bi)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Boron (B)-Dissolved			0.273		mg/L	0.9	20	16-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Calcium (Ca)-Dissolved			45.4		mg/L	2.2	20	16-SEP-20
Chromium (Cr)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-20
Cobalt (Co)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	16-SEP-20
Copper (Cu)-Dissolved			<0.00020	RPD-NA	mg/L	N/A	20	16-SEP-20
Iron (Fe)-Dissolved			<0.010	RPD-NA	mg/L	N/A	20	16-SEP-20
Lead (Pb)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Lithium (Li)-Dissolved			0.0973		mg/L	1.6	20	16-SEP-20
Magnesium (Mg)-Dissolved			32.1		mg/L	1.2	20	16-SEP-20



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Workorder: L2503105

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5225137							
WG3405956-3	DUP	L2503105-1						
Manganese (Mn)-Dissolved		0.00636	0.00659		mg/L	3.5	20	16-SEP-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Nickel (Ni)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Potassium (K)-Dissolved		2.54	2.56		mg/L	0.8	20	16-SEP-20
Silicon (Si)-Dissolved		4.58	4.63		mg/L	1.1	20	16-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-20
Sodium (Na)-Dissolved		37.5	37.4		mg/L	0.2	20	16-SEP-20
Strontium (Sr)-Dissolved		2.23	2.17		mg/L	2.8	20	16-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-20
Tin (Sn)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-SEP-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-SEP-20
Uranium (U)-Dissolved		0.000039	0.000043		mg/L	9.7	20	16-SEP-20
Vanadium (V)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-SEP-20
Zinc (Zn)-Dissolved		0.0010	0.0011		mg/L	3.2	20	16-SEP-20
WG3405956-2	LCS							
Aluminum (Al)-Dissolved			106.6		%		80-120	16-SEP-20
Antimony (Sb)-Dissolved			96.3		%		80-120	16-SEP-20
Arsenic (As)-Dissolved			98.7		%		80-120	16-SEP-20
Barium (Ba)-Dissolved			97.6		%		80-120	16-SEP-20
Bismuth (Bi)-Dissolved			105.9		%		80-120	16-SEP-20
Boron (B)-Dissolved			89.6		%		80-120	16-SEP-20
Cadmium (Cd)-Dissolved			97.6		%		80-120	16-SEP-20
Calcium (Ca)-Dissolved			97.9		%		80-120	16-SEP-20
Chromium (Cr)-Dissolved			96.6		%		80-120	16-SEP-20
Cobalt (Co)-Dissolved			97.8		%		80-120	16-SEP-20
Copper (Cu)-Dissolved			98.2		%		80-120	16-SEP-20
Iron (Fe)-Dissolved			93.3		%		80-120	16-SEP-20
Lead (Pb)-Dissolved			99.7		%		80-120	16-SEP-20
Lithium (Li)-Dissolved			93.3		%		80-120	16-SEP-20
Magnesium (Mg)-Dissolved			95.3		%		80-120	16-SEP-20
Manganese (Mn)-Dissolved			97.5		%		80-120	16-SEP-20
Molybdenum (Mo)-Dissolved			96.9		%		80-120	16-SEP-20
Nickel (Ni)-Dissolved			99.4		%		80-120	16-SEP-20
Potassium (K)-Dissolved			101.2		%		80-120	16-SEP-20



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Workorder: L2503105

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5225137							
WG3405956-2	LCS							
Selenium (Se)-Dissolved			101.0		%		80-120	16-SEP-20
Silicon (Si)-Dissolved			93.6		%		60-140	16-SEP-20
Silver (Ag)-Dissolved			96.8		%		80-120	16-SEP-20
Sodium (Na)-Dissolved			98.7		%		80-120	16-SEP-20
Strontium (Sr)-Dissolved			96.1		%		80-120	16-SEP-20
Thallium (Tl)-Dissolved			100.4		%		80-120	16-SEP-20
Tin (Sn)-Dissolved			99.0		%		80-120	16-SEP-20
Titanium (Ti)-Dissolved			94.9		%		80-120	16-SEP-20
Uranium (U)-Dissolved			97.8		%		80-120	16-SEP-20
Vanadium (V)-Dissolved			101.2		%		80-120	16-SEP-20
Zinc (Zn)-Dissolved			102.9		%		80-120	16-SEP-20
WG3405956-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5225137							
WG3405956-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-SEP-20
WG3405956-4	MS	L2503105-2						
Aluminum (Al)-Dissolved			104.1		%		70-130	16-SEP-20
Antimony (Sb)-Dissolved			100.3		%		70-130	16-SEP-20
Arsenic (As)-Dissolved			102.6		%		70-130	16-SEP-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	16-SEP-20
Bismuth (Bi)-Dissolved			87.5		%		70-130	16-SEP-20
Boron (B)-Dissolved			87.8		%		70-130	16-SEP-20
Cadmium (Cd)-Dissolved			96.8		%		70-130	16-SEP-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	16-SEP-20
Chromium (Cr)-Dissolved			96.7		%		70-130	16-SEP-20
Cobalt (Co)-Dissolved			93.1		%		70-130	16-SEP-20
Copper (Cu)-Dissolved			92.9		%		70-130	16-SEP-20
Iron (Fe)-Dissolved			97.0		%		70-130	16-SEP-20
Lead (Pb)-Dissolved			95.2		%		70-130	16-SEP-20
Lithium (Li)-Dissolved			97.1		%		70-130	16-SEP-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	16-SEP-20
Manganese (Mn)-Dissolved			93.8		%		70-130	16-SEP-20
Molybdenum (Mo)-Dissolved			97.2		%		70-130	16-SEP-20
Nickel (Ni)-Dissolved			92.8		%		70-130	16-SEP-20
Potassium (K)-Dissolved			99.7		%		70-130	16-SEP-20
Selenium (Se)-Dissolved			97.3		%		70-130	16-SEP-20
Silicon (Si)-Dissolved			87.0		%		70-130	16-SEP-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	16-SEP-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	16-SEP-20
Thallium (Tl)-Dissolved			91.2		%		70-130	16-SEP-20
Tin (Sn)-Dissolved			98.5		%		70-130	16-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5225137							
WG3405956-4	MS	L2503105-2						
Titanium (Ti)-Dissolved			97.5		%		70-130	16-SEP-20
Uranium (U)-Dissolved			94.5		%		70-130	16-SEP-20
Vanadium (V)-Dissolved			100.4		%		70-130	16-SEP-20
Zinc (Zn)-Dissolved			98.8		%		70-130	16-SEP-20
Batch	R5226820							
WG3406490-3	DUP	L2503105-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	17-SEP-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-SEP-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-SEP-20
Barium (Ba)-Dissolved		0.0860	0.0845		mg/L	1.2	20	17-SEP-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-SEP-20
Boron (B)-Dissolved		0.273	0.272		mg/L	3.2	20	17-SEP-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	17-SEP-20
Calcium (Ca)-Dissolved		45.4	44.3		mg/L	0.4	20	17-SEP-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-SEP-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	17-SEP-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-SEP-20
Lithium (Li)-Dissolved		0.0973	0.0958		mg/L	0.3	20	17-SEP-20
Magnesium (Mg)-Dissolved		32.1	30.7		mg/L	0.1	20	17-SEP-20
Manganese (Mn)-Dissolved		0.00636	0.00660		mg/L	2.7	20	17-SEP-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-SEP-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-SEP-20
Potassium (K)-Dissolved		2.54	2.48		mg/L	0.8	20	17-SEP-20
Selenium (Se)-Dissolved		0.00569	0.00497		mg/L	13	20	17-SEP-20
Silicon (Si)-Dissolved		4.58	4.67		mg/L	0.8	20	17-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-SEP-20
Sodium (Na)-Dissolved		37.5	35.5		mg/L	0.4	20	17-SEP-20
Strontium (Sr)-Dissolved		2.23	2.11		mg/L	0.8	20	17-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-SEP-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-SEP-20
Uranium (U)-Dissolved		0.000039	0.000038		mg/L	0.5	20	17-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5226820							
WG3406490-3	DUP	L2503105-1						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-SEP-20
Zinc (Zn)-Dissolved		0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3406490-2	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	17-SEP-20
Antimony (Sb)-Dissolved			92.5		%		80-120	17-SEP-20
Arsenic (As)-Dissolved			98.1		%		80-120	17-SEP-20
Barium (Ba)-Dissolved			100.7		%		80-120	17-SEP-20
Bismuth (Bi)-Dissolved			104.8		%		80-120	17-SEP-20
Boron (B)-Dissolved			102.3		%		80-120	17-SEP-20
Cadmium (Cd)-Dissolved			100.5		%		80-120	17-SEP-20
Calcium (Ca)-Dissolved			104.2		%		80-120	17-SEP-20
Chromium (Cr)-Dissolved			99.3		%		80-120	17-SEP-20
Cobalt (Co)-Dissolved			99.0		%		80-120	17-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	17-SEP-20
Iron (Fe)-Dissolved			94.3		%		80-120	17-SEP-20
Lead (Pb)-Dissolved			101.1		%		80-120	17-SEP-20
Lithium (Li)-Dissolved			99.6		%		80-120	17-SEP-20
Magnesium (Mg)-Dissolved			97.5		%		80-120	17-SEP-20
Manganese (Mn)-Dissolved			98.1		%		80-120	17-SEP-20
Molybdenum (Mo)-Dissolved			93.0		%		80-120	17-SEP-20
Nickel (Ni)-Dissolved			99.0		%		80-120	17-SEP-20
Potassium (K)-Dissolved			102.5		%		80-120	17-SEP-20
Selenium (Se)-Dissolved			104.9		%		80-120	17-SEP-20
Silicon (Si)-Dissolved			105.5		%		60-140	17-SEP-20
Sodium (Na)-Dissolved			98.9		%		80-120	17-SEP-20
Strontium (Sr)-Dissolved			100.5		%		80-120	17-SEP-20
Thallium (Tl)-Dissolved			98.9		%		80-120	17-SEP-20
Tin (Sn)-Dissolved			94.1		%		80-120	17-SEP-20
Titanium (Ti)-Dissolved			99.9		%		80-120	17-SEP-20
Uranium (U)-Dissolved			100.3		%		80-120	17-SEP-20
Vanadium (V)-Dissolved			99.7		%		80-120	17-SEP-20
Zinc (Zn)-Dissolved			101.1		%		80-120	17-SEP-20
WG3406490-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5226820							
WG3406490-1	MB	NP						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-SEP-20
Batch	R5230167							
WG3406490-2	LCS							
Silver (Ag)-Dissolved			104.1		%		80-120	18-SEP-20
NH3-L-F-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5224751								
WG3405213-18	LCS							
Ammonia as N			103.1		%		85-115	15-SEP-20
WG3405213-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	15-SEP-20
NO2-L-IC-N-CL								
Water								
Batch R5224527								
WG3405572-7	DUP	L2503105-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS							
Nitrite (as N)			100.8		%		90-110	15-SEP-20
WG3405572-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-SEP-20
WG3405572-8	MS	L2503105-5						
Nitrite (as N)			102.7		%		75-125	15-SEP-20
NO3-L-IC-N-CL								
Water								
Batch R5224527								
WG3405572-7	DUP	L2503105-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS							
Nitrate (as N)			100.7		%		90-110	15-SEP-20
WG3405572-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-SEP-20
WG3405572-8	MS	L2503105-5						
Nitrate (as N)			102.0		%		75-125	15-SEP-20
OH-CL								
Water								
Batch R5224756								
WG3405824-3	DUP	L2503105-6						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	16-SEP-20
WG3405824-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	16-SEP-20
ORP-CL								
Water								
Batch R5224232								
WG3404997-6	CRM	CL-ORP						
ORP			221		mV		210-230	15-SEP-20
WG3404997-5	DUP	L2503105-6						
ORP		446	442	J	mV	3.9	15	15-SEP-20
P-T-L-COL-CL								
Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R5224813							
WG3405476-22	LCS							
Phosphorus (P)-Total			101.2		%		80-120	16-SEP-20
WG3405476-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-SEP-20
PH-CL Water								
Batch	R5224756							
WG3405824-2	LCS							
pH			6.99		pH		6.9-7.1	16-SEP-20
PO4-DO-L-COL-CL Water								
Batch	R5224224							
WG3404933-2	LCS							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	15-SEP-20
WG3404933-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-SEP-20
SO4-IC-N-CL Water								
Batch	R5224527							
WG3405572-7	DUP	L2503105-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3405572-6	LCS							
Sulfate (SO4)			102.1		%		90-110	15-SEP-20
WG3405572-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-SEP-20
WG3405572-8	MS	L2503105-5						
Sulfate (SO4)			103.2		%		75-125	15-SEP-20
SOLIDS-TDS-CL Water								
Batch	R5224879							
WG3404525-17	LCS							
Total Dissolved Solids			103.0		%		85-115	15-SEP-20
WG3404525-16	MB							
Total Dissolved Solids			<10		mg/L		10	15-SEP-20
TKN-L-F-CL Water								
Batch	R5224612							
WG3405544-2	LCS							
Total Kjeldahl Nitrogen			108.2		%		75-125	16-SEP-20
WG3405544-4	LCS							
Total Kjeldahl Nitrogen			111.8		%		75-125	16-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5224612							
WG3405544-6	LCS							
Total Kjeldahl Nitrogen			110.4		%		75-125	16-SEP-20
WG3405544-8	LCS							
Total Kjeldahl Nitrogen			110.5		%		75-125	16-SEP-20
WG3405544-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
WG3405544-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-SEP-20
TSS-L-CL		Water						
Batch	R5224785							
WG3404295-16	LCS							
Total Suspended Solids			99.1		%		85-115	15-SEP-20
WG3404295-15	MB							
Total Suspended Solids			<1.0		mg/L		1	15-SEP-20
TURBIDITY-CL		Water						
Batch	R5224219							
WG3404934-2	LCS							
Turbidity			98.0		%		85-115	15-SEP-20
WG3404934-1	MB							
Turbidity			<0.10		NTU		0.1	15-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	13-SEP-20 10:55	15-SEP-20 14:15	0.25	51	hours	EHTR-FM
	2	13-SEP-20 12:10	15-SEP-20 14:15	0.25	50	hours	EHTR-FM
	3	13-SEP-20 14:00	15-SEP-20 14:15	0.25	48	hours	EHTR-FM
	4	13-SEP-20 15:12	15-SEP-20 14:15	0.25	47	hours	EHTR-FM
	5	13-SEP-20 14:00	15-SEP-20 14:15	0.25	48	hours	EHTR-FM
	6	13-SEP-20 14:00	15-SEP-20 14:15	0.25	48	hours	EHTR-FM
pH							
	1	13-SEP-20 10:55	16-SEP-20 11:00	0.25	72	hours	EHTR-FM
	2	13-SEP-20 12:10	16-SEP-20 11:00	0.25	71	hours	EHTR-FM
	3	13-SEP-20 14:00	16-SEP-20 11:00	0.25	69	hours	EHTR-FM
	4	13-SEP-20 15:12	16-SEP-20 11:00	0.25	68	hours	EHTR-FM
	5	13-SEP-20 14:00	16-SEP-20 11:00	0.25	69	hours	EHTR-FM
	6	13-SEP-20 14:00	16-SEP-20 11:00	0.25	69	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2503105 were received on 15-SEP-20 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Project Manager	Leigh Stickney			Lab Contact	Justine Burna-a			Email 1:	Leigh.Stickney@teck.com		X	X	X
Email	leigh.stickney@teck.com			Email	Justine.Bumaa@ALSGlobal.com			Email 2:	Jeremy.Enns@teck.com		X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com				X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com		X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com		X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	684125				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL.	PRESERV.	ANALYSIS	Y	Y	Y								
											H2SO4	HCL	N	HNO3	HNO3	N	H2SO4	BOD/Colour	EPH	PAH	TSS/TURB
GH_GA-MW-3_WG_2020-07-06_NP	GH_GA-MW-3	WG		9/13/2020	10:55	G	6			ALS_Package-DOC	1	1	1	1							
GH_MW-ERSC-1_WG_2020-07-06_NP	GH_MW-ERSC-1	WG		9/13/2020	12:10	G	6			HG-D-CVAF-VA	1	1	1	1							
GH_MW-UTC-B_WG_2020-07-06_NP	GH_MW-UTC-B	WG		9/13/2020	14:00	G	6			HG-T-U-CVAF-VA	1	1	1	1							
GH_MW-TD_WG_2020-07-06_NP	GH_MW-TD	WG		9/13/2020	15:12	G	6			TECKCOAL-MET-D-VA	1	1	1	1							
GH_BLNK1_WG_2020-07-06_NP	GH_BLNK1	WG		9/13/2020	14:00	G	6			TECKCOAL-MET-T-VA	1	1	1	1							
GH_DUP1_WG_2020-07-06_NP	GH_DUP1	WG		9/13/2020	14:00	G	6			TECKCOAL-ROUTINE-VA	1	1	1	1							
										ALS_Package-TKN/TOC	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

1 DAY RUSH

JF

09/15 10:00

SERVICE REQUEST (rush - subject to availability)

Regular (default)

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge X

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

JF/KM

Mobile #

Sampler's Signature

Date/Time

120



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

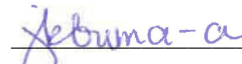
Date Received: 25-SEP-20
Report Date: 08-FEB-21 16:56 (MT)
Version: FINAL REV. 3

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2508447
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-09-24-WG
Legal Site Desc:

Comments: 8-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2508447-1 GH_MW-PC_WG_2020-07-06_NP							
Sampled By: BP on 24-SEP-20 @ 11:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	269		5.0	mg/L		26-SEP-20	R5241161
Carbonate (CO3)	6.2		5.0	mg/L		26-SEP-20	R5241161
Dissolved Organic Carbon	1.06		0.50	mg/L		01-OCT-20	R5243941
Hydroxide (OH)	<5.0		5.0	mg/L		26-SEP-20	R5241161
Total Kjeldahl Nitrogen	0.271		0.050	mg/L		27-SEP-20	R5241414
Mercury (Hg)-Total	0.00134		0.00050	ug/L		30-SEP-20	R5242970
Total Organic Carbon	1.49		0.50	mg/L		01-OCT-20	R5243941
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-SEP-20	28-SEP-20	R5241419
Dissolved Metals Filtration Location	FIELD					28-SEP-20	R5239817
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-SEP-20	29-SEP-20	R5241563
Dissolved Mercury Filtration Location	FIELD					29-SEP-20	R5241498
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-SEP-20	R5239817
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-SEP-20	28-SEP-20	R5241419
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Arsenic (As)-Dissolved	0.00034		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Barium (Ba)-Dissolved	0.0636		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-SEP-20	28-SEP-20	R5241419
Boron (B)-Dissolved	<0.010		0.010	mg/L	28-SEP-20	28-SEP-20	R5241419
Cadmium (Cd)-Dissolved	0.0480		0.0050	ug/L	28-SEP-20	28-SEP-20	R5241419
Calcium (Ca)-Dissolved	117		0.050	mg/L	28-SEP-20	28-SEP-20	R5241419
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	28-SEP-20	28-SEP-20	R5241419
Copper (Cu)-Dissolved	0.0495		0.00020	mg/L	28-SEP-20	28-SEP-20	R5241419
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	28-SEP-20	28-SEP-20	R5241419
Lead (Pb)-Dissolved	0.000070		0.000050	mg/L	28-SEP-20	28-SEP-20	R5241419
Lithium (Li)-Dissolved	0.0085		0.0010	mg/L	28-SEP-20	28-SEP-20	R5241419
Magnesium (Mg)-Dissolved	81.7		0.10	mg/L	28-SEP-20	28-SEP-20	R5241419
Manganese (Mn)-Dissolved	0.00089		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Molybdenum (Mo)-Dissolved	0.00288		0.000050	mg/L	28-SEP-20	28-SEP-20	R5241419
Nickel (Ni)-Dissolved	0.00154		0.00050	mg/L	28-SEP-20	28-SEP-20	R5241419
Potassium (K)-Dissolved	1.65		0.050	mg/L	28-SEP-20	28-SEP-20	R5241419
Selenium (Se)-Dissolved	64.2		0.050	ug/L	28-SEP-20	28-SEP-20	R5241419
Silicon (Si)-Dissolved	2.89		0.050	mg/L	28-SEP-20	28-SEP-20	R5241419
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-SEP-20	28-SEP-20	R5241419
Sodium (Na)-Dissolved	1.10		0.050	mg/L	28-SEP-20	28-SEP-20	R5241419
Strontium (Sr)-Dissolved	0.154		0.00020	mg/L	28-SEP-20	28-SEP-20	R5241419
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	28-SEP-20	28-SEP-20	R5241419
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241419
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-SEP-20	28-SEP-20	R5241419
Uranium (U)-Dissolved	0.00514		0.000010	mg/L	28-SEP-20	28-SEP-20	R5241419
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-SEP-20	28-SEP-20	R5241419
Zinc (Zn)-Dissolved	0.0030		0.0010	mg/L	28-SEP-20	28-SEP-20	R5241419
Hardness							
Hardness (as CaCO3)	629		0.50	mg/L		28-SEP-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		26-SEP-20	R5241948

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2508447-1 GH_MW-PC_WG_2020-07-06_NP Sampled By: BP on 24-SEP-20 @ 11:00 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	220		1.0	mg/L		26-SEP-20	R5241161
Alkalinity, Carbonate (as CaCO3)	10.4		1.0	mg/L		26-SEP-20	R5241161
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-20	R5241161
Alkalinity, Total (as CaCO3)	231		1.0	mg/L		26-SEP-20	R5241161
Ammonia, Total (as N)							
Ammonia as N	0.139		0.0050	mg/L		28-SEP-20	R5241710
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-SEP-20	R5241378
Chloride in Water by IC							
Chloride (Cl)	0.71		0.10	mg/L		25-SEP-20	R5241378
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1040		2.0	uS/cm		26-SEP-20	R5241161
Fluoride in Water by IC							
Fluoride (F)	0.334		0.020	mg/L		25-SEP-20	R5241378
Ion Balance Calculation							
Cation - Anion Balance	0.4			%		29-SEP-20	
Anion Sum	12.6			meq/L		29-SEP-20	
Cation Sum	12.7			meq/L		29-SEP-20	
Ion Balance Calculation							
Ion Balance	101		-100	%		29-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.33		0.0050	mg/L		25-SEP-20	R5241378
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-20	R5241378
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0132		0.0010	mg/L		26-SEP-20	R5238667
Oxidation redution potential by elect.							
ORP	382		-1000	mV		25-SEP-20	R5237697
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0209		0.0020	mg/L		29-SEP-20	R5242297
Sulfate in Water by IC							
Sulfate (SO4)	375		0.30	mg/L		25-SEP-20	R5241378
Total Dissolved Solids							
Total Dissolved Solids	770	DLHC	20	mg/L		29-SEP-20	R5242697
Total Suspended Solids							
Total Suspended Solids	14.0		1.0	mg/L		29-SEP-20	R5242654
Turbidity							
Turbidity	11.7		0.10	NTU		25-SEP-20	R5237736
pH							
pH	8.39		0.10	pH		26-SEP-20	R5241161
L2508447-2 GH_PC1_WS_2020-09-24_NP Sampled By: BP on 24-SEP-20 @ 11:00 Matrix: WG							
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	02-OCT-20	02-OCT-20	R5245496
EPH19-32	<0.25		0.25	mg/L	02-OCT-20	02-OCT-20	R5245496
Surrogate: 2-Bromobenzotrifluoride	85.8		60-140	%	02-OCT-20	02-OCT-20	R5245496
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		05-OCT-20	
TEH (C10-C30)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2508447-2 GH_PC1_WS_2020-09-24_NP Sampled By: BP on 24-SEP-20 @ 11:00 Matrix: WG TEH (C10-C30) TEH (C10-C30) Surrogate: 2-Bromobenzotrifluoride	 <0.25 85.8		 0.25 60-140	 mg/L %	 02-OCT-20 02-OCT-20	 02-OCT-20 02-OCT-20	 R5245496 R5245496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-09-24-WG

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2508447

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5241948							
WG3414319-11	LCS							
Acidity (as CaCO3)			98.0		%		85-115	26-SEP-20
WG3414319-10	MB							
Acidity (as CaCO3)			2.0		mg/L		2	26-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5241161							
WG3413856-8	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	26-SEP-20
WG3413856-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5241419							
WG3413513-2	LCS							
Beryllium (Be)-Dissolved			92.8		%		80-120	28-SEP-20
WG3413513-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-SEP-20
BIC-CL								
	Water							
Batch	R5241161							
WG3413856-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5241378							
WG3414027-2	LCS							
Bromide (Br)			106.9		%		85-115	25-SEP-20
WG3414027-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	25-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5243941							
WG3417118-6	LCS							
Dissolved Organic Carbon			91.9		%		80-120	01-OCT-20
WG3417118-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-OCT-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5243941							
WG3417118-6	LCS							
Total Organic Carbon			98.7		%		80-120	01-OCT-20
WG3417118-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	01-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5241378							
WG3414027-2	LCS							
Chloride (Cl)			100.7		%		85-115	25-SEP-20
WG3414027-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	25-SEP-20
CO3-CL	Water							
Batch	R5241161							
WG3413856-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	26-SEP-20
EC-L-PCT-CL	Water							
Batch	R5241161							
WG3413856-8	LCS							
Conductivity (@ 25C)			99.1		%		90-110	26-SEP-20
WG3413856-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-SEP-20
F-IC-N-CL	Water							
Batch	R5241378							
WG3414027-2	LCS							
Fluoride (F)			97.3		%		90-110	25-SEP-20
WG3414027-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	25-SEP-20
HG-D-CVAA-VA	Water							
Batch	R5241563							
WG3414183-6	LCS							
Mercury (Hg)-Dissolved			99.6		%		80-120	29-SEP-20
WG3414183-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-SEP-20
HG-T-U-CVAF-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA								
	Water							
Batch	R5242970							
WG3415906-2	LCS							
Mercury (Hg)-Total			95.6		%		80-120	30-SEP-20
WG3415906-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	30-SEP-20
WG3415906-4	MS	L2508447-1						
Mercury (Hg)-Total			96.8		%		70-130	30-SEP-20
MET-D-CCMS-VA								
	Water							
Batch	R5241419							
WG3413513-2	LCS							
Aluminum (Al)-Dissolved			101.4		%		80-120	28-SEP-20
Antimony (Sb)-Dissolved			99.3		%		80-120	28-SEP-20
Arsenic (As)-Dissolved			102.5		%		80-120	28-SEP-20
Barium (Ba)-Dissolved			102.9		%		80-120	28-SEP-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	28-SEP-20
Boron (B)-Dissolved			91.7		%		80-120	28-SEP-20
Cadmium (Cd)-Dissolved			103.3		%		80-120	28-SEP-20
Calcium (Ca)-Dissolved			103.6		%		80-120	28-SEP-20
Chromium (Cr)-Dissolved			104.8		%		80-120	28-SEP-20
Cobalt (Co)-Dissolved			104.4		%		80-120	28-SEP-20
Copper (Cu)-Dissolved			102.2		%		80-120	28-SEP-20
Iron (Fe)-Dissolved			105.4		%		80-120	28-SEP-20
Lead (Pb)-Dissolved			107.0		%		80-120	28-SEP-20
Lithium (Li)-Dissolved			100.1		%		80-120	28-SEP-20
Magnesium (Mg)-Dissolved			99.5		%		80-120	28-SEP-20
Manganese (Mn)-Dissolved			102.0		%		80-120	28-SEP-20
Molybdenum (Mo)-Dissolved			102.5		%		80-120	28-SEP-20
Nickel (Ni)-Dissolved			102.4		%		80-120	28-SEP-20
Potassium (K)-Dissolved			104.0		%		80-120	28-SEP-20
Selenium (Se)-Dissolved			103.4		%		80-120	28-SEP-20
Silicon (Si)-Dissolved			101.1		%		60-140	28-SEP-20
Silver (Ag)-Dissolved			109.3		%		80-120	28-SEP-20
Sodium (Na)-Dissolved			108.3		%		80-120	28-SEP-20
Strontium (Sr)-Dissolved			105.0		%		80-120	28-SEP-20
Thallium (Tl)-Dissolved			105.3		%		80-120	28-SEP-20
Tin (Sn)-Dissolved			102.2		%		80-120	28-SEP-20
Titanium (Ti)-Dissolved			100.4		%		80-120	28-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5241419							
WG3413513-2	LCS							
Uranium (U)-Dissolved			108.5		%		80-120	28-SEP-20
Vanadium (V)-Dissolved			107.1		%		80-120	28-SEP-20
Zinc (Zn)-Dissolved			102.8		%		80-120	28-SEP-20
WG3413513-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5241710								
WG3414129-19	DUP	L2508447-1						
Ammonia as N		0.139	0.140		mg/L	1.1	20	28-SEP-20
WG3414129-18	LCS							
Ammonia as N			98.7		%		85-115	28-SEP-20
WG3414129-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-SEP-20
WG3414129-20	MS	L2508447-1						
Ammonia as N			N/A	MS-B	%		-	28-SEP-20
NO2-L-IC-N-CL								
Batch R5241378								
WG3414027-2	LCS							
Nitrite (as N)			103.2		%		90-110	25-SEP-20
WG3414027-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	25-SEP-20
NO3-L-IC-N-CL								
Batch R5241378								
WG3414027-2	LCS							
Nitrate (as N)			101.4		%		90-110	25-SEP-20
WG3414027-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	25-SEP-20
OH-CL								
Batch R5241161								
WG3413856-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	26-SEP-20
ORP-CL								
Batch R5237697								
WG3412659-5	CRM	CL-ORP						
ORP			221		mV		210-230	25-SEP-20
P-T-L-COL-CL								
Batch R5242297								
WG3414535-22	LCS							
Phosphorus (P)-Total			95.2		%		80-120	29-SEP-20
WG3414535-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-SEP-20
PH-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch	R5241161							
WG3413856-8	LCS							
pH			6.98		pH		6.9-7.1	26-SEP-20
PO4-DO-L-COL-CL								
Water								
Batch	R5238667							
WG3413034-6	LCS							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	26-SEP-20
WG3413034-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-SEP-20
SO4-IC-N-CL								
Water								
Batch	R5241378							
WG3414027-2	LCS							
Sulfate (SO4)			101.3		%		90-110	25-SEP-20
WG3414027-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-SEP-20
SOLIDS-TDS-CL								
Water								
Batch	R5242697							
WG3414282-8	LCS							
Total Dissolved Solids			97.9		%		85-115	29-SEP-20
WG3414282-7	MB							
Total Dissolved Solids			<10		mg/L		10	29-SEP-20
TEH-BC-VA-CL								
Water								
Batch	R5245496							
WG3418651-2	LCS							
EPH10-19			102.4		%		70-130	02-OCT-20
EPH19-32			110.7		%		70-130	02-OCT-20
WG3418651-4	LCS							
EPH10-19			74.7		%		70-130	07-OCT-20
EPH19-32			77.1		%		70-130	07-OCT-20
WG3418651-1	MB							
EPH10-19			<0.25		mg/L		0.25	02-OCT-20
EPH19-32			<0.25		mg/L		0.25	02-OCT-20
Surrogate: 2-Bromobenzotrifluoride			71.8		%		60-140	02-OCT-20
WG3418651-3	MB							
EPH10-19			<0.25		mg/L		0.25	07-OCT-20
EPH19-32			<0.25		mg/L		0.25	07-OCT-20
Surrogate: 2-Bromobenzotrifluoride			79.1		%		60-140	07-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL		Water						
Batch	R5245496							
WG3418651-2	LCS							
TEH (C10-C30)			105.1		%		70-130	02-OCT-20
WG3418651-4	LCS							
TEH (C10-C30)			73.3		%		70-130	07-OCT-20
WG3418651-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	02-OCT-20
Surrogate: 2-Bromobenzotrifluoride			71.8		%		60-140	02-OCT-20
WG3418651-3	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	07-OCT-20
Surrogate: 2-Bromobenzotrifluoride			79.1		%		60-140	07-OCT-20
TKN-L-F-CL		Water						
Batch	R5241414							
WG3413187-10	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	27-SEP-20
WG3413187-12	LCS							
Total Kjeldahl Nitrogen			84.3		%		75-125	27-SEP-20
WG3413187-2	LCS							
Total Kjeldahl Nitrogen			93.0		%		75-125	27-SEP-20
WG3413187-6	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	27-SEP-20
WG3413187-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3413187-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3413187-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3413187-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
TSS-L-CL		Water						
Batch	R5242654							
WG3414284-6	LCS							
Total Suspended Solids			85.9		%		85-115	29-SEP-20
WG3414284-5	MB							
Total Suspended Solids			<1.0		mg/L		1	29-SEP-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5237736							
WG3412484-8	LCS							
Turbidity			97.5		%		85-115	25-SEP-20
WG3412484-7	MB							
Turbidity			<0.10		NTU		0.1	25-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	24-SEP-20 11:00	25-SEP-20 16:30	0.25	30	hours	EHTR-FM
pH	1	24-SEP-20 11:00	26-SEP-20 09:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2508447 were received on 25-SEP-20 09:00.

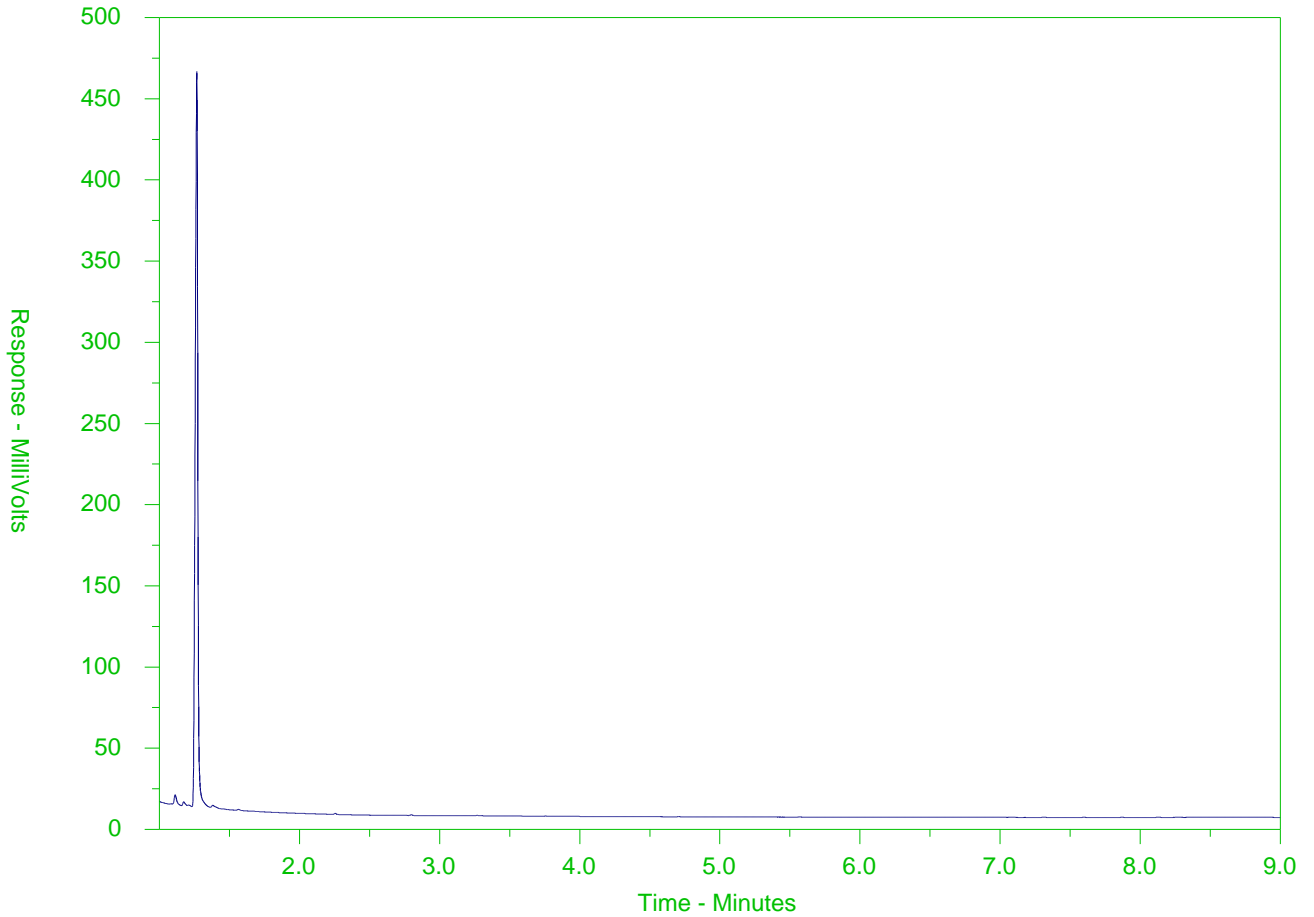
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2508447-2
 Client Sample ID: GH_MW-PC_WS_2020-09-24_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Teck

COC ID:	2020-09-24-WG	TURNAROUND TIME:	RUSH
PROJECT/CLIENT INFO		LABORATORY	
Facility Name / Job#	Greenhills Operation	Lab Name	ALS Calgary
Project Manager	Jeremy Enns	Lab Contact	Justine Burnaa
Email	Jeremy.Enns@teck.com	Email	Justine.burnaa@alsglobal.com
Address	P.O. BOX 5000	Address	2559 29 Street NE
City	Elkford	City	Calgary
Province	BC	Province	AB
Postal Code	V0B1H0	Postal Code	T1Y 7B5
Country	Canada	Country	Canada
Phone Number	250-865-3048	Phone Number	403 407 1794
Report Format / Distribution	Excel	PDF	EDD
Email 1:	Leigh.Stickney@teck.com	X	X
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Email 3:	teckcoal@equisonline.com		X
Email 4:	jaydon.francis@teck.com	X	X
Email 5:	Brendan.Peachey@teck.com	X	X
Email 6:	DL-Equis-GHO-Field@teck.com	X	X
PO number	684125		

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2508447-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	C=Com p	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	TSS/TURB	EpH
GH_MW-PC_WG_2020-07-06_NP	GH_PC	WG		9/24/2020	11:00	G	6	1	1	1	1	1	1			
GH_MW-PC_WS_2020-09-24_NP	GH_PC	WG		9/24/2020	11:00	G	2								2	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	9/25

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	BP	Mobile #	
Regular (default)	X	Sampler's Signature		Date/Time	September 24, 2020
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 30-SEP-20
Report Date: 22-JAN-21 16:27 (MT)
Version: FINAL REV. 3

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2510458
Project P.O. #: 672225
Job Reference: GREENHILLS OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510458-1 WG 29-SEP-20 14:25 GH_MW_BG1B_W G_2020_09_29_NP	L2510458-2 WG 29-SEP-20 11:00 GH_MW_BG1C_W G_2020_09_29_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	535	590		
	Hardness (as CaCO3) (mg/L)	291	274		
	pH (pH)	8.12	8.25		
	ORP (mV)	274	313		
	Total Suspended Solids (mg/L)	89.1	16.0		
	Total Dissolved Solids (mg/L)	329 ^{DLHC}	353 ^{DLHC}		
	Turbidity (NTU)	71.5	23.2		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.1	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	282	288		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	282	288		
	Ammonia as N (mg/L)	0.150	0.164		
	Bicarbonate (HCO3) (mg/L)	344	352		
	Bromide (Br) (mg/L)	<0.050	0.112		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	4.16	5.50		
	Fluoride (F) (mg/L)	0.353	0.367		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	105	103		
	Nitrate and Nitrite (as N) (mg/L)	0.0124	0.0068		
	Nitrate (as N) (mg/L)	0.0124	0.0068		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.391	0.339		
	Total Nitrogen (mg/L)	0.403	0.346		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0537	0.0130		
	Sulfate (SO4) (mg/L)	25.4	45.5		
	Anion Sum (meq/L)	6.30	6.89		
	Cation Sum (meq/L)	6.60	7.11		
	Cation - Anion Balance (%)	2.3	1.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.31	4.18		
	Total Organic Carbon (mg/L)	9.01	5.69		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0017	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510458-1 WG 29-SEP-20 14:25 GH_MW_BG1B_W G_2020_09_29_NP	L2510458-2 WG 29-SEP-20 11:00 GH_MW_BG1C_W G_2020_09_29_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00012	0.00015		
	Arsenic (As)-Dissolved (mg/L)	0.00078	0.00078		
	Barium (Ba)-Dissolved (mg/L)	0.212	0.200		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.013	0.015		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000451	0.0000325		
	Calcium (Ca)-Dissolved (mg/L)	71.4	67.9		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	0.00211	0.00172		
	Copper (Cu)-Dissolved (mg/L)	0.0161	0.0128		
	Iron (Fe)-Dissolved (mg/L)	1.61	1.44		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0049	0.0055		
	Magnesium (Mg)-Dissolved (mg/L)	27.3	25.4		
	Manganese (Mn)-Dissolved (mg/L)	0.191	0.194		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00380	0.00406		
	Nickel (Ni)-Dissolved (mg/L)	0.00426	0.00367		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.43	1.54		
	Selenium (Se)-Dissolved (mg/L)	0.000128	0.000113		
	Silicon (Si)-Dissolved (mg/L)	4.08	3.50		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	14.8	34.3		
	Strontium (Sr)-Dissolved (mg/L)	0.115	0.149		
	Sulfur (S)-Dissolved (mg/L)	10.3	16.1		
	Thallium (Tl)-Dissolved (mg/L)	0.000075	0.000046		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000722	0.00167		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0327	0.0325		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2510458-1, -2
Matrix Spike	Sulfate (SO4)	MS-B	L2510458-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

Page 1 of 15

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5243419							
WG3416429-8	LCS							
Acidity (as CaCO3)			99.7		%		85-115	01-OCT-20
WG3416429-7	MB							
Acidity (as CaCO3)			1.6		mg/L		2	01-OCT-20
ALK-MAN-CL		Water						
Batch	R5244719							
WG3417953-8	LCS							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	03-OCT-20
WG3417953-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-OCT-20
BE-D-L-CCMS-CL		Water						
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Beryllium (Be)-Dissolved			106.1		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Beryllium (Be)-Dissolved			99.3		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Beryllium (Be)-Dissolved			98.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Beryllium (Be)-Dissolved			102.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-13	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
BIC-CL		Water						
Batch	R5244719							
WG3417953-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-OCT-20
BR-L-IC-N-CL		Water						
Batch	R5243407							
WG3416399-6	LCS							
Bromide (Br)			105.1		%		85-115	30-SEP-20
WG3416399-5	MB							



Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5243407							
WG3416399-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-SEP-20
C-DIS-ORG-LOW-CL Water								
Batch	R5245228							
WG3418474-7	DUP	L2510458-2						
Dissolved Organic Carbon		4.18	4.15		mg/L	0.7	20	03-OCT-20
WG3418474-6	LCS							
Dissolved Organic Carbon			84.6		%		80-120	03-OCT-20
WG3418474-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-OCT-20
WG3418474-8	MS	L2510458-2						
Dissolved Organic Carbon			96.0		%		70-130	03-OCT-20
C-TOT-ORG-LOW-CL Water								
Batch	R5245228							
WG3418474-7	DUP	L2510458-2						
Total Organic Carbon		5.69	6.03		mg/L	5.8	20	03-OCT-20
WG3418474-6	LCS							
Total Organic Carbon			91.5		%		80-120	03-OCT-20
WG3418474-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	03-OCT-20
WG3418474-8	MS	L2510458-2						
Total Organic Carbon			104.0		%		70-130	03-OCT-20
CL-L-IC-N-CL Water								
Batch	R5243407							
WG3416399-6	LCS							
Chloride (Cl)			102.8		%		85-115	30-SEP-20
WG3416399-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	30-SEP-20
CO3-CL Water								
Batch	R5244719							
WG3417953-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-20
EC-L-PCT-CL Water								

Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch	R5244719							
WG3417953-8	LCS							
Conductivity (@ 25C)			97.8		%		90-110	03-OCT-20
WG3417953-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-20
F-IC-N-CL								
Batch	R5243407							
WG3416399-6	LCS							
Fluoride (F)			91.7		%		90-110	30-SEP-20
WG3416399-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-SEP-20
HG-D-CVAA-CL								
Batch	R5251014							
WG3420385-6	LCS							
Mercury (Hg)-Dissolved			109.0		%		80-120	07-OCT-20
WG3420385-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-OCT-20
MET-D-CCMS-CL								
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Aluminum (Al)-Dissolved			106.8		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.7		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.7		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			102.7		%		80-120	05-OCT-20
Boron (B)-Dissolved			101.3		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.0		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			102.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			100.8		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			100.2		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			102.2		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			109.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	05-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Nickel (Ni)-Dissolved			102.1		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			122.3		%		70-130	05-OCT-20
Potassium (K)-Dissolved			103.1		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.6		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.4		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			103.7		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			99.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			105.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.4		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.1		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			84.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			96.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			102.2		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Aluminum (Al)-Dissolved			103.0		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.1		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			101.1		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			103.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.8		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			94.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			103.6		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			100.7		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			99.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			99.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.3		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			93.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			108.1		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			99.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			104.3		%		80-120	05-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-14	LCS	TMRM						
Nickel (Ni)-Dissolved			98.8		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			108.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			102.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			99.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.6		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			102.4		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			98.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			100.6		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			102.9		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			102.4		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			87.4		%		80-120	05-OCT-20
Uranium (U)-Dissolved			103.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			102.2		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.7		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.9		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Aluminum (Al)-Dissolved			104.5		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			104.3		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			103.0		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.5		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			100.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			108.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			103.9		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			102.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			102.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			104.0		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			95.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			114.0		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			105.1		%		80-120	05-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.0		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			129.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			106.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			106.2		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			104.0		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			106.3		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			106.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			97.0		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			104.0		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			105.5		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			105.6		%		80-120	05-OCT-20
Uranium (U)-Dissolved			108.3		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			106.6		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.4		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			99.3		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			105.0		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			107.2		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			101.3		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			98.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			101.7		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			101.9		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			110.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.7		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-6	LCS	TMRM						
Nickel (Ni)-Dissolved			100.9		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			118.2		%		70-130	05-OCT-20
Potassium (K)-Dissolved			104.9		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			105.7		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			101.9		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			102.2		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.7		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.5		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.8		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			91.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.6		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			98.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-5 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-9	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
NH3-L-F-CL		Water						
Batch	R5244225							
WG3417397-6	LCS							
Ammonia as N			103.5		%		85-115	02-OCT-20
WG3417397-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5243407							
WG3416399-6	LCS							
Nitrite (as N)			101.6		%		90-110	30-SEP-20
WG3416399-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-SEP-20
NO3-L-IC-N-CL		Water						
Batch	R5243407							
WG3416399-6	LCS							
Nitrate (as N)			100.3		%		90-110	30-SEP-20
WG3416399-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-SEP-20
OH-CL	Water							

Quality Control Report

Workorder: L2510458

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5244719							
WG3417953-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-20
ORP-CL	Water							
Batch	R5243713							
WG3416588-5 CRM		CL-ORP						
ORP			221		mV		210-230	01-OCT-20
P-T-L-COL-CL	Water							
Batch	R5245759							
WG3418434-34 LCS								
Phosphorus (P)-Total			99.4		%		80-120	05-OCT-20
WG3418434-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-20
PH-CL	Water							
Batch	R5244719							
WG3417953-8 LCS								
pH			6.99		pH		6.9-7.1	03-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5242968							
WG3415705-19 LCS								
Orthophosphate-Dissolved (as P)			110.0		%		80-120	30-SEP-20
WG3415705-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-SEP-20
SO4-IC-N-CL	Water							
Batch	R5243407							
WG3416399-6 LCS								
Sulfate (SO4)			100.4		%		90-110	30-SEP-20
WG3416399-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5244632							
WG3416931-5 LCS								
Total Dissolved Solids			97.4		%		85-115	02-OCT-20
WG3416931-4 MB								
Total Dissolved Solids			<10		mg/L		10	02-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5244050							
WG3417095-13	LCS							
Total Kjeldahl Nitrogen			81.8		%		75-125	02-OCT-20
WG3417095-15	LCS							
Total Kjeldahl Nitrogen			83.8		%		75-125	02-OCT-20
WG3417095-16	LCS							
Total Kjeldahl Nitrogen			82.8		%		75-125	02-OCT-20
WG3417095-19	LCS							
Total Kjeldahl Nitrogen			83.6		%		75-125	02-OCT-20
WG3417095-2	LCS							
Total Kjeldahl Nitrogen			82.1		%		75-125	02-OCT-20
WG3417095-7	LCS							
Total Kjeldahl Nitrogen			80.6		%		75-125	02-OCT-20
WG3417095-9	LCS							
Total Kjeldahl Nitrogen			80.6		%		75-125	02-OCT-20
WG3417095-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
TSS-L-CL								
Water								
Batch	R5244573							
WG3416063-6	LCS							
Total Suspended Solids			102.1		%		85-115	02-OCT-20
WG3416063-5	MB							
Total Suspended Solids			<1.0		mg/L		1	02-OCT-20
TURBIDITY-CL								
Water								
Batch	R5243709							
WG3416493-6	DUP	L2510458-1						
Turbidity		71.5	70.3		NTU	1.7	15	01-OCT-20
WG3416493-5	LCS							
Turbidity			97.0		%		85-115	01-OCT-20
WG3416493-4	MB							
Turbidity			<0.10		NTU		0.1	01-OCT-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	29-SEP-20 14:25	01-OCT-20 12:00	0.25	46	hours	EHTR-FM
	2	29-SEP-20 11:00	01-OCT-20 12:00	0.25	49	hours	EHTR-FM
pH	1	29-SEP-20 14:25	03-OCT-20 11:00	0.25	93	hours	EHTR-FM
	2	29-SEP-20 11:00	03-OCT-20 11:00	0.25	96	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2510458 were received on 30-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)													
Company: SNC-Lavalin -Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Mark Newman		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Priority (Business Days)		Emergency											
Phone: Tel.:250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Street: 520 Lake Street		Emails: SNC - 'Mark.Newman'			Date and Time Required for all E&P TATs:													
City/Province: Nelson, BC		'Stefan.Humphries', 'Vicky.Lipinski@snciavalin.com'			For tests that can not be performed according to the service level selected, you will be contacted.													
Postal Code: V1L 4C6		Teck: 'Cam.Jaeger', 'Jennifer.DeWerk', 'Brendan.Peachey' @teck.com, teckcoal@equisonline.com			Analysis Request													
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX			F/P P F/P P													
Company:		Emails: Mark.Newman@snciavalin.com			DOC (C-DIS-ORG-LOW-CL)													
Contact:		payables@snciavalin.com			TOC (C-TOT-ORG-LOW-CL)													
Project Information		Oil and Gas Required Fields (client use)			BC MDG D-Met. + Hg (MET-D-BOMDG-CL)													
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)													
Job #: GHO- Greenhills Operations		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)													
PO / AFE: 672225		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)													
LSD:		Location:			TKN (TKN-L-F-CL)													
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784			Bicarbonate (BIC-CL)													
		Sampler: MTB			Carbonate (CO3-CL)													
					Hydroxide (OH-CL)													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BOMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	GH_MW_ER2B_WG_2020_09-29_NP	GH_MW_ER2B A	29-Sep-20	11:25	WG	R	R	R	R	R	R	R	R	R	R			5
	GH_MW_ER2B_WG_2020_09-29_NP	GH_MW_ER2B	29-Sep-20	11:00	WG	R	R	R	R	R	R	R	R	R	R			5
	GH_MW_MC10-A_WG_2020__NP	GH_MW_MC10-A			WG	R	R	R	R	R	R	R	R	R	R			5
	GH_MW_MC10-B_WG_2020__NP	GH_MW_MC10-B			WG	R	R	R	R	R	R	R	R	R	R			5
	GH_MW_MC10-C_WG_2020__NP	GH_MW_MC10-C			WG	R	R	R	R	R	R	R	R	R	R			5
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)													
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) REP-Regional FRO-FORDING RIVER OPERATION GHO-GREENHILLS OPERATIONS			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input checked="" type="checkbox"/>													
Are samples for human consumption/ use?					INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C													
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)													
Released by: Marc Beaton		Date: 29-Sep-20 Time: 1700			Received by: [Signature] Date: 9/30 Time: [Signature]													



L2510458-COFC



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 08-OCT-20
Report Date: 18-OCT-20 10:13 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2514522
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 01-03-Q4-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514522-1 WP 07-OCT-20 07:47 RG_DW-01- 03_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	368			
	Hardness (as CaCO3) (mg/L)	222			
	pH (pH)	8.48			
	ORP (mV)	383			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	228	DLHC		
	Turbidity (NTU)	0.14			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	156			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.8			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	163			
	Ammonia as N (mg/L)	0.0082			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.09			
	Fluoride (F) (mg/L)	0.156			
	Ion Balance (%)	101			
	Nitrate (as N) (mg/L)	1.17			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.102			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	51.9			
	Anion Sum (meq/L)	4.45			
	Cation Sum (meq/L)	4.51			
	Cation - Anion Balance (%)	0.6			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0760			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0108			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514522-1 WP 07-OCT-20 07:47 RG_DW-01- 03_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	64.2			
	Chromium (Cr)-Total (mg/L)	0.00030			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00185			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000121			
	Lithium (Li)-Total (mg/L)	0.0025			
	Magnesium (Mg)-Total (mg/L)	15.0			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000987			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.445			
	Selenium (Se)-Total (ug/L)	4.42			
	Silicon (Si)-Total (mg/L)	2.08			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.31			
	Strontium (Sr)-Total (mg/L)	0.248			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000856			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0100			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0849			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	63.7			
	Chromium (Cr)-Dissolved (mg/L)	0.00027			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514522-1 WP 07-OCT-20 07:47 RG_DW-01- 03_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00105			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000089			
	Lithium (Li)-Dissolved (mg/L)	0.0027			
	Magnesium (Mg)-Dissolved (mg/L)	15.2			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000926			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.480			
	Selenium (Se)-Dissolved (ug/L)	4.67			
	Silicon (Si)-Dissolved (mg/L)	2.03			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.41			
	Strontium (Sr)-Dissolved (mg/L)	0.221			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000889			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0076			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2514522-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2514522-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2514522-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2514522-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2514522-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2514522-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

01-03-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2514522

Report Date: 18-OCT-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5252670							
WG3422367-20	LCS							
Acidity (as CaCO3)			103.7		%		85-115	09-OCT-20
WG3422367-19	MB							
Acidity (as CaCO3)			1.4		mg/L		2	09-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5253860							
WG3423809-17	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	13-OCT-20
WG3423809-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Beryllium (Be)-Dissolved			104.2		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Beryllium (Be)-Total			103.6		%		80-120	13-OCT-20
WG3423444-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5252854							
WG3422577-6	LCS							
Bromide (Br)			101.5		%		85-115	09-OCT-20
WG3422577-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5256176							
WG3426602-2	LCS							
Dissolved Organic Carbon			107.4		%		80-120	16-OCT-20
WG3426602-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2514522

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5256176							
WG3426602-2	LCS							
Total Organic Carbon			109.2		%		80-120	16-OCT-20
WG3426602-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Chloride (Cl)			104.8		%		85-115	09-OCT-20
WG3422577-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-OCT-20
EC-L-PCT-CL	Water							
Batch	R5253860							
WG3423809-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-OCT-20
F-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Fluoride (F)			99.7		%		90-110	09-OCT-20
WG3422577-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-20
HG-D-CVAA-VA	Water							
Batch	R5254665							
WG3424657-18	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	15-OCT-20
WG3424657-17	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-OCT-20
HG-T-CVAA-VA	Water							
Batch	R5253792							
WG3423770-2	LCS							
Mercury (Hg)-Total			95.6		%		80-120	14-OCT-20
WG3423770-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-OCT-20
MET-D-CCMS-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Aluminum (Al)-Dissolved			108.1		%		80-120	15-OCT-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-OCT-20
Arsenic (As)-Dissolved			103.1		%		80-120	15-OCT-20
Barium (Ba)-Dissolved			113.2		%		80-120	15-OCT-20
Bismuth (Bi)-Dissolved			107.6		%		80-120	15-OCT-20
Boron (B)-Dissolved			101.1		%		80-120	15-OCT-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	15-OCT-20
Calcium (Ca)-Dissolved			106.5		%		80-120	15-OCT-20
Chromium (Cr)-Dissolved			102.9		%		80-120	15-OCT-20
Cobalt (Co)-Dissolved			102.9		%		80-120	15-OCT-20
Copper (Cu)-Dissolved			104.0		%		80-120	15-OCT-20
Iron (Fe)-Dissolved			103.1		%		80-120	15-OCT-20
Lead (Pb)-Dissolved			108.0		%		80-120	15-OCT-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	15-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	15-OCT-20
Molybdenum (Mo)-Dissolved			110.8		%		80-120	15-OCT-20
Nickel (Ni)-Dissolved			105.0		%		80-120	15-OCT-20
Potassium (K)-Dissolved			106.2		%		80-120	15-OCT-20
Selenium (Se)-Dissolved			108.8		%		80-120	15-OCT-20
Silicon (Si)-Dissolved			103.0		%		60-140	15-OCT-20
Silver (Ag)-Dissolved			104.8		%		80-120	15-OCT-20
Sodium (Na)-Dissolved			103.4		%		80-120	15-OCT-20
Strontium (Sr)-Dissolved			109.3		%		80-120	15-OCT-20
Thallium (Tl)-Dissolved			106.6		%		80-120	15-OCT-20
Tin (Sn)-Dissolved			104.8		%		80-120	15-OCT-20
Titanium (Ti)-Dissolved			99.6		%		80-120	15-OCT-20
Uranium (U)-Dissolved			117.3		%		80-120	15-OCT-20
Vanadium (V)-Dissolved			107.1		%		80-120	15-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-1	MB	NP						
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	13-OCT-20
Antimony (Sb)-Total			106.5		%		80-120	13-OCT-20
Arsenic (As)-Total			101.3		%		80-120	13-OCT-20
Barium (Ba)-Total			99.3		%		80-120	13-OCT-20
Bismuth (Bi)-Total			117.7		%		80-120	13-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-2	LCS							
Boron (B)-Total			93.5		%		80-120	13-OCT-20
Cadmium (Cd)-Total			101.3		%		80-120	13-OCT-20
Calcium (Ca)-Total			106.8		%		80-120	13-OCT-20
Chromium (Cr)-Total			107.8		%		80-120	13-OCT-20
Cobalt (Co)-Total			107.4		%		80-120	13-OCT-20
Copper (Cu)-Total			102.2		%		80-120	13-OCT-20
Iron (Fe)-Total			94.3		%		80-120	13-OCT-20
Lead (Pb)-Total			97.8		%		80-120	13-OCT-20
Lithium (Li)-Total			100.5		%		80-120	13-OCT-20
Magnesium (Mg)-Total			101.1		%		80-120	13-OCT-20
Manganese (Mn)-Total			101.1		%		80-120	13-OCT-20
Molybdenum (Mo)-Total			101.0		%		80-120	13-OCT-20
Nickel (Ni)-Total			101.2		%		80-120	13-OCT-20
Potassium (K)-Total			105.2		%		80-120	13-OCT-20
Selenium (Se)-Total			99.8		%		80-120	13-OCT-20
Silicon (Si)-Total			104.6		%		80-120	13-OCT-20
Silver (Ag)-Total			103.3		%		80-120	13-OCT-20
Sodium (Na)-Total			105.0		%		80-120	13-OCT-20
Strontium (Sr)-Total			107.1		%		80-120	13-OCT-20
Thallium (Tl)-Total			101.5		%		80-120	13-OCT-20
Tin (Sn)-Total			104.1		%		80-120	13-OCT-20
Titanium (Ti)-Total			107.2		%		80-120	13-OCT-20
Uranium (U)-Total			98.9		%		80-120	13-OCT-20
Vanadium (V)-Total			107.4		%		80-120	13-OCT-20
Zinc (Zn)-Total			105.8		%		80-120	13-OCT-20
WG3423444-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	13-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-1	MB							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-OCT-20
NH3-L-F-CL		Water						
Batch	R5256114							
WG3426131-10	LCS							
Ammonia as N			99.5		%		85-115	16-OCT-20
WG3426131-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5252854							
WG3422577-6	LCS							
Nitrite (as N)			106.4		%		90-110	09-OCT-20
WG3422577-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Nitrate (as N)			106.1		%		90-110	09-OCT-20
WG3422577-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-20
ORP-CL	Water							
Batch	R5253698							
WG3423587-5	CRM	CL-ORP						
ORP			226		mV		210-230	13-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255264							
WG3425452-22	LCS							
Phosphorus (P)-Total			92.5		%		80-120	15-OCT-20
WG3425452-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-OCT-20
PH-CL	Water							
Batch	R5253860							
WG3423809-17	LCS							
pH			7.01		pH		6.9-7.1	13-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5252370							
WG3421209-38	LCS							
Orthophosphate-Dissolved (as P)			106.0		%		80-120	08-OCT-20
WG3421209-37	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-OCT-20
SO4-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Sulfate (SO4)			103.6		%		90-110	09-OCT-20
WG3422577-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-17	LCS							
Total Dissolved Solids			97.5		%		85-115	14-OCT-20
WG3423754-16	MB							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-16 MB								
Total Dissolved Solids			<10		mg/L		10	14-OCT-20
TKN-L-F-CL	Water							
Batch	R5253899							
WG3423621-10 LCS								
Total Kjeldahl Nitrogen			85.5		%		75-125	13-OCT-20
WG3423621-14 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-18 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	13-OCT-20
WG3423621-2 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-22 LCS								
Total Kjeldahl Nitrogen			84.3		%		75-125	13-OCT-20
WG3423621-28 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-32 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-34 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	13-OCT-20
WG3423621-36 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	13-OCT-20
WG3423621-4 LCS								
Total Kjeldahl Nitrogen			80.6		%		75-125	13-OCT-20
WG3423621-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5253899							
WG3423621-33	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
TSS-L-CL		Water						
Batch	R5255043							
WG3423757-10	LCS							
Total Suspended Solids			89.6		%		85-115	14-OCT-20
WG3423757-9	MB							
Total Suspended Solids			<1.0		mg/L		1	14-OCT-20
TURBIDITY-CL		Water						
Batch	R5252648							
WG3422084-9	LCS							
Turbidity			96.9		%		85-115	09-OCT-20
WG3422084-8	MB							
Turbidity			<0.10		NTU		0.1	09-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	07-OCT-20 07:47	13-OCT-20 16:45	0.25	153	hours	EHTR-FM
pH	1	07-OCT-20 07:47	13-OCT-20 14:00	0.25	150	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2514522 were received on 08-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-03-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-01-03_WP_Q4-2020_NP	RG_DW-01-03	WP	N	Oct 7, 2020	7:47	G	7	1	1	1	1	1	1	1



L2514522-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	<i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jennifer de Werk
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge		Date/Time	Oct 7, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Mobile #	250-910-7287



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0


Date Received: 17-OCT-20
Report Date: 08-FEB-21 17:19 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2517981
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-10-16-WS
Legal Site Desc:

Comments: 8-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-1 GH_MW-UTC-1B_WG_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 12:31							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	252		5.0	mg/L		20-OCT-20	R5260636
Carbonate (CO3)	<5.0		5.0	mg/L		20-OCT-20	R5260636
Dissolved Organic Carbon	0.83		0.50	mg/L		25-OCT-20	R5268556
Hydroxide (OH)	<5.0		5.0	mg/L		20-OCT-20	R5260636
Total Kjeldahl Nitrogen	0.103		0.050	mg/L		20-OCT-20	R5260066
Mercury (Hg)-Total	0.00064		0.00050	ug/L		23-OCT-20	R5267701
Total Organic Carbon	0.92		0.50	mg/L		25-OCT-20	R5268556
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-OCT-20	24-OCT-20	R5268088
Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	22-OCT-20	22-OCT-20	R5263196
Dissolved Mercury Filtration Location	FIELD					22-OCT-20	R5263036
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-OCT-20	24-OCT-20	R5268088
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Barium (Ba)-Dissolved	0.0712		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Boron (B)-Dissolved	0.087		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cadmium (Cd)-Dissolved	0.0086		0.0050	ug/L	20-OCT-20	24-OCT-20	R5268088
Calcium (Ca)-Dissolved	64.8		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-OCT-20	24-OCT-20	R5268088
Copper (Cu)-Dissolved	0.00028		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Lithium (Li)-Dissolved	0.0382		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Magnesium (Mg)-Dissolved	19.6		0.10	mg/L	20-OCT-20	24-OCT-20	R5268088
Manganese (Mn)-Dissolved	0.00553		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Molybdenum (Mo)-Dissolved	0.00145		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088
Potassium (K)-Dissolved	1.19		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Selenium (Se)-Dissolved	2.20		0.050	ug/L	20-OCT-20	24-OCT-20	R5268088
Silicon (Si)-Dissolved	4.08		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Sodium (Na)-Dissolved	16.1		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Strontium (Sr)-Dissolved	1.06		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Uranium (U)-Dissolved	0.000281		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088
Zinc (Zn)-Dissolved	0.0034		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Hardness							
Hardness (as CaCO3)	243		0.50	mg/L		25-OCT-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-OCT-20	R5261604

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-1 GH_MW-UTC-1B_WG_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 12:31							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	207		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Total (as CaCO3)	207		1.0	mg/L		20-OCT-20	R5260636
Ammonia, Total (as N)							
Ammonia as N	0.0148		0.0050	mg/L		27-OCT-20	R5269497
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-OCT-20	R5263116
Chloride in Water by IC							
Chloride (Cl)	8.67		0.10	mg/L		17-OCT-20	R5263116
Electrical Conductivity (EC)							
Conductivity (@ 25C)	453		2.0	uS/cm		20-OCT-20	R5260636
Fluoride in Water by IC							
Fluoride (F)	0.128		0.020	mg/L		17-OCT-20	R5263116
Ion Balance Calculation							
Cation - Anion Balance	3.5			%		25-OCT-20	
Anion Sum	5.20			meq/L		25-OCT-20	
Cation Sum	5.58			meq/L		25-OCT-20	
Ion Balance Calculation							
Ion Balance	107		-100	%		25-OCT-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0632		0.0050	mg/L		17-OCT-20	R5263116
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-OCT-20	R5263116
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		17-OCT-20	R5256199
Oxidation redution potential by elect.							
ORP	512		-1000	mV		19-OCT-20	R5257225
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		25-OCT-20	R5268309
Sulfate in Water by IC							
Sulfate (SO4)	38.9		0.30	mg/L		17-OCT-20	R5263116
Total Dissolved Solids							
Total Dissolved Solids	289	DLHC	20	mg/L		22-OCT-20	R5268029
Total Suspended Solids							
Total Suspended Solids	10.7		1.0	mg/L		22-OCT-20	R5268009
Turbidity							
Turbidity	5.68		0.10	NTU		17-OCT-20	R5256415
pH							
pH	8.15		0.10	pH		20-OCT-20	R5260636
L2517981-2 GH.UTC1_WS_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 09:47							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	250		5.0	mg/L		20-OCT-20	R5260636
Carbonate (CO3)	5.5		5.0	mg/L		20-OCT-20	R5260636
Dissolved Organic Carbon	1.81		0.50	mg/L		25-OCT-20	R5268641
Hydroxide (OH)	<5.0		5.0	mg/L		20-OCT-20	R5260636
Total Kjeldahl Nitrogen	0.340		0.050	mg/L		20-OCT-20	R5260066
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		23-OCT-20	R5267701
Total Organic Carbon	1.88		0.50	mg/L		25-OCT-20	R5268641

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-2 GH.UTC1_WS_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 09:47							
Matrix: WS							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-OCT-20	24-OCT-20	R5268088
Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	22-OCT-20	22-OCT-20	R5263196
Dissolved Mercury Filtration Location	FIELD					22-OCT-20	R5263036
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-OCT-20	24-OCT-20	R5268088
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Barium (Ba)-Dissolved	0.0414		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Boron (B)-Dissolved	0.023		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	20-OCT-20	24-OCT-20	R5268088
Calcium (Ca)-Dissolved	157		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-OCT-20	24-OCT-20	R5268088
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Iron (Fe)-Dissolved	0.011		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Lithium (Li)-Dissolved	0.0214		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Magnesium (Mg)-Dissolved	108		0.10	mg/L	20-OCT-20	24-OCT-20	R5268088
Manganese (Mn)-Dissolved	0.00220		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Molybdenum (Mo)-Dissolved	0.000795		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Nickel (Ni)-Dissolved	0.00162		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088
Potassium (K)-Dissolved	2.23		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Selenium (Se)-Dissolved	54.3		0.050	ug/L	20-OCT-20	24-OCT-20	R5268088
Silicon (Si)-Dissolved	2.42		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Sodium (Na)-Dissolved	9.38		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Strontium (Sr)-Dissolved	0.400		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Uranium (U)-Dissolved	0.00290		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Hardness							
Hardness (as CaCO3)	839		0.50	mg/L		25-OCT-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		21-OCT-20	R5262656
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0206		0.0030	mg/L		21-OCT-20	R5262656
Antimony (Sb)-Total	0.00015		0.00010	mg/L		21-OCT-20	R5262656
Arsenic (As)-Total	0.00019		0.00010	mg/L		21-OCT-20	R5262656
Barium (Ba)-Total	0.0400		0.00010	mg/L		21-OCT-20	R5262656
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		21-OCT-20	R5262656
Boron (B)-Total	0.023		0.010	mg/L		21-OCT-20	R5262656
Cadmium (Cd)-Total	0.0067		0.0050	ug/L		21-OCT-20	R5262656
Calcium (Ca)-Total	158		0.050	mg/L		21-OCT-20	R5262656

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-2 GH.UTC1_WS_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 09:47							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		21-OCT-20	R5262656
Cobalt (Co)-Total	<0.10		0.10	ug/L		21-OCT-20	R5262656
Copper (Cu)-Total	<0.00050		0.00050	mg/L		21-OCT-20	R5262656
Iron (Fe)-Total	0.028		0.010	mg/L		21-OCT-20	R5262656
Lead (Pb)-Total	<0.000050		0.000050	mg/L		21-OCT-20	R5262656
Lithium (Li)-Total	0.0221		0.0010	mg/L		21-OCT-20	R5262656
Magnesium (Mg)-Total	106		0.10	mg/L		21-OCT-20	R5262656
Manganese (Mn)-Total	0.00327		0.00010	mg/L		21-OCT-20	R5262656
Molybdenum (Mo)-Total	0.000775		0.000050	mg/L		21-OCT-20	R5262656
Nickel (Ni)-Total	0.00166		0.00050	mg/L		21-OCT-20	R5262656
Potassium (K)-Total	2.19		0.050	mg/L		21-OCT-20	R5262656
Selenium (Se)-Total	55.7		0.050	ug/L		21-OCT-20	R5262656
Silicon (Si)-Total	2.69		0.10	mg/L		21-OCT-20	R5262656
Silver (Ag)-Total	<0.000010		0.000010	mg/L		21-OCT-20	R5262656
Sodium (Na)-Total	9.35		0.050	mg/L		21-OCT-20	R5262656
Strontium (Sr)-Total	0.406		0.00020	mg/L		21-OCT-20	R5262656
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		21-OCT-20	R5262656
Tin (Sn)-Total	<0.00010		0.00010	mg/L		21-OCT-20	R5262656
Titanium (Ti)-Total	<0.010		0.010	mg/L		21-OCT-20	R5262656
Uranium (U)-Total	0.00286		0.000010	mg/L		21-OCT-20	R5262656
Vanadium (V)-Total	<0.00050		0.00050	mg/L		21-OCT-20	R5262656
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		21-OCT-20	R5262656
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-OCT-20	R5261604
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	205		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Carbonate (as CaCO3)	9.2		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Total (as CaCO3)	214		1.0	mg/L		20-OCT-20	R5260636
Ammonia, Total (as N)							
Ammonia as N	0.0142		0.0050	mg/L		27-OCT-20	R5269497
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-OCT-20	R5263116
Chloride in Water by IC							
Chloride (Cl)	18.6	DLHC	0.50	mg/L		17-OCT-20	R5263116
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1320		2.0	uS/cm		20-OCT-20	R5260636
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		17-OCT-20	R5263116
Ion Balance Calculation							
Ion Balance	95.3		-100	%		25-OCT-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.4			%		25-OCT-20	
Anion Sum	18.1			meq/L		25-OCT-20	
Cation Sum	17.2			meq/L		25-OCT-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.410	DLHC	0.025	mg/L		17-OCT-20	R5263116
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-OCT-20	R5263116
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-OCT-20	R5256199

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-2 GH.UTC1_WS_2020-10-05_NP Sampled By: SS on 16-OCT-20 @ 09:47 Matrix: WS							
Oxidation redution potential by elect. ORP	279		-1000	mV		19-OCT-20	R5257225
Phosphorus (P)-Total Phosphorus (P)-Total	0.0061		0.0020	mg/L		25-OCT-20	R5268309
Sulfate in Water by IC Sulfate (SO4)	636	DLHC	1.5	mg/L		17-OCT-20	R5263116
Total Dissolved Solids Total Dissolved Solids	1120	DLHC	20	mg/L		22-OCT-20	R5268029
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		22-OCT-20	R5268009
Turbidity Turbidity	1.68		0.10	NTU		17-OCT-20	R5256415
pH pH	8.39		0.10	pH		20-OCT-20	R5260636
L2517981-3 GH.UTCN_WS_2020-10-05_NP Sampled By: SS on 16-OCT-20 @ 08:59 Matrix: WS							
Miscellaneous Parameters Bicarbonate (HCO3)	313		5.0	mg/L		20-OCT-20	R5260636
Carbonate (CO3)	7.7		5.0	mg/L		20-OCT-20	R5260636
Dissolved Organic Carbon	1.29		0.50	mg/L		25-OCT-20	R5268641
Hydroxide (OH)	<5.0		5.0	mg/L		20-OCT-20	R5260636
Total Kjeldahl Nitrogen	0.365		0.050	mg/L		20-OCT-20	R5260066
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		23-OCT-20	R5267701
Total Organic Carbon	1.26		0.50	mg/L		25-OCT-20	R5268641
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-OCT-20	24-OCT-20	R5268088
Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	22-OCT-20	22-OCT-20	R5263196
Dissolved Mercury Filtration Location	FIELD					22-OCT-20	R5263036
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					20-OCT-20	R5260040
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-OCT-20	24-OCT-20	R5268088
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Barium (Ba)-Dissolved	0.0553		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Boron (B)-Dissolved	0.021		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cadmium (Cd)-Dissolved	0.0265		0.0050	ug/L	20-OCT-20	24-OCT-20	R5268088
Calcium (Ca)-Dissolved	176		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-OCT-20	24-OCT-20	R5268088
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Lithium (Li)-Dissolved	0.0205		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Magnesium (Mg)-Dissolved	103		0.10	mg/L	20-OCT-20	24-OCT-20	R5268088
Manganese (Mn)-Dissolved	0.00704		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Molybdenum (Mo)-Dissolved	0.000781		0.000050	mg/L	20-OCT-20	24-OCT-20	R5268088
Nickel (Ni)-Dissolved	0.00204		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-3 GH_UTCN_WS_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 08:59							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	1.95		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Selenium (Se)-Dissolved	65.9		0.050	ug/L	20-OCT-20	24-OCT-20	R5268088
Silicon (Si)-Dissolved	3.30		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Sodium (Na)-Dissolved	8.50		0.050	mg/L	20-OCT-20	24-OCT-20	R5268088
Strontium (Sr)-Dissolved	0.417		0.00020	mg/L	20-OCT-20	24-OCT-20	R5268088
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-OCT-20	24-OCT-20	R5268088
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-OCT-20	24-OCT-20	R5268088
Uranium (U)-Dissolved	0.00307		0.000010	mg/L	20-OCT-20	24-OCT-20	R5268088
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-OCT-20	24-OCT-20	R5268088
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-OCT-20	24-OCT-20	R5268088
Hardness							
Hardness (as CaCO3)	863		0.50	mg/L		25-OCT-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		21-OCT-20	R5262656
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0252		0.0030	mg/L		21-OCT-20	R5262656
Antimony (Sb)-Total	0.00014		0.00010	mg/L		21-OCT-20	R5262656
Arsenic (As)-Total	0.00015		0.00010	mg/L		21-OCT-20	R5262656
Barium (Ba)-Total	0.0524		0.00010	mg/L		21-OCT-20	R5262656
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		21-OCT-20	R5262656
Boron (B)-Total	0.023		0.010	mg/L		21-OCT-20	R5262656
Cadmium (Cd)-Total	0.0256		0.0050	ug/L		21-OCT-20	R5262656
Calcium (Ca)-Total	182		0.050	mg/L		21-OCT-20	R5262656
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		21-OCT-20	R5262656
Cobalt (Co)-Total	<0.10		0.10	ug/L		21-OCT-20	R5262656
Copper (Cu)-Total	<0.00050		0.00050	mg/L		21-OCT-20	R5262656
Iron (Fe)-Total	0.023		0.010	mg/L		21-OCT-20	R5262656
Lead (Pb)-Total	<0.000050		0.000050	mg/L		21-OCT-20	R5262656
Lithium (Li)-Total	0.0210		0.0010	mg/L		21-OCT-20	R5262656
Magnesium (Mg)-Total	103		0.10	mg/L		21-OCT-20	R5262656
Manganese (Mn)-Total	0.00845		0.00010	mg/L		21-OCT-20	R5262656
Molybdenum (Mo)-Total	0.000753		0.000050	mg/L		21-OCT-20	R5262656
Nickel (Ni)-Total	0.00210		0.00050	mg/L		21-OCT-20	R5262656
Potassium (K)-Total	1.92		0.050	mg/L		21-OCT-20	R5262656
Selenium (Se)-Total	66.6		0.050	ug/L		21-OCT-20	R5262656
Silicon (Si)-Total	3.66		0.10	mg/L		21-OCT-20	R5262656
Silver (Ag)-Total	<0.000010		0.000010	mg/L		21-OCT-20	R5262656
Sodium (Na)-Total	8.83		0.050	mg/L		21-OCT-20	R5262656
Strontium (Sr)-Total	0.428		0.00020	mg/L		21-OCT-20	R5262656
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		21-OCT-20	R5262656
Tin (Sn)-Total	<0.00010		0.00010	mg/L		21-OCT-20	R5262656
Titanium (Ti)-Total	<0.010		0.010	mg/L		21-OCT-20	R5262656
Uranium (U)-Total	0.00323		0.000010	mg/L		21-OCT-20	R5262656
Vanadium (V)-Total	<0.00050		0.00050	mg/L		21-OCT-20	R5262656
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		21-OCT-20	R5262656
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-OCT-20	R5261604
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517981-3 GH_UTCN_WS_2020-10-05_NP							
Sampled By: SS on 16-OCT-20 @ 08:59							
Matrix: WS							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	257		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Carbonate (as CaCO3)	12.8		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-OCT-20	R5260636
Alkalinity, Total (as CaCO3)	270		1.0	mg/L		20-OCT-20	R5260636
Ammonia, Total (as N)							
Ammonia as N	0.0055		0.0050	mg/L		27-OCT-20	R5269497
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-OCT-20	R5263116
Chloride in Water by IC							
Chloride (Cl)	18.3	DLHC	0.50	mg/L		17-OCT-20	R5263116
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1380		2.0	uS/cm		20-OCT-20	R5260636
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		17-OCT-20	R5263116
Ion Balance Calculation							
Ion Balance	91.9		-100	%		25-OCT-20	
Ion Balance Calculation							
Cation - Anion Balance	-4.2			%		25-OCT-20	
Anion Sum	19.2			meq/L		25-OCT-20	
Cation Sum	17.7			meq/L		25-OCT-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.966	DLHC	0.025	mg/L		17-OCT-20	R5263116
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-OCT-20	R5263116
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0073		0.0010	mg/L		17-OCT-20	R5256199
Oxidation redution potential by elect.							
ORP	431		-1000	mV		19-OCT-20	R5257225
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0063		0.0020	mg/L		25-OCT-20	R5268309
Sulfate in Water by IC							
Sulfate (SO4)	637	DLHC	1.5	mg/L		17-OCT-20	R5263116
Total Dissolved Solids							
Total Dissolved Solids	1210	DLHC	20	mg/L		22-OCT-20	R5268029
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		22-OCT-20	R5268009
Turbidity							
Turbidity	0.89		0.10	NTU		17-OCT-20	R5256415
pH							
pH	8.40		0.10	pH		20-OCT-20	R5260636

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-10-16-WS

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2517981

Report Date: 08-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5261604							
WG3429351-8	LCS							
Acidity (as CaCO3)			101.2		%		85-115	21-OCT-20
WG3429351-7	MB							
Acidity (as CaCO3)			1.7		mg/L		2	21-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5260636							
WG3428913-11	LCS							
Alkalinity, Total (as CaCO3)			103.1		%		85-115	20-OCT-20
WG3428913-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5268088							
WG3428673-3	DUP	L2517981-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	24-OCT-20
WG3428673-2	LCS							
Beryllium (Be)-Dissolved			99.4		%		80-120	24-OCT-20
WG3428673-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-OCT-20
WG3428673-4	MS	L2517981-2						
Beryllium (Be)-Dissolved			97.4		%		70-130	24-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5262656							
WG3428630-2	LCS							
Beryllium (Be)-Total			93.0		%		80-120	21-OCT-20
WG3428630-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	21-OCT-20
BIC-CL								
	Water							
Batch	R5260636							
WG3428913-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-JAN-21
BR-L-IC-N-CL								
	Water							
Batch	R5263116							
WG3429405-6	LCS							
Bromide (Br)			95.6		%		85-115	17-OCT-20
WG3429405-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5268556							
WG3432113-11	DUP	L2517981-1						
	Dissolved Organic Carbon	0.83	0.85		mg/L	2.6	20	25-OCT-20
WG3432113-10	LCS							
	Dissolved Organic Carbon		92.8		%		80-120	25-OCT-20
WG3432113-9	MB							
	Dissolved Organic Carbon		<0.50		mg/L		0.5	25-OCT-20
WG3432113-12	MS	L2517981-1						
	Dissolved Organic Carbon		96.2		%		70-130	25-OCT-20
Batch	R5268641							
WG3432193-2	LCS							
	Dissolved Organic Carbon		93.7		%		80-120	25-OCT-20
WG3432193-1	MB							
	Dissolved Organic Carbon		<0.50		mg/L		0.5	25-OCT-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5268556							
WG3432113-11	DUP	L2517981-1						
	Total Organic Carbon	0.92	1.03		mg/L	11	20	25-OCT-20
WG3432113-10	LCS							
	Total Organic Carbon		91.0		%		80-120	25-OCT-20
WG3432113-9	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	25-OCT-20
WG3432113-12	MS	L2517981-1						
	Total Organic Carbon		98.4		%		70-130	25-OCT-20
Batch	R5268641							
WG3432193-2	LCS							
	Total Organic Carbon		97.9		%		80-120	25-OCT-20
WG3432193-1	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	25-OCT-20
CL-L-IC-N-CL								
	Water							
Batch	R5263116							
WG3429405-6	LCS							
	Chloride (Cl)		96.7		%		85-115	17-OCT-20
WG3429405-5	MB							
	Chloride (Cl)		<0.10		mg/L		0.1	17-OCT-20
CO3-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch R5260636								
WG3428913-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	15-JAN-21
EC-L-PCT-CL	Water							
Batch R5260636								
WG3428913-11 LCS								
Conductivity (@ 25C)			94.8		%		90-110	20-OCT-20
WG3428913-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	20-OCT-20
F-IC-N-CL	Water							
Batch R5263116								
WG3429405-6 LCS								
Fluoride (F)			92.2		%		90-110	17-OCT-20
WG3429405-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	17-OCT-20
HG-D-CVAA-VA	Water							
Batch R5263196								
WG3429718-2 LCS								
Mercury (Hg)-Dissolved			97.7		%		80-120	22-OCT-20
WG3429718-1 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	22-OCT-20
WG3429718-4 MS		L2517981-1						
Mercury (Hg)-Dissolved			95.8		%		70-130	22-OCT-20
HG-T-U-CVAF-VA	Water							
Batch R5267701								
WG3431243-3 DUP		L2517981-2						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	23-OCT-20
WG3431243-2 LCS								
Mercury (Hg)-Total			90.8		%		80-120	23-OCT-20
WG3431243-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	23-OCT-20
MET-D-CCMS-VA	Water							
Batch R5268088								
WG3428673-3 DUP		L2517981-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	24-OCT-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-OCT-20
Arsenic (As)-Dissolved		0.00012	0.00013		mg/L	8.7	20	24-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5268088							
WG3428673-3	DUP	L2517981-1						
Barium (Ba)-Dissolved		0.0712	0.0689		mg/L	3.2	20	24-OCT-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-OCT-20
Boron (B)-Dissolved		0.087	0.083		mg/L	4.3	20	24-OCT-20
Cadmium (Cd)-Dissolved		0.0000086	0.0000091		mg/L	5.7	20	24-OCT-20
Calcium (Ca)-Dissolved		64.8	64.1		mg/L	1.1	20	24-OCT-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-OCT-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-OCT-20
Copper (Cu)-Dissolved		0.00028	0.00032		mg/L	11	20	24-OCT-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-OCT-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-OCT-20
Lithium (Li)-Dissolved		0.0382	0.0369		mg/L	3.3	20	24-OCT-20
Magnesium (Mg)-Dissolved		19.6	19.0		mg/L	3.2	20	24-OCT-20
Manganese (Mn)-Dissolved		0.00553	0.00542		mg/L	2.0	20	24-OCT-20
Molybdenum (Mo)-Dissolved		0.00145	0.00141		mg/L	3.0	20	24-OCT-20
Nickel (Ni)-Dissolved		<0.00050	0.00052	RPD-NA	mg/L	N/A	20	24-OCT-20
Potassium (K)-Dissolved		1.19	1.18		mg/L	0.8	20	24-OCT-20
Selenium (Se)-Dissolved		0.00220	0.00197		mg/L	11	20	24-OCT-20
Silicon (Si)-Dissolved		4.08	4.14		mg/L	1.4	20	24-OCT-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-OCT-20
Sodium (Na)-Dissolved		16.1	15.7		mg/L	2.3	20	24-OCT-20
Strontium (Sr)-Dissolved		1.06	1.02		mg/L	3.5	20	24-OCT-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-OCT-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-OCT-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-OCT-20
Uranium (U)-Dissolved		0.000281	0.000278		mg/L	1.1	20	24-OCT-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-OCT-20
Zinc (Zn)-Dissolved		0.0034	0.0034		mg/L	1.3	20	24-OCT-20
WG3428673-2	LCS							
Aluminum (Al)-Dissolved			103.5		%		80-120	24-OCT-20
Antimony (Sb)-Dissolved			88.0		%		80-120	24-OCT-20
Arsenic (As)-Dissolved			92.3		%		80-120	24-OCT-20
Barium (Ba)-Dissolved			104.2		%		80-120	24-OCT-20
Bismuth (Bi)-Dissolved			107.4		%		80-120	24-OCT-20
Boron (B)-Dissolved			94.5		%		80-120	24-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5268088							
WG3428673-2	LCS							
Cadmium (Cd)-Dissolved			96.9		%		80-120	24-OCT-20
Calcium (Ca)-Dissolved			98.7		%		80-120	24-OCT-20
Chromium (Cr)-Dissolved			104.3		%		80-120	24-OCT-20
Cobalt (Co)-Dissolved			104.2		%		80-120	24-OCT-20
Copper (Cu)-Dissolved			98.3		%		80-120	24-OCT-20
Iron (Fe)-Dissolved			92.8		%		80-120	24-OCT-20
Lead (Pb)-Dissolved			100.5		%		80-120	24-OCT-20
Lithium (Li)-Dissolved			102.7		%		80-120	24-OCT-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	24-OCT-20
Manganese (Mn)-Dissolved			99.0		%		80-120	24-OCT-20
Molybdenum (Mo)-Dissolved			93.9		%		80-120	24-OCT-20
Nickel (Ni)-Dissolved			99.9		%		80-120	24-OCT-20
Potassium (K)-Dissolved			99.4		%		80-120	24-OCT-20
Selenium (Se)-Dissolved			87.6		%		80-120	24-OCT-20
Silicon (Si)-Dissolved			91.8		%		60-140	24-OCT-20
Silver (Ag)-Dissolved			102.6		%		80-120	24-OCT-20
Sodium (Na)-Dissolved			103.0		%		80-120	24-OCT-20
Strontium (Sr)-Dissolved			95.4		%		80-120	24-OCT-20
Thallium (Tl)-Dissolved			107.2		%		80-120	24-OCT-20
Tin (Sn)-Dissolved			92.7		%		80-120	24-OCT-20
Titanium (Ti)-Dissolved			92.3		%		80-120	24-OCT-20
Uranium (U)-Dissolved			100.4		%		80-120	24-OCT-20
Vanadium (V)-Dissolved			104.1		%		80-120	24-OCT-20
Zinc (Zn)-Dissolved			93.3		%		80-120	24-OCT-20
WG3428673-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20



Quality Control Report

Workorder: L2517981

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5268088							
WG3428673-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-OCT-20
WG3428673-4	MS	L2517981-2						
Aluminum (Al)-Dissolved			103.3		%		70-130	24-OCT-20
Antimony (Sb)-Dissolved			102.1		%		70-130	24-OCT-20
Arsenic (As)-Dissolved			110.3		%		70-130	24-OCT-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Bismuth (Bi)-Dissolved			84.8		%		70-130	24-OCT-20
Boron (B)-Dissolved			86.8		%		70-130	24-OCT-20
Cadmium (Cd)-Dissolved			97.8		%		70-130	24-OCT-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Chromium (Cr)-Dissolved			103.7		%		70-130	24-OCT-20
Cobalt (Co)-Dissolved			100.6		%		70-130	24-OCT-20
Copper (Cu)-Dissolved			94.9		%		70-130	24-OCT-20
Iron (Fe)-Dissolved			97.2		%		70-130	24-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5268088							
WG3428673-4 MS		L2517981-2						
Lead (Pb)-Dissolved			90.9		%		70-130	24-OCT-20
Lithium (Li)-Dissolved			103.3		%		70-130	24-OCT-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Manganese (Mn)-Dissolved			98.9		%		70-130	24-OCT-20
Molybdenum (Mo)-Dissolved			105.9		%		70-130	24-OCT-20
Nickel (Ni)-Dissolved			96.7		%		70-130	24-OCT-20
Potassium (K)-Dissolved			108.6		%		70-130	24-OCT-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Silicon (Si)-Dissolved			92.8		%		70-130	24-OCT-20
Silver (Ag)-Dissolved			96.1		%		70-130	24-OCT-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	24-OCT-20
Thallium (Tl)-Dissolved			90.4		%		70-130	24-OCT-20
Tin (Sn)-Dissolved			100.6		%		70-130	24-OCT-20
Titanium (Ti)-Dissolved			105.7		%		70-130	24-OCT-20
Uranium (U)-Dissolved			95.5		%		70-130	24-OCT-20
Vanadium (V)-Dissolved			109.9		%		70-130	24-OCT-20
Zinc (Zn)-Dissolved			93.8		%		70-130	24-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5262656							
WG3428630-2 LCS								
Aluminum (Al)-Total			96.4		%		80-120	21-OCT-20
Antimony (Sb)-Total			93.1		%		80-120	21-OCT-20
Arsenic (As)-Total			90.7		%		80-120	21-OCT-20
Barium (Ba)-Total			95.1		%		80-120	21-OCT-20
Bismuth (Bi)-Total			98.0		%		80-120	21-OCT-20
Boron (B)-Total			83.4		%		80-120	21-OCT-20
Cadmium (Cd)-Total			98.4		%		80-120	21-OCT-20
Calcium (Ca)-Total			95.9		%		80-120	21-OCT-20
Chromium (Cr)-Total			97.6		%		80-120	21-OCT-20
Cobalt (Co)-Total			96.3		%		80-120	21-OCT-20
Copper (Cu)-Total			96.8		%		80-120	21-OCT-20
Iron (Fe)-Total			91.8		%		80-120	21-OCT-20
Lead (Pb)-Total			93.6		%		80-120	21-OCT-20



Quality Control Report

Workorder: L2517981

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5262656							
WG3428630-2	LCS							
Lithium (Li)-Total			91.2		%		80-120	21-OCT-20
Magnesium (Mg)-Total			93.6		%		80-120	21-OCT-20
Manganese (Mn)-Total			98.6		%		80-120	21-OCT-20
Molybdenum (Mo)-Total			94.7		%		80-120	21-OCT-20
Nickel (Ni)-Total			96.0		%		80-120	21-OCT-20
Potassium (K)-Total			96.9		%		80-120	21-OCT-20
Selenium (Se)-Total			93.7		%		80-120	21-OCT-20
Silicon (Si)-Total			94.9		%		80-120	21-OCT-20
Silver (Ag)-Total			98.2		%		80-120	21-OCT-20
Sodium (Na)-Total			96.7		%		80-120	21-OCT-20
Strontium (Sr)-Total			98.1		%		80-120	21-OCT-20
Thallium (Tl)-Total			98.5		%		80-120	21-OCT-20
Tin (Sn)-Total			94.2		%		80-120	21-OCT-20
Titanium (Ti)-Total			85.1		%		80-120	21-OCT-20
Uranium (U)-Total			95.3		%		80-120	21-OCT-20
Vanadium (V)-Total			96.7		%		80-120	21-OCT-20
Zinc (Zn)-Total			94.3		%		80-120	21-OCT-20
WG3428630-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	21-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	21-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	21-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-OCT-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	21-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	21-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	21-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	21-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5262656							
WG3428630-1	MB							
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	21-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	21-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	21-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	21-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	21-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	21-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	21-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	21-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	21-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	21-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	21-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	21-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-OCT-20
NH3-L-F-CL		Water						
Batch	R5269497							
WG3432568-2	LCS							
Ammonia as N			112.1		%		85-115	26-OCT-20
WG3432568-6	LCS							
Ammonia as N			98.1		%		85-115	26-OCT-20
WG3432568-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-20
WG3432568-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5263116							
WG3429405-6	LCS							
Nitrite (as N)			99.5		%		90-110	17-OCT-20
WG3429405-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-OCT-20
NO3-L-IC-N-CL		Water						
Batch	R5263116							
WG3429405-6	LCS							
Nitrate (as N)			94.8		%		90-110	17-OCT-20
WG3429405-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5263116							
WG3429405-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	17-OCT-20
OH-CL	Water							
Batch	R5260636							
WG3428913-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	15-JAN-21
ORP-CL	Water							
Batch	R5257225							
WG3427623-3 CRM		CL-ORP						
ORP			227		mV		210-230	19-OCT-20
WG3427623-4 DUP		L2517981-3						
ORP		431	433	J	mV	2.3	15	19-OCT-20
P-T-L-COL-CL	Water							
Batch	R5268309							
WG3431748-6 LCS								
Phosphorus (P)-Total			98.1		%		80-120	25-OCT-20
WG3431748-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-OCT-20
PH-CL	Water							
Batch	R5260636							
WG3428913-11 LCS								
pH			7.00		pH		6.9-7.1	20-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5256199							
WG3426639-18 LCS								
Orthophosphate-Dissolved (as P)			109.0		%		80-120	17-OCT-20
WG3426639-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-OCT-20
SO4-IC-N-CL	Water							
Batch	R5263116							
WG3429405-6 LCS								
Sulfate (SO4)			95.8		%		90-110	17-OCT-20
WG3429405-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	17-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5268029							
WG3429800-3	DUP	L2517981-3						
Total Dissolved Solids		1210	1200		mg/L	0.5	20	22-OCT-20
WG3429800-2	LCS							
Total Dissolved Solids			99.7		%		85-115	22-OCT-20
WG3429800-1	MB							
Total Dissolved Solids			<10		mg/L		10	22-OCT-20
TKN-L-F-CL								
	Water							
Batch	R5260066							
WG3428629-12	LCS							
Total Kjeldahl Nitrogen			100.1		%		75-125	20-OCT-20
WG3428629-2	LCS							
Total Kjeldahl Nitrogen			102.9		%		75-125	20-OCT-20
WG3428629-4	LCS							
Total Kjeldahl Nitrogen			102.7		%		75-125	20-OCT-20
WG3428629-6	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	20-OCT-20
WG3428629-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-OCT-20
WG3428629-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-OCT-20
WG3428629-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-OCT-20
WG3428629-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-OCT-20
TSS-L-CL								
	Water							
Batch	R5268009							
WG3429618-17	LCS							
Total Suspended Solids			95.3		%		85-115	22-OCT-20
WG3429618-16	MB							
Total Suspended Solids			<1.0		mg/L		1	22-OCT-20
TURBIDITY-CL								
	Water							
Batch	R5256415							
WG3426671-2	LCS							
Turbidity			96.4		%		85-115	17-OCT-20
WG3426671-1	MB							
Turbidity			<0.10		NTU		0.1	17-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	16-OCT-20 12:31	19-OCT-20 13:00	0.25	72	hours	EHTR-FM
	2	16-OCT-20 09:47	19-OCT-20 13:00	0.25	75	hours	EHTR-FM
	3	16-OCT-20 08:59	19-OCT-20 13:00	0.25	76	hours	EHTR-FM
pH	1	16-OCT-20 12:31	20-OCT-20 14:00	0.25	97	hours	EHTR-FM
	2	16-OCT-20 09:47	20-OCT-20 14:00	0.25	100	hours	EHTR-FM
	3	16-OCT-20 08:59	20-OCT-20 14:00	0.25	101	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2517981 were received on 17-OCT-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	2020-10-16-WS			TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO	
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa		Excel PDF EDD
Email	Jeremy.Enns@teck.com			Email	Justine.burmaa@alsglobal.com		Email 1: Leigh.Stickney@teck.com X X X
Address	P.O. BOX 5000			Address	2559 29 Street NE		Email 2: Laura.Ferguson@teck.com X X X
							Email 3: teckcost@equisonline.com X X X
							Email 4: jaydon.francis@teck.com X X X
City	Elkford	Province	BC	City	Calgary	Province	AB
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-865-3048			Phone Number	403 407.1794		Email 5: Brendan.Peachey@teck.com X X X
							Email 6: DL-Equis-GHO-Field@teck.com X X X
							PO number 684125

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2517981-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	TSS/TURB	EPH	Bacteriological
GH_MW.UTC-1B.WG.2020-10-05_NP	GH_MW.UTC-1B	WG		10/16/2020	12:31	G	6	1	1	1	1	1	1	1			
GH.UTC1.WS.2020-10-05_NP	GH.UTC1	WS		10/16/2020	9:47	G	7	1	1	1	1	1	1	1			
GH.UTC.N.WS.2020-10-05_NP	GH.UTC.N	WS		10/16/2020	8:59	G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	10/17 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	SS	Mobile #	
Sampler's Signature		Date/Time	October 16, 2020

301



SNC-Lavalin
ATTN: Mark Newman
Teck Resources Limited c/o SNC-Lavalin
8648 Commerce Court
Burnaby BC V5A 4N6

Date Received: 10-NOV-20
Report Date: 18-NOV-20 14:50 (MT)
Version: FINAL

Client Phone: --

Certificate of Analysis

Lab Work Order #: L2527887
Project P.O. #: 672225
Job Reference: RGMP
C of C Numbers: 17-787381
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2527887-1 WG 08-NOV-20 13:00 GH_MW_BG1A_W G_2020_11_08_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	545			
	Hardness (as CaCO3) (mg/L)	346			
	pH (pH)	8.05			
	ORP (mV)	213			
	Total Suspended Solids (mg/L)	82.8			
	Total Dissolved Solids (mg/L)	363	DLHC		
	Turbidity (NTU)	73.2			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	301			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	301			
	Ammonia as N (mg/L)	0.285			
	Bicarbonate (HCO3) (mg/L)	367			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	5.23			
	Fluoride (F) (mg/L)	0.198			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	115			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.280			
	Total Nitrogen (mg/L)	0.280			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0026			
	Phosphorus (P)-Total (mg/L)	0.0033			
	Sulfate (SO4) (mg/L)	16.6			
	Anion Sum (meq/L)	6.51			
	Cation Sum (meq/L)	7.48			
	Cation - Anion Balance (%)	6.9			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.61			
	Total Organic Carbon (mg/L)	3.32			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2527887-1 WG 08-NOV-20 13:00 GH_MW_BG1A_W G_2020_11_08_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00221			
	Arsenic (As)-Dissolved (mg/L)	0.00477			
	Barium (Ba)-Dissolved (mg/L)	0.324			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.033			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000123			
	Calcium (Ca)-Dissolved (mg/L)	80.0			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00062			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.617			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0222			
	Magnesium (Mg)-Dissolved (mg/L)	35.5			
	Manganese (Mn)-Dissolved (mg/L)	0.146			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0344			
	Nickel (Ni)-Dissolved (mg/L)	0.00168			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	3.90			
	Selenium (Se)-Dissolved (mg/L)	0.00552			
	Silicon (Si)-Dissolved (mg/L)	3.30			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.29			
	Strontium (Sr)-Dissolved (mg/L)	0.121			
	Sulfur (S)-Dissolved (mg/L)	8.93			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00446			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0113			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Phosphorus (P)-Total	MS-B	L2527887-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			

Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

17-787381

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin 8648 Commerce Court
 Burnaby BC V5A 4N6

Contact: Mark Newman

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5284265							
WG3443645-8	LCS							
Acidity (as CaCO3)			102.8		%		85-115	12-NOV-20
WG3443645-7	MB							
Acidity (as CaCO3)			1.7		mg/L		2	12-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5286616							
WG3446224-8	LCS							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	14-NOV-20
WG3446224-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-NOV-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5287686							
WG3447545-2	LCS	TMRM						
Beryllium (Be)-Dissolved			111.4		%		80-120	18-NOV-20
WG3447545-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-20
BIC-CL								
	Water							
Batch	R5286616							
WG3446224-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5284199							
WG3443556-2	LCS							
Bromide (Br)			105.4		%		85-115	10-NOV-20
WG3443556-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	10-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5285776							
WG3445296-11	DUP	L2527887-1						
Dissolved Organic Carbon		3.61	3.83		mg/L	5.9	20	14-NOV-20
WG3445296-10	LCS							
Dissolved Organic Carbon			104.0		%		80-120	14-NOV-20
WG3445296-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-NOV-20
WG3445296-12	MS	L2527887-1						
Dissolved Organic Carbon			112.3		%		70-130	14-NOV-20

Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5285776							
WG3445296-11	DUP	L2527887-1						
Total Organic Carbon		3.32	3.40		mg/L	2.6	20	14-NOV-20
WG3445296-10	LCS							
Total Organic Carbon			105.6		%		80-120	14-NOV-20
WG3445296-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-NOV-20
WG3445296-12	MS	L2527887-1						
Total Organic Carbon			112.4		%		70-130	14-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5284199							
WG3443556-2	LCS							
Chloride (Cl)			100.8		%		85-115	10-NOV-20
WG3443556-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	10-NOV-20
CO3-CL								
Water								
Batch	R5286616							
WG3446224-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5286616							
WG3446224-8	LCS							
Conductivity (@ 25C)			95.6		%		90-110	14-NOV-20
WG3446224-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-NOV-20
F-IC-N-CL								
Water								
Batch	R5284199							
WG3443556-2	LCS							
Fluoride (F)			108.2		%		90-110	10-NOV-20
WG3443556-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	10-NOV-20
HG-D-CVAA-CL								
Water								
Batch	R5287671							
WG3447549-2	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	18-NOV-20
WG3447549-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-NOV-20



Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5287686							
WG3447545-2	LCS	TMRM						
Aluminum (Al)-Dissolved			107.9		%		80-120	18-NOV-20
Antimony (Sb)-Dissolved			106.2		%		80-120	18-NOV-20
Arsenic (As)-Dissolved			108.7		%		80-120	18-NOV-20
Barium (Ba)-Dissolved			105.0		%		80-120	18-NOV-20
Bismuth (Bi)-Dissolved			102.6		%		80-120	18-NOV-20
Boron (B)-Dissolved			99.9		%		80-120	18-NOV-20
Cadmium (Cd)-Dissolved			106.3		%		80-120	18-NOV-20
Calcium (Ca)-Dissolved			110.1		%		80-120	18-NOV-20
Chromium (Cr)-Dissolved			104.8		%		80-120	18-NOV-20
Cobalt (Co)-Dissolved			105.6		%		80-120	18-NOV-20
Copper (Cu)-Dissolved			104.3		%		80-120	18-NOV-20
Iron (Fe)-Dissolved			114.9		%		80-120	18-NOV-20
Lead (Pb)-Dissolved			105.7		%		80-120	18-NOV-20
Lithium (Li)-Dissolved			104.4		%		80-120	18-NOV-20
Magnesium (Mg)-Dissolved			110.1		%		80-120	18-NOV-20
Manganese (Mn)-Dissolved			107.4		%		80-120	18-NOV-20
Molybdenum (Mo)-Dissolved			110.2		%		80-120	18-NOV-20
Nickel (Ni)-Dissolved			104.9		%		80-120	18-NOV-20
Phosphorus (P)-Dissolved			115.4		%		70-130	18-NOV-20
Potassium (K)-Dissolved			108.9		%		80-120	18-NOV-20
Selenium (Se)-Dissolved			103.7		%		80-120	18-NOV-20
Silicon (Si)-Dissolved			107.5		%		60-140	18-NOV-20
Silver (Ag)-Dissolved			102.6		%		80-120	18-NOV-20
Sodium (Na)-Dissolved			107.3		%		80-120	18-NOV-20
Strontium (Sr)-Dissolved			106.7		%		80-120	18-NOV-20
Sulfur (S)-Dissolved			109.3		%		80-120	18-NOV-20
Thallium (Tl)-Dissolved			100.6		%		80-120	18-NOV-20
Tin (Sn)-Dissolved			101.3		%		80-120	18-NOV-20
Titanium (Ti)-Dissolved			100.7		%		80-120	18-NOV-20
Uranium (U)-Dissolved			101.5		%		80-120	18-NOV-20
Vanadium (V)-Dissolved			107.5		%		80-120	18-NOV-20
Zinc (Zn)-Dissolved			103.9		%		80-120	18-NOV-20
Zirconium (Zr)-Dissolved			105.5		%		80-120	18-NOV-20
WG3447545-1	MB							



Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5287686							
WG3447545-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20

NH3-L-F-CL

Water

Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5284785								
WG3444116-10 LCS								
Ammonia as N			103.4		%		85-115	12-NOV-20
WG3444116-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	12-NOV-20
NO2-L-IC-N-CL								
Batch R5284199								
WG3443556-2 LCS								
Nitrite (as N)			104.9		%		90-110	10-NOV-20
WG3443556-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	10-NOV-20
NO3-L-IC-N-CL								
Batch R5284199								
WG3443556-2 LCS								
Nitrate (as N)			101.9		%		90-110	10-NOV-20
WG3443556-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	10-NOV-20
OH-CL								
Batch R5286616								
WG3446224-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	14-NOV-20
ORP-CL								
Batch R5283759								
WG3443031-9 CRM								
ORP		CL-ORP	226		mV		210-230	10-NOV-20
P-T-L-COL-CL								
Batch R5286966								
WG3446486-2 LCS								
Phosphorus (P)-Total			97.5		%		80-120	17-NOV-20
WG3446486-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-20
PH-CL								
Batch R5286616								
WG3446224-8 LCS								
pH			7.02		pH		6.9-7.1	14-NOV-20

Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5283690							
WG3442854-2	LCS							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	10-NOV-20
WG3442854-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-NOV-20
SO4-IC-N-CL	Water							
Batch	R5284199							
WG3443556-2	LCS							
Sulfate (SO4)			100.9		%		90-110	10-NOV-20
WG3443556-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5285268							
WG3443297-8	LCS							
Total Dissolved Solids			101.2		%		85-115	12-NOV-20
WG3443297-7	MB							
Total Dissolved Solids			<10		mg/L		10	12-NOV-20
TKN-L-F-CL	Water							
Batch	R5284260							
WG3443328-2	LCS							
Total Kjeldahl Nitrogen			102.7		%		75-125	12-NOV-20
WG3443328-4	LCS							
Total Kjeldahl Nitrogen			97.8		%		75-125	12-NOV-20
WG3443328-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-NOV-20
WG3443328-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-NOV-20
TSS-L-CL	Water							
Batch	R5285192							
WG3443290-6	LCS							
Total Suspended Solids			103.5		%		85-115	12-NOV-20
WG3443290-5	MB							
Total Suspended Solids			<1.0		mg/L		1	12-NOV-20
TURBIDITY-CL	Water							
Batch	R5283753							
WG3442791-2	LCS							
Turbidity			98.4		%		85-115	10-NOV-20
WG3442791-3	MB							



Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5283753							
WG3442791-3	MB							
Turbidity			<0.10		NTU		0.1	10-NOV-20

Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

Page 8 of 9

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2527887

Report Date: 18-NOV-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	08-NOV-20 13:00	10-NOV-20 18:00	0.25	53	hours	EHTR-FM
pH	1	08-NOV-20 13:00	14-NOV-20 14:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2527887 were received on 10-NOV-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2527887-COFC

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																													
Company: <u>SNC-Lavalin</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																													
Contact: <u>Mark Newman</u>		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)		EMERGENCY																											
Phone: <u>604-515-5151</u>		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E - 100%] <input type="checkbox"/>																											
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																											
Street: <u>520 Lake Street</u>		Email 1 or Fax: <u>gavin.grundy@snc-lavalin.com</u>		Date and Time Required for all E&P TATs:		dd-mmm-yy hh:mm																											
City/Province: <u>Nelson, BC</u>		Email 2: <u>mark.newman@snc-lavalin.com</u>		For tests that can not be performed according to the service level selected, you will be contacted.																													
Postal Code: <u>V1L 4C6</u>		Email 3: <u>cam.jaeger@teck.com</u>		Analysis Request																													
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below																													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<table border="1"> <tr> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">NUMBER OF CONTAINERS</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Dissolved Metals + Hg</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">TOC</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">DOC</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Nitrate/Nitrite</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Total N</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Teck Coal Routine</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">TKN</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Bicarbonate</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Carbonate</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">Hydroxide</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">SAMPLES ON HOLD</td> <td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">SUSPECTED HAZARD (see Special Instructions)</td> </tr> </table>				NUMBER OF CONTAINERS	Dissolved Metals + Hg	TOC	DOC	Nitrate/Nitrite	Total N	Teck Coal Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)													
NUMBER OF CONTAINERS	Dissolved Metals + Hg	TOC	DOC																		Nitrate/Nitrite	Total N	Teck Coal Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)				
																														Company:		Email 1 or Fax: <u>payable@snc-lavalin.com</u>	
																														Contact:		Email 2:	
																														Project Information		Oil and Gas Required Fields (client use)	
																														ALS Account # / Quote #: <u>Teck Coal</u>		AFE/Cost Center: PO#	
																														Job #: <u>RGMP</u>		Major/Minor Code: Routing Code:	
																														PO/AFE: <u>672225</u>		Requisitioner:	
																														LSD:		Location:	
																														ALS Lab Work Order # (lab use only):		ALS Contact: <u>Inayat</u>	
						Sampler: <u>Gavin Grundy</u>																											
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																													
	<u>GH-MW-BG1A-WG-2020-11-08-NP</u>	<u>08 Nov 20</u>	<u>1300</u>	<u>WG</u>	<u>5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																				
Drinking Water (DW) Samples¹ (client use)				Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)																									
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO				<u>Teck Equis : GHO (Greenhills)</u>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																									
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO								Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																									
								Cooling Initiated <input checked="" type="checkbox"/>																									
								INITIAL COOLER TEMPERATURES °C																									
								FINAL COOLER TEMPERATURES °C																									
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)																									
Released by: <u>Gavin Grundy</u>		Date: <u>Nov 09, 2020</u>		Time: <u>1200</u>		Received by: <u>[Signature]</u>		Date: <u>11/10</u>		Time: <u>1230</u>		Received by: _____																					

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



TECK COAL LIMITED (GREENHILLS)
ATTN: Leigh Stickney
BOX 5000
ELKFORD BC V0B1H0

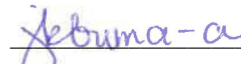
Date Received: 17-NOV-20
Report Date: 08-FEB-21 17:00 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-3274

Certificate of Analysis

Lab Work Order #: L2530427
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Comments: 8-FEB-21: Bicarbonate, Carbonate, and Hydroxide results reported.



Justine Buma-a
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530427-1 GH_MW-GHC-1D_WG_2020-10-05_NP							
Sampled By: JF/KM on 16-NOV-20 @ 13:25							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	320		5.0	mg/L		19-NOV-20	R5288956
Carbonate (CO3)	<5.0		5.0	mg/L		19-NOV-20	R5288956
Dissolved Organic Carbon	<0.50		0.50	mg/L		18-NOV-20	R5289051
Hydroxide (OH)	<5.0		5.0	mg/L		19-NOV-20	R5288956
Total Kjeldahl Nitrogen	0.077		0.050	mg/L		18-NOV-20	R5287574
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		23-NOV-20	R5295556
Total Organic Carbon	0.69		0.50	mg/L		18-NOV-20	R5289051
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-NOV-20	19-NOV-20	R5289518
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287878
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	21-NOV-20	21-NOV-20	R5292961
Dissolved Mercury Filtration Location	FIELD					21-NOV-20	R5292917
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287878
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-NOV-20	19-NOV-20	R5289518
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Barium (Ba)-Dissolved	0.0834		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Boron (B)-Dissolved	0.035		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Cadmium (Cd)-Dissolved	0.0201		0.0050	ug/L	18-NOV-20	19-NOV-20	R5289518
Calcium (Ca)-Dissolved	161		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	18-NOV-20	19-NOV-20	R5289518
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	18-NOV-20	19-NOV-20	R5289518
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Lithium (Li)-Dissolved	0.0176		0.0010	mg/L	18-NOV-20	19-NOV-20	R5289518
Magnesium (Mg)-Dissolved	52.0		0.10	mg/L	18-NOV-20	19-NOV-20	R5289518
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Molybdenum (Mo)-Dissolved	0.000725		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Nickel (Ni)-Dissolved	0.00113		0.00050	mg/L	18-NOV-20	19-NOV-20	R5289518
Potassium (K)-Dissolved	1.46		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Selenium (Se)-Dissolved	4.99		0.050	ug/L	18-NOV-20	19-NOV-20	R5289518
Silicon (Si)-Dissolved	4.76		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Sodium (Na)-Dissolved	4.73		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Strontium (Sr)-Dissolved	0.461		0.00020	mg/L	18-NOV-20	19-NOV-20	R5289518
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Uranium (U)-Dissolved	0.00279		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	19-NOV-20	R5289518
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	19-NOV-20	R5289518
Hardness							
Hardness (as CaCO3)	617		0.50	mg/L		19-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.1		1.0	mg/L		18-NOV-20	R5288077

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530427-1 GH_MW-GHC-1D_WG_2020-10-05_NP Sampled By: JF/KM on 16-NOV-20 @ 13:25 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	262		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Total (as CaCO3)	262		1.0	mg/L		19-NOV-20	R5288956
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		17-NOV-20	R5287213
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-NOV-20	R5287336
Chloride in Water by IC							
Chloride (Cl)	1.76	DLHC	0.50	mg/L		17-NOV-20	R5287336
Electrical Conductivity (EC)							
Conductivity (@ 25C)	962		2.0	uS/cm		19-NOV-20	R5288956
Fluoride in Water by IC							
Fluoride (F)	0.41	DLHC	0.10	mg/L		17-NOV-20	R5287336
Ion Balance Calculation							
Ion Balance	106		-100	%		20-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	2.9			%		20-NOV-20	
Anion Sum	11.9			meq/L		20-NOV-20	
Cation Sum	12.6			meq/L		20-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.233	DLHC	0.025	mg/L		17-NOV-20	R5287336
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-NOV-20	R5287336
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		17-NOV-20	R5287085
Oxidation redution potential by elect.							
ORP	361		-1000	mV		17-NOV-20	R5287119
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0057		0.0020	mg/L		19-NOV-20	R5289256
Sulfate in Water by IC							
Sulfate (SO4)	314	DLHC	1.5	mg/L		17-NOV-20	R5287336
Total Dissolved Solids							
Total Dissolved Solids	776	DLHC	20	mg/L		20-NOV-20	R5293196
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		20-NOV-20	R5293198
Turbidity							
Turbidity	1.98		0.10	NTU		17-NOV-20	R5287116
pH							
pH	7.99		0.10	pH		19-NOV-20	R5288956
L2530427-2 GH_MW-GHC-1S_WG_2020-10-05_NP Sampled By: JF/KM on 16-NOV-20 @ 12:32 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	291		5.0	mg/L		19-NOV-20	R5288956
Carbonate (CO3)	<5.0		5.0	mg/L		19-NOV-20	R5288956
Dissolved Organic Carbon	1.43		0.50	mg/L		18-NOV-20	R5289051
Hydroxide (OH)	<5.0		5.0	mg/L		19-NOV-20	R5288956
Total Kjeldahl Nitrogen	0.154		0.050	mg/L		18-NOV-20	R5287574
Mercury (Hg)-Total	0.00240		0.00050	ug/L		23-NOV-20	R5295556
Total Organic Carbon	1.99		0.50	mg/L		18-NOV-20	R5289051

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530427-2 GH_MW-GHC-1S_WG_2020-10-05_NP							
Sampled By: JF/KM on 16-NOV-20 @ 12:32							
Matrix: WG							
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-NOV-20	19-NOV-20	R5289518
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287878
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-NOV-20	21-NOV-20	R5292961
Dissolved Mercury Filtration Location	FIELD					21-NOV-20	R5292917
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287878
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-NOV-20	19-NOV-20	R5289518
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Arsenic (As)-Dissolved	0.00090		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Barium (Ba)-Dissolved	0.0297		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Boron (B)-Dissolved	0.044		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Cadmium (Cd)-Dissolved	0.0225		0.0050	ug/L	18-NOV-20	19-NOV-20	R5289518
Calcium (Ca)-Dissolved	271		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Cobalt (Co)-Dissolved	0.60		0.10	ug/L	18-NOV-20	19-NOV-20	R5289518
Copper (Cu)-Dissolved	0.00020		0.00020	mg/L	18-NOV-20	19-NOV-20	R5289518
Iron (Fe)-Dissolved	0.467		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Lithium (Li)-Dissolved	0.0241		0.0010	mg/L	18-NOV-20	19-NOV-20	R5289518
Magnesium (Mg)-Dissolved	61.7		0.10	mg/L	18-NOV-20	19-NOV-20	R5289518
Manganese (Mn)-Dissolved	0.276		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Molybdenum (Mo)-Dissolved	0.000995		0.000050	mg/L	18-NOV-20	19-NOV-20	R5289518
Nickel (Ni)-Dissolved	0.00249		0.00050	mg/L	18-NOV-20	19-NOV-20	R5289518
Potassium (K)-Dissolved	2.18		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Selenium (Se)-Dissolved	0.052		0.050	ug/L	18-NOV-20	19-NOV-20	R5289518
Silicon (Si)-Dissolved	6.62		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Sodium (Na)-Dissolved	4.90		0.050	mg/L	18-NOV-20	19-NOV-20	R5289518
Strontium (Sr)-Dissolved	0.709		0.00020	mg/L	18-NOV-20	19-NOV-20	R5289518
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	19-NOV-20	R5289518
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-NOV-20	19-NOV-20	R5289518
Uranium (U)-Dissolved	0.00194		0.000010	mg/L	18-NOV-20	19-NOV-20	R5289518
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	19-NOV-20	R5289518
Zinc (Zn)-Dissolved	0.0105		0.0010	mg/L	18-NOV-20	19-NOV-20	R5289518
Hardness							
Hardness (as CaCO3)	930		0.50	mg/L		19-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.0		1.0	mg/L		18-NOV-20	R5288077
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	239		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		19-NOV-20	R5288956
Alkalinity, Total (as CaCO3)	239		1.0	mg/L		19-NOV-20	R5288956
Ammonia, Total (as N)							
Ammonia as N	0.0249		0.0050	mg/L		17-NOV-20	R5287213
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-NOV-20	R5287336

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530427-2 GH_MW-GHC-1S_WG_2020-10-05_NP							
Sampled By: JF/KM on 16-NOV-20 @ 12:32							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	9.33	DLHC	0.50	mg/L		17-NOV-20	R5287336
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1350		2.0	uS/cm		19-NOV-20	R5288956
Fluoride in Water by IC							
Fluoride (F)	0.14	DLHC	0.10	mg/L		17-NOV-20	R5287336
Ion Balance Calculation							
Ion Balance	108		-100	%		20-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	3.8			%		20-NOV-20	
Anion Sum	17.5			meq/L		20-NOV-20	
Cation Sum	18.9			meq/L		20-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.151	DLHC	0.025	mg/L		17-NOV-20	R5287336
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-NOV-20	R5287336
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		17-NOV-20	R5287085
Oxidation redution potential by elect.							
ORP	218		-1000	mV		17-NOV-20	R5287119
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0232		0.0020	mg/L		19-NOV-20	R5289256
Sulfate in Water by IC							
Sulfate (SO4)	598	DLHC	1.5	mg/L		17-NOV-20	R5287336
Total Dissolved Solids							
Total Dissolved Solids	1210	DLHC	20	mg/L		20-NOV-20	R5293196
Total Suspended Solids							
Total Suspended Solids	25.3		1.0	mg/L		20-NOV-20	R5293198
Turbidity							
Turbidity	24.8		0.10	NTU		17-NOV-20	R5287116
pH							
pH	7.90		0.10	pH		19-NOV-20	R5288956

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2530427

Report Date: 08-FEB-21

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5288077							
WG3447910-5	LCS							
Acidity (as CaCO3)			104.0		%		85-115	18-NOV-20
WG3447910-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	18-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5288956							
WG3448139-17	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	19-NOV-20
WG3448139-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5289518							
WG3447723-2	LCS							
Beryllium (Be)-Dissolved			99.1		%		80-120	19-NOV-20
WG3447723-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-NOV-20
BIC-CL								
	Water							
Batch	R5288956							
WG3448139-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5287336							
WG3447223-2	LCS							
Bromide (Br)			102.2		%		85-115	17-NOV-20
WG3447223-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5289051							
WG3448082-2	LCS							
Dissolved Organic Carbon			101.0		%		80-120	18-NOV-20
WG3448082-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2530427

Report Date: 08-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5289051							
WG3448082-2	LCS							
Total Organic Carbon			107.0		%		80-120	18-NOV-20
WG3448082-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5287336							
WG3447223-2	LCS							
Chloride (Cl)			105.7		%		85-115	17-NOV-20
WG3447223-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	17-NOV-20
CO3-CL	Water							
Batch	R5288956							
WG3448139-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	19-NOV-20
EC-L-PCT-CL	Water							
Batch	R5288956							
WG3448139-17	LCS							
Conductivity (@ 25C)			97.2		%		90-110	19-NOV-20
WG3448139-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-NOV-20
F-IC-N-CL	Water							
Batch	R5287336							
WG3447223-2	LCS							
Fluoride (F)			95.4		%		90-110	17-NOV-20
WG3447223-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5292961							
WG3449311-6	LCS							
Mercury (Hg)-Dissolved			97.0		%		80-120	21-NOV-20
WG3449311-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-NOV-20
HG-T-U-CVAF-VA	Water							



Quality Control Report

Workorder: L2530427

Report Date: 08-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA		Water						
Batch	R5295556							
WG3450129-2	LCS							
Mercury (Hg)-Total			102.8		%		80-120	23-NOV-20
WG3450129-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	23-NOV-20
MET-D-CCMS-VA		Water						
Batch	R5289518							
WG3447723-2	LCS							
Aluminum (Al)-Dissolved			100.8		%		80-120	19-NOV-20
Antimony (Sb)-Dissolved			100.3		%		80-120	19-NOV-20
Arsenic (As)-Dissolved			98.0		%		80-120	19-NOV-20
Barium (Ba)-Dissolved			105.1		%		80-120	19-NOV-20
Bismuth (Bi)-Dissolved			105.3		%		80-120	19-NOV-20
Boron (B)-Dissolved			94.2		%		80-120	19-NOV-20
Cadmium (Cd)-Dissolved			99.8		%		80-120	19-NOV-20
Calcium (Ca)-Dissolved			98.5		%		80-120	19-NOV-20
Chromium (Cr)-Dissolved			95.2		%		80-120	19-NOV-20
Cobalt (Co)-Dissolved			95.6		%		80-120	19-NOV-20
Copper (Cu)-Dissolved			96.9		%		80-120	19-NOV-20
Iron (Fe)-Dissolved			90.6		%		80-120	19-NOV-20
Lead (Pb)-Dissolved			94.9		%		80-120	19-NOV-20
Lithium (Li)-Dissolved			96.3		%		80-120	19-NOV-20
Magnesium (Mg)-Dissolved			96.9		%		80-120	19-NOV-20
Manganese (Mn)-Dissolved			94.3		%		80-120	19-NOV-20
Molybdenum (Mo)-Dissolved			102.0		%		80-120	19-NOV-20
Nickel (Ni)-Dissolved			97.8		%		80-120	19-NOV-20
Potassium (K)-Dissolved			98.0		%		80-120	19-NOV-20
Selenium (Se)-Dissolved			102.3		%		80-120	19-NOV-20
Silicon (Si)-Dissolved			101.6		%		60-140	19-NOV-20
Silver (Ag)-Dissolved			98.6		%		80-120	19-NOV-20
Sodium (Na)-Dissolved			93.8		%		80-120	19-NOV-20
Strontium (Sr)-Dissolved			96.4		%		80-120	19-NOV-20
Thallium (Tl)-Dissolved			100.5		%		80-120	19-NOV-20
Tin (Sn)-Dissolved			98.6		%		80-120	19-NOV-20
Titanium (Ti)-Dissolved			96.7		%		80-120	19-NOV-20
Uranium (U)-Dissolved			99.4		%		80-120	19-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5289518							
WG3447723-2	LCS							
Vanadium (V)-Dissolved			96.1		%		80-120	19-NOV-20
Zinc (Zn)-Dissolved			99.1		%		80-120	19-NOV-20
WG3447723-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-NOV-20

NH3-L-F-CL

Water

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5287213							
WG3446903-6	LCS							
Ammonia as N			101.2		%		85-115	17-NOV-20
WG3446903-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-NOV-20
NO2-L-IC-N-CL	Water							
Batch	R5287336							
WG3447223-2	LCS							
Nitrite (as N)			106.5		%		90-110	17-NOV-20
WG3447223-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5287336							
WG3447223-2	LCS							
Nitrate (as N)			103.0		%		90-110	17-NOV-20
WG3447223-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-NOV-20
OH-CL	Water							
Batch	R5288956							
WG3448139-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	19-NOV-20
ORP-CL	Water							
Batch	R5287119							
WG3446574-5	CRM	CL-ORP						
ORP			224		mV		210-230	17-NOV-20
P-T-L-COL-CL	Water							
Batch	R5289256							
WG3448194-14	LCS							
Phosphorus (P)-Total			97.1		%		80-120	19-NOV-20
WG3448194-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-NOV-20
PH-CL	Water							
Batch	R5288956							
WG3448139-17	LCS							
pH			6.99		pH		6.9-7.1	19-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5287085							
WG3446746-10 LCS								
Orthophosphate-Dissolved (as P)			101.5		%		80-120	17-NOV-20
WG3446746-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-NOV-20
SO4-IC-N-CL	Water							
Batch	R5287336							
WG3447223-2 LCS								
Sulfate (SO4)			103.1		%		90-110	17-NOV-20
WG3447223-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	17-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5293196							
WG3449172-5 LCS								
Total Dissolved Solids			100.6		%		85-115	20-NOV-20
WG3449172-4 MB								
Total Dissolved Solids			<10		mg/L		10	20-NOV-20
TKN-L-F-CL	Water							
Batch	R5287574							
WG3447123-11 LCS								
Total Kjeldahl Nitrogen			86.1		%		75-125	18-NOV-20
WG3447123-13 LCS								
Total Kjeldahl Nitrogen			86.3		%		75-125	18-NOV-20
WG3447123-2 LCS								
Total Kjeldahl Nitrogen			90.0		%		75-125	18-NOV-20
WG3447123-6 LCS								
Total Kjeldahl Nitrogen			86.2		%		75-125	18-NOV-20
WG3447123-9 LCS								
Total Kjeldahl Nitrogen			88.0		%		75-125	18-NOV-20
WG3447123-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20



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Workorder: L2530427

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5293198							
WG3449171-4	LCS							
Total Suspended Solids			94.3		%		85-115	20-NOV-20
WG3449171-3	MB							
Total Suspended Solids			<1.0		mg/L		1	20-NOV-20
TURBIDITY-CL	Water							
Batch	R5287116							
WG3446572-8	LCS							
Turbidity			96.4		%		85-115	17-NOV-20
WG3446572-7	MB							
Turbidity			<0.10		NTU		0.1	17-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	16-NOV-20 13:25	17-NOV-20 17:00	0.25	28	hours	EHTR-FM
	2	16-NOV-20 12:32	17-NOV-20 17:00	0.25	29	hours	EHTR-FM
pH	1	16-NOV-20 13:25	19-NOV-20 14:00	0.25	72	hours	EHTR-FM
	2	16-NOV-20 12:32	19-NOV-20 14:00	0.25	73	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2530427 were received on 17-NOV-20 08:50.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CO# ID:				TURNAROUND TIME:				RUSH:										
PROJECT/CLIENT INFO							LABORATORY				OTHER INFO							
Facility Name / Job#		Greenhills Operation				Lab Name		ALS Calgary		Report Format / Distribution			Excel	PDF	EDD			
Project Manager		Leigh Stickney				Lab Contact		Justine Buma-a		Email 1:		Leigh.Stickney@teck.com	X	X	X			
Email		leigh.stickney@teck.com				Email		Justine.Bumaa@ALSGlobal.com		Email 2:		Jeremy.Enns@teck.com	X	X	X			
Address		P.O. BOX 5000				Address		2559 29 Street NE		Email 3:		teckcoal@equisonline.com			X			
City		Elkford		Province	BC		City		Calgary		Province	AB		Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code		VOB1H0		Country	Canada		Postal Code		T1Y 7B5		Country	Canada		Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number		250-865-3048				Phone Number		403 407 1794		PO number		684125						

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	BOD/Colour	EPH	PAH	TSS/TURB	SULFIDES
GH_MW-GHC-ID_WG_2020-10-05_NP	GH_MW-GHC-ID	WG		11/16/2020	13:25	G	6	1	1	1	1		1	1					
GH_MW-GHC-IS_WG_2020-10-05_NP	GH_MW-GHC-IS	WG		11/16/2020	12:32	G	6	1	1	1	1		1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME				ACCEPTED BY/AFFILIATION				DATE/TIME			
																17/11 8:50			
SERVICE REQUEST (rush - subject to availability)																			
Regular (default) X				Sampler's Name				JF/KM				Mobile #							
Priority (2-3 business days) - 50% surcharge				Sampler's Signature								Date/Time							
Emergency (1 Business Day) - 100% surcharge																			
For Emergency <1 Day, ASAP or Weekend - Contact ALS																			

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TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 21-NOV-20
Report Date: 01-DEC-20 14:45 (MT)
Version: FINAL

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2532145
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-11-20-WG
Legal Site Desc:

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-1 GH_GA-MW-3_WG_2020-10-05_NP							
Sampled By: BP on 20-NOV-20 @ 15:15							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Total Kjeldahl Nitrogen	0.69	DLM	0.25	mg/L		23-NOV-20	R5295816
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-NOV-20	30-NOV-20	R5299896
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-NOV-20	26-NOV-20	R5297859
Dissolved Mercury Filtration Location	FIELD					26-NOV-20	R5297834
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-NOV-20	30-NOV-20	R5299896
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Barium (Ba)-Dissolved	0.148		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Boron (B)-Dissolved	0.233		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-NOV-20	30-NOV-20	R5299896
Calcium (Ca)-Dissolved	96.6		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-NOV-20	30-NOV-20	R5299896
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Iron (Fe)-Dissolved	0.061		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Lithium (Li)-Dissolved	0.0998		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Magnesium (Mg)-Dissolved	53.2		0.10	mg/L	30-NOV-20	30-NOV-20	R5299896
Manganese (Mn)-Dissolved	0.0151		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Molybdenum (Mo)-Dissolved	0.000218		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Nickel (Ni)-Dissolved	0.00108		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Potassium (K)-Dissolved	2.61		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Selenium (Se)-Dissolved	39.1		0.050	ug/L	30-NOV-20	30-NOV-20	R5299896
Silicon (Si)-Dissolved	4.78		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Sodium (Na)-Dissolved	30.4		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Strontium (Sr)-Dissolved	3.02		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Uranium (U)-Dissolved	0.000487		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Hardness							
Hardness (as CaCO3)	461		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296881
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	251		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-1 GH_GA-MW-3_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 15:15 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Total (as CaCO3)	251		1.0	mg/L		24-NOV-20	R5296885
Ammonia, Total (as N)							
Ammonia as N	0.905	DLHC	0.050	mg/L		23-NOV-20	R5295836
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-NOV-20	R5295358
Chloride in Water by IC							
Chloride (Cl)	7.18	DLHC	0.50	mg/L		21-NOV-20	R5295358
Electrical Conductivity (EC)							
Conductivity (@ 25C)	889		2.0	uS/cm		24-NOV-20	R5296885
Fluoride in Water by IC							
Fluoride (F)	0.45	DLHC	0.10	mg/L		21-NOV-20	R5295358
Ion Balance Calculation							
Cation - Anion Balance	1.6			%		30-NOV-20	
Anion Sum	10.3			meq/L		30-NOV-20	
Cation Sum	10.7			meq/L		30-NOV-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.57	DLHC	0.025	mg/L		21-NOV-20	R5295358
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.514	DLHC	0.0050	mg/L		21-NOV-20	R5295358
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0057		0.0010	mg/L		22-NOV-20	R5293681
Oxidation redution potential by elect.							
ORP	323		-1000	mV		21-NOV-20	R5293516
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0094		0.0020	mg/L		23-NOV-20	R5295099
Sulfate in Water by IC							
Sulfate (SO4)	236	DLHC	1.5	mg/L		21-NOV-20	R5295358
Total Dissolved Solids							
Total Dissolved Solids	606	DLHC	20	mg/L		24-NOV-20	R5297512
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		24-NOV-20	R5297482
Turbidity							
Turbidity	69.6		0.10	NTU		21-NOV-20	R5293557
pH							
pH	8.09		0.10	pH		24-NOV-20	R5296885
L2532145-2 GH_GA-MW-2_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 16:15 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		23-NOV-20	R5295816
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-NOV-20	30-NOV-20	R5299896
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-2 GH_GA-MW-2_WG_2020-10-05_NP							
Sampled By: BP on 20-NOV-20 @ 16:15							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	26-NOV-20	R5297859
Dissolved Mercury Filtration Location	FIELD					26-NOV-20	R5297834
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-NOV-20	30-NOV-20	R5299896
Antimony (Sb)-Dissolved	0.00182		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Barium (Ba)-Dissolved	0.0349		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Boron (B)-Dissolved	0.026		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cadmium (Cd)-Dissolved	0.0599		0.0050	ug/L	30-NOV-20	30-NOV-20	R5299896
Calcium (Ca)-Dissolved	215		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cobalt (Co)-Dissolved	0.43		0.10	ug/L	30-NOV-20	30-NOV-20	R5299896
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Lithium (Li)-Dissolved	0.0226		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Magnesium (Mg)-Dissolved	53.1		0.10	mg/L	30-NOV-20	30-NOV-20	R5299896
Manganese (Mn)-Dissolved	0.0774		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Molybdenum (Mo)-Dissolved	0.0296		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Nickel (Ni)-Dissolved	0.00673		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Potassium (K)-Dissolved	1.41		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Selenium (Se)-Dissolved	34.6		0.050	ug/L	30-NOV-20	30-NOV-20	R5299896
Silicon (Si)-Dissolved	3.56		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Sodium (Na)-Dissolved	10.2		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Strontium (Sr)-Dissolved	0.705		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Uranium (U)-Dissolved	0.00943		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Zinc (Zn)-Dissolved	0.0097		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Hardness							
Hardness (as CaCO3)	755		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.3		1.0	mg/L		24-NOV-20	R5296881
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Total (as CaCO3)	175		1.0	mg/L		24-NOV-20	R5296885
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		23-NOV-20	R5295836
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-NOV-20	R5295358
Chloride in Water by IC							
Chloride (Cl)	6.16	DLHC	0.50	mg/L		21-NOV-20	R5295358
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1180		2.0	uS/cm		24-NOV-20	R5296885

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-2 GH_GA-MW-2_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 16:15 Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		21-NOV-20	R5295358
Ion Balance Calculation							
Ion Balance	105		-100	%		30-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	2.4			%		30-NOV-20	
Anion Sum	14.8			meq/L		30-NOV-20	
Cation Sum	15.6			meq/L		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	12.5	DLHC	0.025	mg/L		21-NOV-20	R5295358
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.361	DLHC	0.0050	mg/L		21-NOV-20	R5295358
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0026		0.0010	mg/L		22-NOV-20	R5293681
Oxidation redution potential by elect.							
ORP	379		-1000	mV		21-NOV-20	R5293516
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0027		0.0020	mg/L		23-NOV-20	R5295099
Sulfate in Water by IC							
Sulfate (SO4)	492	DLHC	1.5	mg/L		21-NOV-20	R5295358
Total Dissolved Solids							
Total Dissolved Solids	967	DLHC	20	mg/L		24-NOV-20	R5297512
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		24-NOV-20	R5297482
Turbidity							
Turbidity	0.36		0.10	NTU		21-NOV-20	R5293557
pH							
pH	7.92		0.10	pH		24-NOV-20	R5296885
L2532145-3 GH_JDW1_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 15:20 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-NOV-20	R5295816
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-NOV-20	30-NOV-20	R5299896
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-NOV-20	26-NOV-20	R5297859
Dissolved Mercury Filtration Location	FIELD					26-NOV-20	R5297834
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5300070
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-NOV-20	30-NOV-20	R5299896
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Boron (B)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-NOV-20	30-NOV-20	R5299896

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-3 GH_JDW1_WG_2020-10-05_NP							
Sampled By: BP on 20-NOV-20 @ 15:20							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-NOV-20	30-NOV-20	R5299896
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	30-NOV-20	30-NOV-20	R5299896
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5300088
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Potassium (K)-Dissolved	<0.050		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	30-NOV-20	30-NOV-20	R5299896
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		24-NOV-20	R5296881
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		23-NOV-20	R5295836
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-NOV-20	R5295358
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		21-NOV-20	R5295358
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		24-NOV-20	R5296885
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-20	R5295358
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		30-NOV-20	
Anion Sum	<0.10			meq/L		30-NOV-20	
Cation Sum	<0.10			meq/L		30-NOV-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		21-NOV-20	R5295358
Nitrite in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-3 GH_JDW1_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 15:20 Matrix: WG							
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-20	R5295358
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-NOV-20	R5293681
Oxidation redution potential by elect. ORP	455		-1000	mV		21-NOV-20	R5293516
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		23-NOV-20	R5295099
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		21-NOV-20	R5295358
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		24-NOV-20	R5297512
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		24-NOV-20	R5297482
Turbidity Turbidity	<0.10		0.10	NTU		21-NOV-20	R5293557
pH pH	5.58		0.10	pH		24-NOV-20	R5296885
L2532145-4 GH_FOX1_WG_2020-10-05_NP Sampled By: BP on 20-NOV-20 @ 15:25 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Total Kjeldahl Nitrogen	0.77	DLM	0.25	mg/L		23-NOV-20	R5295816
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-20	R5294356
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-NOV-20	30-NOV-20	R5299896
Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	26-NOV-20	R5297859
Dissolved Mercury Filtration Location	FIELD					26-NOV-20	R5297834
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					30-NOV-20	R5299809
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-NOV-20	30-NOV-20	R5299896
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Barium (Ba)-Dissolved	0.148		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Boron (B)-Dissolved	0.237		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-NOV-20	30-NOV-20	R5299896
Calcium (Ca)-Dissolved	95.5		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-NOV-20	30-NOV-20	R5299896
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Iron (Fe)-Dissolved	0.101		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896
Lithium (Li)-Dissolved	0.0948		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Magnesium (Mg)-Dissolved	52.3		0.10	mg/L	30-NOV-20	30-NOV-20	R5299896
Manganese (Mn)-Dissolved	0.0150		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Molybdenum (Mo)-Dissolved	0.000230		0.000050	mg/L	30-NOV-20	30-NOV-20	R5299896

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2532145-4 GH_FOX1_WG_2020-10-05_NP							
Sampled By: BP on 20-NOV-20 @ 15:25							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Nickel (Ni)-Dissolved	0.00114		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Potassium (K)-Dissolved	2.57		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Selenium (Se)-Dissolved	32.7		0.050	ug/L	30-NOV-20	30-NOV-20	R5299896
Silicon (Si)-Dissolved	4.79		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Sodium (Na)-Dissolved	30.0		0.050	mg/L	30-NOV-20	30-NOV-20	R5299896
Strontium (Sr)-Dissolved	2.93		0.00020	mg/L	30-NOV-20	30-NOV-20	R5299896
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-NOV-20	30-NOV-20	R5299896
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-NOV-20	30-NOV-20	R5299896
Uranium (U)-Dissolved	0.000477		0.000010	mg/L	30-NOV-20	30-NOV-20	R5299896
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-NOV-20	30-NOV-20	R5299896
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-NOV-20	30-NOV-20	R5299896
Hardness							
Hardness (as CaCO3)	454		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296881
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	240		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-NOV-20	R5296885
Alkalinity, Total (as CaCO3)	240		1.0	mg/L		24-NOV-20	R5296885
Ammonia, Total (as N)							
Ammonia as N	0.895	DLHC	0.050	mg/L		23-NOV-20	R5295836
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-NOV-20	R5295358
Chloride in Water by IC							
Chloride (Cl)	7.62		0.10	mg/L		21-NOV-20	R5295358
Electrical Conductivity (EC)							
Conductivity (@ 25C)	861		2.0	uS/cm		24-NOV-20	R5296885
Fluoride in Water by IC							
Fluoride (F)	0.522		0.020	mg/L		21-NOV-20	R5295358
Ion Balance Calculation							
Cation - Anion Balance	2.4			%		30-NOV-20	
Anion Sum	10.0			meq/L		30-NOV-20	
Cation Sum	10.5			meq/L		30-NOV-20	
Ion Balance Calculation							
Ion Balance	105		-100	%		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.54		0.0050	mg/L		21-NOV-20	R5295358
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.487		0.0010	mg/L		21-NOV-20	R5295358
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0062		0.0010	mg/L		22-NOV-20	R5293681
Oxidation redution potential by elect.							
ORP	338		-1000	mV		21-NOV-20	R5293516
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0090		0.0020	mg/L		23-NOV-20	R5295099
Sulfate in Water by IC							
Sulfate (SO4)	232		0.30	mg/L		21-NOV-20	R5295358
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-11-20-WG

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)

BOX 5000
Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5296881							
WG3450904-5	LCS							
Acidity (as CaCO3)			105.4		%		85-115	24-NOV-20
WG3450904-4	MB							
Acidity (as CaCO3)			1.4		mg/L		2	24-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5296885							
WG3450915-2	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	24-NOV-20
WG3450915-5	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	24-NOV-20
WG3450915-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-NOV-20
WG3450915-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299896							
WG3454093-3	DUP	L2532145-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-NOV-20
WG3454093-2	LCS							
Beryllium (Be)-Dissolved			103.5		%		80-120	30-NOV-20
WG3454093-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-NOV-20
WG3454093-4	MS	L2532145-2						
Beryllium (Be)-Dissolved			98.5		%		70-130	30-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5295358							
WG3450036-7	DUP	L2532145-3						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6	LCS							
Bromide (Br)			107.0		%		85-115	21-NOV-20
WG3450036-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-NOV-20
WG3450036-8	MS	L2532145-3						
Bromide (Br)			112.3		%		75-125	21-NOV-20
C-DIS-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5294356							
WG3449808-7	DUP	L2532145-2						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-NOV-20
WG3449808-2	LCS							
Dissolved Organic Carbon			101.6		%		80-120	22-NOV-20
WG3449808-6	LCS							
Dissolved Organic Carbon			119.9		%		80-120	22-NOV-20
WG3449808-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449808-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449808-8	MS	L2532145-2						
Dissolved Organic Carbon			123.3		%		70-130	22-NOV-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5294356							
WG3449808-7	DUP	L2532145-2						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-NOV-20
WG3449808-2	LCS							
Total Organic Carbon			104.8		%		80-120	22-NOV-20
WG3449808-6	LCS							
Total Organic Carbon			113.1		%		80-120	22-NOV-20
WG3449808-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449808-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
WG3449808-8	MS	L2532145-2						
Total Organic Carbon			118.8		%		70-130	22-NOV-20
CL-L-IC-N-CL								
	Water							
Batch	R5295358							
WG3450036-7	DUP	L2532145-3						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6	LCS							
Chloride (Cl)			104.6		%		85-115	21-NOV-20
WG3450036-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	21-NOV-20
WG3450036-8	MS	L2532145-3						
Chloride (Cl)			113.9		%		75-125	21-NOV-20
EC-L-PCT-CL								
	Water							

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R5296885							
WG3450915-2	LCS							
Conductivity (@ 25C)			98.2		%		90-110	24-NOV-20
WG3450915-5	LCS							
Conductivity (@ 25C)			91.7		%		90-110	24-NOV-20
WG3450915-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-NOV-20
WG3450915-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-NOV-20
F-IC-N-CL								
Water								
Batch	R5295358							
WG3450036-7	DUP	L2532145-3						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6	LCS							
Fluoride (F)			95.2		%		90-110	21-NOV-20
WG3450036-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-NOV-20
WG3450036-8	MS	L2532145-3						
Fluoride (F)			108.9		%		75-125	21-NOV-20
HG-D-CVAA-VA								
Water								
Batch	R5297859							
WG3451985-2	LCS							
Mercury (Hg)-Dissolved			97.3		%		80-120	26-NOV-20
WG3451985-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-NOV-20
HG-T-U-CVAF-VA								
Water								
Batch	R5299395							
WG3453674-3	DUP	L2532145-4						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	28-NOV-20
WG3453674-2	LCS							
Mercury (Hg)-Total			88.2		%		80-120	28-NOV-20
WG3453674-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-NOV-20
MET-D-CCMS-VA								
Water								
Batch	R5299896							
WG3454093-3	DUP	L2532145-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	30-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299896							
WG3454093-3	DUP	L2532145-1						
Arsenic (As)-Dissolved		0.00014	0.00015		mg/L	5.8	20	30-NOV-20
Barium (Ba)-Dissolved		0.148	0.161		mg/L	8.7	20	30-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Boron (B)-Dissolved		0.233	0.229		mg/L	1.9	20	30-NOV-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Calcium (Ca)-Dissolved		96.6	92.3		mg/L	4.6	20	30-NOV-20
Chromium (Cr)-Dissolved		0.00012	0.00018	J	mg/L	0.00006	0.0002	30-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-NOV-20
Iron (Fe)-Dissolved		0.061	0.061		mg/L	0.4	20	30-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Lithium (Li)-Dissolved		0.0998	0.0920		mg/L	8.1	20	30-NOV-20
Magnesium (Mg)-Dissolved		53.2	53.5		mg/L	0.6	20	30-NOV-20
Manganese (Mn)-Dissolved		0.0151	0.0151		mg/L	0.0	20	30-NOV-20
Molybdenum (Mo)-Dissolved		0.000218	0.000205		mg/L	6.4	20	30-NOV-20
Nickel (Ni)-Dissolved		0.00108	0.00111		mg/L	2.8	20	30-NOV-20
Potassium (K)-Dissolved		2.61	2.59		mg/L	0.9	20	30-NOV-20
Selenium (Se)-Dissolved		0.0391	0.0373		mg/L	4.8	20	30-NOV-20
Silicon (Si)-Dissolved		4.78	4.74		mg/L	0.9	20	30-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Sodium (Na)-Dissolved		30.4	30.7		mg/L	0.9	20	30-NOV-20
Strontium (Sr)-Dissolved		3.02	2.92		mg/L	3.4	20	30-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-NOV-20
Uranium (U)-Dissolved		0.000487	0.000497		mg/L	2.0	20	30-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-NOV-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-NOV-20
WG3454093-2	LCS							
Aluminum (Al)-Dissolved			93.7		%		80-120	30-NOV-20
Antimony (Sb)-Dissolved			105.4		%		80-120	30-NOV-20
Arsenic (As)-Dissolved			94.8		%		80-120	30-NOV-20
Barium (Ba)-Dissolved			96.7		%		80-120	30-NOV-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299896							
WG3454093-2	LCS							
Boron (B)-Dissolved			105.4		%		80-120	30-NOV-20
Cadmium (Cd)-Dissolved			95.3		%		80-120	30-NOV-20
Calcium (Ca)-Dissolved			105.9		%		80-120	30-NOV-20
Chromium (Cr)-Dissolved			92.9		%		80-120	30-NOV-20
Cobalt (Co)-Dissolved			96.3		%		80-120	30-NOV-20
Copper (Cu)-Dissolved			95.4		%		80-120	30-NOV-20
Iron (Fe)-Dissolved			94.7		%		80-120	30-NOV-20
Lead (Pb)-Dissolved			100.3		%		80-120	30-NOV-20
Lithium (Li)-Dissolved			100.6		%		80-120	30-NOV-20
Magnesium (Mg)-Dissolved			94.0		%		80-120	30-NOV-20
Manganese (Mn)-Dissolved			95.7		%		80-120	30-NOV-20
Molybdenum (Mo)-Dissolved			104.5		%		80-120	30-NOV-20
Nickel (Ni)-Dissolved			93.3		%		80-120	30-NOV-20
Potassium (K)-Dissolved			98.0		%		80-120	30-NOV-20
Selenium (Se)-Dissolved			102.0		%		80-120	30-NOV-20
Silicon (Si)-Dissolved			98.1		%		60-140	30-NOV-20
Silver (Ag)-Dissolved			80.2		%		80-120	30-NOV-20
Sodium (Na)-Dissolved			97.6		%		80-120	30-NOV-20
Strontium (Sr)-Dissolved			101.0		%		80-120	30-NOV-20
Thallium (Tl)-Dissolved			102.7		%		80-120	30-NOV-20
Tin (Sn)-Dissolved			97.9		%		80-120	30-NOV-20
Titanium (Ti)-Dissolved			94.9		%		80-120	30-NOV-20
Uranium (U)-Dissolved			99.4		%		80-120	30-NOV-20
Vanadium (V)-Dissolved			96.1		%		80-120	30-NOV-20
Zinc (Zn)-Dissolved			98.5		%		80-120	30-NOV-20
WG3454093-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299896							
WG3454093-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
WG3454093-4	MS	L2532145-2						
Aluminum (Al)-Dissolved			91.1		%		70-130	30-NOV-20
Antimony (Sb)-Dissolved			106.6		%		70-130	30-NOV-20
Arsenic (As)-Dissolved			94.4		%		70-130	30-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Bismuth (Bi)-Dissolved			75.7		%		70-130	30-NOV-20
Boron (B)-Dissolved			101.6		%		70-130	30-NOV-20
Cadmium (Cd)-Dissolved			90.7		%		70-130	30-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Chromium (Cr)-Dissolved			89.3		%		70-130	30-NOV-20
Cobalt (Co)-Dissolved			87.4		%		70-130	30-NOV-20
Copper (Cu)-Dissolved			85.0		%		70-130	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299896							
WG3454093-4	MS	L2532145-2						
Iron (Fe)-Dissolved			92.8		%		70-130	30-NOV-20
Lead (Pb)-Dissolved			91.1		%		70-130	30-NOV-20
Lithium (Li)-Dissolved			98.0		%		70-130	30-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Nickel (Ni)-Dissolved			84.3		%		70-130	30-NOV-20
Potassium (K)-Dissolved			90.0		%		70-130	30-NOV-20
Selenium (Se)-Dissolved			100.1		%		70-130	30-NOV-20
Silicon (Si)-Dissolved			94.1		%		70-130	30-NOV-20
Silver (Ag)-Dissolved			89.6		%		70-130	30-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Thallium (Tl)-Dissolved			90.3		%		70-130	30-NOV-20
Tin (Sn)-Dissolved			100.0		%		70-130	30-NOV-20
Titanium (Ti)-Dissolved			97.8		%		70-130	30-NOV-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Vanadium (V)-Dissolved			94.1		%		70-130	30-NOV-20
Zinc (Zn)-Dissolved			89.6		%		70-130	30-NOV-20
Batch	R5300088							
WG3454420-3	DUP	L2532145-3						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	30-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-NOV-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-NOV-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5300088							
WG3454420-3	DUP	L2532145-3						
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-NOV-20
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	30-NOV-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-NOV-20
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-NOV-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-NOV-20
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-NOV-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-NOV-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-NOV-20
WG3454420-2	LCS							
Aluminum (Al)-Dissolved			100.4		%		80-120	30-NOV-20
Antimony (Sb)-Dissolved			105.6		%		80-120	30-NOV-20
Arsenic (As)-Dissolved			96.8		%		80-120	30-NOV-20
Barium (Ba)-Dissolved			102.0		%		80-120	30-NOV-20
Bismuth (Bi)-Dissolved			94.3		%		80-120	30-NOV-20
Boron (B)-Dissolved			95.7		%		80-120	30-NOV-20
Cadmium (Cd)-Dissolved			100.0		%		80-120	30-NOV-20
Calcium (Ca)-Dissolved			97.8		%		80-120	30-NOV-20
Chromium (Cr)-Dissolved			98.1		%		80-120	30-NOV-20
Cobalt (Co)-Dissolved			99.2		%		80-120	30-NOV-20
Copper (Cu)-Dissolved			96.8		%		80-120	30-NOV-20
Iron (Fe)-Dissolved			95.3		%		80-120	30-NOV-20
Lead (Pb)-Dissolved			96.4		%		80-120	30-NOV-20
Lithium (Li)-Dissolved			95.8		%		80-120	30-NOV-20
Magnesium (Mg)-Dissolved			101.0		%		80-120	30-NOV-20
Manganese (Mn)-Dissolved			97.7		%		80-120	30-NOV-20

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MET-D-CCMS-VA								
	Water							
Batch	R5300088							
WG3454420-2	LCS							
Molybdenum (Mo)-Dissolved			104.5		%		80-120	30-NOV-20
Nickel (Ni)-Dissolved			96.2		%		80-120	30-NOV-20
Potassium (K)-Dissolved			96.9		%		80-120	30-NOV-20
Selenium (Se)-Dissolved			95.5		%		80-120	30-NOV-20
Silicon (Si)-Dissolved			97.3		%		60-140	30-NOV-20
Silver (Ag)-Dissolved			96.4		%		80-120	30-NOV-20
Sodium (Na)-Dissolved			97.3		%		80-120	30-NOV-20
Strontium (Sr)-Dissolved			103.9		%		80-120	30-NOV-20
Thallium (Tl)-Dissolved			98.4		%		80-120	30-NOV-20
Tin (Sn)-Dissolved			93.2		%		80-120	30-NOV-20
Titanium (Ti)-Dissolved			97.8		%		80-120	30-NOV-20
Uranium (U)-Dissolved			88.5		%		80-120	30-NOV-20
Vanadium (V)-Dissolved			98.5		%		80-120	30-NOV-20
Zinc (Zn)-Dissolved			99.3		%		80-120	30-NOV-20
WG3454420-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-20



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MET-D-CCMS-VA								
	Water							
Batch	R5300088							
WG3454420-1	MB	NP						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5295836							
WG3449861-6	LCS							
Ammonia as N			103.3		%		85-115	23-NOV-20
WG3449861-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5295358							
WG3450036-7	DUP	L2532145-3						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6	LCS							
Nitrite (as N)			105.2		%		90-110	21-NOV-20
WG3450036-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-20
WG3450036-8	MS	L2532145-3						
Nitrite (as N)			113.6		%		75-125	21-NOV-20
NO3-L-IC-N-CL								
	Water							
Batch	R5295358							
WG3450036-7	DUP	L2532145-3						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6	LCS							
Nitrate (as N)			103.6		%		90-110	21-NOV-20
WG3450036-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-NOV-20
WG3450036-8	MS	L2532145-3						

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5295358							
WG3450036-8 MS		L2532145-3						
Nitrate (as N)			112.3		%		75-125	21-NOV-20
ORP-CL	Water							
Batch	R5293516							
WG3449498-1 CRM		CL-ORP						
ORP			220		mV		210-230	21-NOV-20
P-T-L-COL-CL	Water							
Batch	R5295099							
WG3449801-6 LCS								
Phosphorus (P)-Total			91.9		%		80-120	23-NOV-20
WG3449801-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-NOV-20
PH-CL	Water							
Batch	R5296885							
WG3450915-2 LCS								
pH			6.97		pH		6.9-7.1	24-NOV-20
WG3450915-5 LCS								
pH			6.99		pH		6.9-7.1	24-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5293681							
WG3449519-6 LCS								
Orthophosphate-Dissolved (as P)			100.4		%		80-120	22-NOV-20
WG3449519-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-NOV-20
SO4-IC-N-CL	Water							
Batch	R5295358							
WG3450036-7 DUP		L2532145-3						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3450036-6 LCS								
Sulfate (SO4)			102.6		%		90-110	21-NOV-20
WG3450036-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	21-NOV-20
WG3450036-8 MS		L2532145-3						
Sulfate (SO4)			112.0		%		75-125	21-NOV-20
SOLIDS-TDS-CL	Water							

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5297512							
WG3450511-5	LCS							
Total Dissolved Solids			101.8		%		85-115	24-NOV-20
WG3450511-4	MB							
Total Dissolved Solids			<10		mg/L		10	24-NOV-20
TKN-L-F-CL		Water						
Batch	R5295816							
WG3450112-10	LCS							
Total Kjeldahl Nitrogen			79.8		%		75-125	23-NOV-20
WG3450112-12	LCS							
Total Kjeldahl Nitrogen			79.6		%		75-125	23-NOV-20
WG3450112-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	23-NOV-20
WG3450112-6	LCS							
Total Kjeldahl Nitrogen			81.8		%		75-125	23-NOV-20
WG3450112-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-NOV-20
WG3450112-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-NOV-20
WG3450112-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-NOV-20
WG3450112-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-NOV-20
TSS-L-CL		Water						
Batch	R5297482							
WG3450509-4	LCS							
Total Suspended Solids			91.9		%		85-115	24-NOV-20
WG3450509-3	MB							
Total Suspended Solids			<1.0		mg/L		1	24-NOV-20
TURBIDITY-CL		Water						
Batch	R5293557							
WG3449487-2	LCS							
Turbidity			95.9		%		85-115	21-NOV-20
WG3449487-1	MB							
Turbidity			<0.10		NTU		0.1	21-NOV-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2532145

Report Date: 01-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	20-NOV-20 15:15	21-NOV-20 15:15	0.25	24	hours	EHTR-FM
	2	20-NOV-20 16:15	21-NOV-20 15:15	0.25	23	hours	EHTR-FM
	3	20-NOV-20 15:20	21-NOV-20 15:15	0.25	24	hours	EHTR-FM
	4	20-NOV-20 15:25	21-NOV-20 15:15	0.25	24	hours	EHTR-FM
pH							
	1	20-NOV-20 15:15	24-NOV-20 14:00	0.25	95	hours	EHTR-FM
	2	20-NOV-20 16:15	24-NOV-20 14:00	0.25	94	hours	EHTR-FM
	3	20-NOV-20 15:20	24-NOV-20 14:00	0.25	95	hours	EHTR-FM
	4	20-NOV-20 15:25	24-NOV-20 14:00	0.25	95	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2532145 were received on 21-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 2020-11-20-WG		TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job# Greenhills Operation		Lab Name ALS Calgary		Report Format / Distribution	
Project Manager Jeremy Enns		Lab Contact Justine Burmaa		Email 1: Leigh.Stickney@teck.com	Excel X PDF X EDD X
Email Jeremy.Enns@teck.com		Email Justine.burmaa@alsglobal.com		Email 2: Laura.Ferguson@teck.com	X X X
Address P.O. BOX 5000		Address 2559 29 Street NE		Email 3: teckcoal@equisonline.com	X
City Elkford Province BC		City Calgary Province AB		Email 4: leydon.francis@teck.com	X X X
Postal Code V0B1H0 Country Canada		Postal Code T1Y 7B5 Country Canada		Email 5: Brendan.Peachey@teck.com	X X X
Phone Number 250-865-3048		Phone Number 403 407 1794		Email 6: DL-Equis-GHO-Field@teck.co	X X X
				PO number 684125	



L2532145-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED																					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	TSS/TURB	Bacteriological	PAH	Y	Y	N	Y	N	N	N	N	N	N		
GH_GA-MW-3_WG_2020-10-05_NP	GH_GA-MW-3	WG		20-Nov	15:15	G	6	1	1	1	1		1	1															
GH_GA-MW-2_WG_2020-10-05_NP	GH_GA-MW-2	WG		20-Nov	16:15	G	6	1	1	1	1		1	1															
GH_JDW1_WG_2020-10-05_NP	GH_JDW1	WG		20-Nov	15:20	G	6	1	1	1	1		1	1															
GH_FOX1_WG_2020-10-05_NP	GH_FOX1	WG		20-Nov	15:25	G	6	1	1	1	1		1	1															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
						DK		11/21 0840	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		BP		Mobile #			
Regular (default) X		Sampler's Signature				Date/Time		November 20, 2020	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

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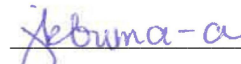
TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B 1H0

Date Received: 25-NOV-20
Report Date: 09-DEC-20 09:32 (MT)
Version: FINAL

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2533386
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:



Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-1 GH_GC1_WS_2020-11-02_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 09:25							
Matrix: WS							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.54		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	0.064		0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	0.55		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-NOV-20	27-NOV-20	R5298880
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	0.0708		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880
Calcium (Ca)-Dissolved	145		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	0.0238		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	99.4		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880
Manganese (Mn)-Dissolved	0.00046		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Molybdenum (Mo)-Dissolved	0.00118		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	0.00127		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	2.71		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	8.37		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	3.77		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	4.84		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	0.254		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	0.00292		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Hardness							
Hardness (as CaCO3)	772		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-NOV-20	R5298982
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-NOV-20	R5298982
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-NOV-20	R5298982

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-1 GH_GC1_WS_2020-11-02_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 09:25							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00019		0.00010	mg/L		27-NOV-20	R5298982
Barium (Ba)-Total	0.0741		0.00010	mg/L		27-NOV-20	R5298982
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-NOV-20	R5298982
Boron (B)-Total	0.011		0.010	mg/L		27-NOV-20	R5298982
Cadmium (Cd)-Total	0.0071		0.0050	ug/L		27-NOV-20	R5298982
Calcium (Ca)-Total	158		0.050	mg/L		27-NOV-20	R5298982
Chromium (Cr)-Total	0.00013		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-NOV-20	R5298982
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-NOV-20	R5298982
Iron (Fe)-Total	<0.010		0.010	mg/L		27-NOV-20	R5298982
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-NOV-20	R5298982
Lithium (Li)-Total	0.0243		0.0010	mg/L		27-NOV-20	R5298982
Magnesium (Mg)-Total	99.4		0.10	mg/L		27-NOV-20	R5298982
Manganese (Mn)-Total	0.00055		0.00010	mg/L		27-NOV-20	R5298982
Molybdenum (Mo)-Total	0.00116		0.000050	mg/L		27-NOV-20	R5298982
Nickel (Ni)-Total	0.00123		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	2.73		0.050	mg/L		27-NOV-20	R5298982
Selenium (Se)-Total	7.77		0.050	ug/L		27-NOV-20	R5298982
Silicon (Si)-Total	3.96		0.10	mg/L		27-NOV-20	R5298982
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-NOV-20	R5298982
Sodium (Na)-Total	4.95		0.050	mg/L		27-NOV-20	R5298982
Strontium (Sr)-Total	0.259		0.00020	mg/L		27-NOV-20	R5298982
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-NOV-20	R5298982
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-NOV-20	R5298982
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-NOV-20	R5298982
Uranium (U)-Total	0.00319		0.000010	mg/L		27-NOV-20	R5298982
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-NOV-20	R5298982
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-NOV-20	R5298982
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	292		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	2.4		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	294		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	0.0068		0.0050	mg/L		25-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	3.67	DLHC	0.50	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1140		2.0	uS/cm		26-NOV-20	R5298100
Fluoride in Water by IC							
Fluoride (F)	0.37	DLHC	0.10	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Ion Balance	93.9		-100	%		28-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.2			%		28-NOV-20	
Anion Sum	16.7			meq/L		28-NOV-20	
Cation Sum	15.7			meq/L		28-NOV-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-1 GH_GC1_WS_2020-11-02_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 09:25 Matrix: WS							
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.297	DLHC	0.025	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0056		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect. ORP	387		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total Phosphorus (P)-Total	0.0069		0.0020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC Sulfate (SO4)	514	DLHC	1.5	mg/L		25-NOV-20	R5298278
Total Dissolved Solids Total Dissolved Solids	1000	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity Turbidity	<0.10		0.10	NTU		25-NOV-20	R5297774
pH pH	8.28		0.10	pH		26-NOV-20	R5298100
L2533386-2 GH_JDW3_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-NOV-20	27-NOV-20	R5298880
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-2 GH_JDW3_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		27-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		25-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-NOV-20	R5298100
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Ion Balance	0.0		-100	%		09-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		09-DEC-20	
Anion Sum	<0.10			meq/L		09-DEC-20	
Cation Sum	<0.10			meq/L		09-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect.							
ORP	401		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-2 GH_JDW3_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20 Matrix: WG							
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		25-NOV-20	R5298278
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	<0.10		0.10	NTU		25-NOV-20	R5297774
pH							
pH	5.59		0.10	pH		26-NOV-20	R5298100
L2533386-3 GH_FOX3_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	0.235		0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-NOV-20	27-NOV-20	R5298880
Antimony (Sb)-Dissolved	0.00038		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	0.0888		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	0.015		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	0.0097		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880
Calcium (Ca)-Dissolved	66.0		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	0.0347		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	28.7		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Molybdenum (Mo)-Dissolved	0.00298		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	0.00199		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	1.53		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	7.97		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	2.49		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	6.81		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	0.218		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-3 GH_FOX3_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	0.00208		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Hardness							
Hardness (as CaCO3)	283		0.50	mg/L		27-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.3		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	193		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	193		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	0.0104		0.0050	mg/L		25-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	2.50		0.10	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	489		2.0	uS/cm		26-NOV-20	R5298100
Fluoride in Water by IC							
Fluoride (F)	0.157		0.020	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Cation - Anion Balance	-1.0			%		27-NOV-20	
Anion Sum	6.10			meq/L		27-NOV-20	
Cation Sum	5.99			meq/L		27-NOV-20	
Ion Balance Calculation							
Ion Balance	98.1		-100	%		27-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.32		0.0050	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect.							
ORP	449		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0024		0.0020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC							
Sulfate (SO4)	95.9		0.30	mg/L		25-NOV-20	R5298278
Total Dissolved Solids							
Total Dissolved Solids	317	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	<0.10		0.10	NTU		25-NOV-20	R5297774
pH							
pH	8.09		0.10	pH		26-NOV-20	R5298100

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-4 GH_GA-MW-1_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	6.55		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	0.723		0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	0.00061		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	6.76		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-NOV-20	27-NOV-20	R5298880
Antimony (Sb)-Dissolved	0.00068		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	0.00073		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	0.0457		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	0.821		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	0.0307		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880
Calcium (Ca)-Dissolved	69.2		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	1.54		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	0.0375		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	0.099		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	0.163		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	41.8		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880
Manganese (Mn)-Dissolved	0.735		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Molybdenum (Mo)-Dissolved	0.0126		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	0.00578		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	3.86		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	0.103		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	4.13		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	192		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	5.22		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Thallium (Tl)-Dissolved	0.000031		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	0.00206		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Hardness							
Hardness (as CaCO3)	345		0.50	mg/L		27-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.7		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	392		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-4 GH_GA-MW-1_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 13:20 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	392		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	0.939	DLHC	0.050	mg/L		26-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	22.0	DLHC	0.50	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1220		2.0	uS/cm		26-NOV-20	R5298100
Fluoride in Water by IC							
Fluoride (F)	0.48	DLHC	0.10	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Cation - Anion Balance	0.7			%		27-NOV-20	
Anion Sum	15.2			meq/L		27-NOV-20	
Cation Sum	15.4			meq/L		27-NOV-20	
Ion Balance Calculation							
Ion Balance	101		-100	%		27-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.062	DLHC	0.025	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0308		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect.							
ORP	275		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.053	DLM	0.020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC							
Sulfate (SO4)	323	DLHC	1.5	mg/L		25-NOV-20	R5298278
Total Dissolved Solids							
Total Dissolved Solids	819	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	1.83		0.10	NTU		25-NOV-20	R5297774
pH							
pH	8.10		0.10	pH		26-NOV-20	R5298100
L2533386-5 GH_GA-MW-4_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 11:05 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	0.130	TKNI	0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-5 GH_GA-MW-4_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 11:05							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-NOV-20	27-NOV-20	R5298880
Antimony (Sb)-Dissolved	0.00038		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	0.0911		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	0.023		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	0.0064		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880
Calcium (Ca)-Dissolved	65.8		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	0.00025		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	0.0364		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	28.6		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	01-DEC-20	R5300473
Molybdenum (Mo)-Dissolved	0.00318		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	0.00199		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	1.57		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	8.04		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	2.52		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	6.93		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	0.226		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	0.00218		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Hardness							
Hardness (as CaCO3)	282		0.50	mg/L		01-DEC-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	197		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	197		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	0.0100		0.0050	mg/L		25-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	2.44		0.10	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	526		2.0	uS/cm		26-NOV-20	R5298100

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-5 GH_GA-MW-4_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 11:05 Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	0.155		0.020	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Cation - Anion Balance	-1.5			%		01-DEC-20	
Anion Sum	6.17			meq/L		01-DEC-20	
Cation Sum	5.98			meq/L		01-DEC-20	
Ion Balance Calculation							
Ion Balance	97.0		-100	%		01-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.19		0.0050	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0022		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect.							
ORP	421		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0031		0.0020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC							
Sulfate (SO4)	95.7		0.30	mg/L		25-NOV-20	R5298278
Total Dissolved Solids							
Total Dissolved Solids	312	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	<0.10		0.10	NTU		25-NOV-20	R5297774
pH							
pH	8.10		0.10	pH		26-NOV-20	R5298100
L2533386-6 GH_RDI3_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 14:30 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		26-NOV-20	R5298084
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299476
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-NOV-20	27-NOV-20	R5298880
Dissolved Metals Filtration Location	FIELD					26-NOV-20	R5298448
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	0.0077	RRV	0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-NOV-20	27-NOV-20	R5298880

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-6 GH_RDI3_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 24-NOV-20 @ 14:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Calcium (Ca)-Dissolved	0.416	RRV	0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-NOV-20	27-NOV-20	R5298880
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-NOV-20	27-NOV-20	R5298880
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-NOV-20	27-NOV-20	R5298880
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	26-NOV-20	27-NOV-20	R5298880
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-NOV-20	27-NOV-20	R5298880
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-NOV-20	27-NOV-20	R5298880
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Potassium (K)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-NOV-20	27-NOV-20	R5298880
Silicon (Si)-Dissolved	0.062	RRV	0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	26-NOV-20	27-NOV-20	R5298880
Strontium (Sr)-Dissolved	0.00026	RRV	0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Tin (Sn)-Dissolved	0.00031	RRV	0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-NOV-20	27-NOV-20	R5298880
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-NOV-20	27-NOV-20	R5298880
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-NOV-20	27-NOV-20	R5298880
Zinc (Zn)-Dissolved	0.0015	RRV	0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	1.04		0.50	mg/L		28-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.0		1.0	mg/L		26-NOV-20	R5298091
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-NOV-20	R5298100
Ammonia, Total (as N)							
Ammonia as N	0.0069	RRV	0.0050	mg/L		25-NOV-20	R5298379
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-NOV-20	R5298278
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		25-NOV-20	R5298278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-NOV-20	R5298100
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		25-NOV-20	R5298278
Ion Balance Calculation							
Ion Balance	0.0		-100	%		09-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		09-DEC-20	
Anion Sum	<0.10			meq/L		09-DEC-20	
Cation Sum	<0.10			meq/L		09-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		25-NOV-20	R5298278
Nitrite in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533386-6 GH_RDI3_WG_2020-10-05_NP Sampled By: AF/JF/HS on 24-NOV-20 @ 14:30 Matrix: WG							
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		25-NOV-20	R5298278
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-NOV-20	R5297743
Oxidation redution potential by elect. ORP	364		-1000	mV		25-NOV-20	R5297769
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		26-NOV-20	R5297987
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		25-NOV-20	R5298278
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		30-NOV-20	R5300305
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity Turbidity	<0.10		0.10	NTU		25-NOV-20	R5297774
pH pH	5.43		0.10	pH		26-NOV-20	R5298100

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2533386

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Client: TECK COAL LIMITED (GREENHILLS)

BOX 5000
Elkford BC V0B 1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5298091							
WG3452278-5	LCS							
Acidity (as CaCO3)			112.8		%		85-115	26-NOV-20
WG3452278-4	MB							
Acidity (as CaCO3)			1.9		mg/L		2	26-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5298100							
WG3452287-8	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	26-NOV-20
WG3452287-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5298880							
WG3452583-3	DUP	L2533386-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3452583-2	LCS							
Beryllium (Be)-Dissolved			92.7		%		80-120	27-NOV-20
WG3452583-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-NOV-20
WG3452583-4	MS	L2533386-2						
Beryllium (Be)-Dissolved			98.4		%		70-130	27-NOV-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5298982							
WG3452574-2	LCS							
Beryllium (Be)-Total			92.8		%		80-120	27-NOV-20
WG3452574-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5298278							
WG3452430-3	DUP	L2533386-6						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2	LCS							
Bromide (Br)			102.9		%		85-115	25-NOV-20
WG3452430-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	25-NOV-20
WG3452430-4	MS	L2533386-6						
Bromide (Br)			104.8		%		75-125	25-NOV-20
C-DIS-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5299476							
WG3453575-11	DUP	L2533386-6						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-NOV-20
WG3453575-10	LCS							
Dissolved Organic Carbon			102.2		%		80-120	28-NOV-20
WG3453575-2	LCS							
Dissolved Organic Carbon			105.6		%		80-120	28-NOV-20
WG3453575-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-12	MS	L2533386-6						
Dissolved Organic Carbon			111.1		%		70-130	28-NOV-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5299476							
WG3453575-11	DUP	L2533386-6						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-NOV-20
WG3453575-10	LCS							
Total Organic Carbon			109.7		%		80-120	28-NOV-20
WG3453575-2	LCS							
Total Organic Carbon			115.7		%		80-120	28-NOV-20
WG3453575-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-12	MS	L2533386-6						
Total Organic Carbon			118.4		%		70-130	28-NOV-20
CL-L-IC-N-CL								
	Water							
Batch	R5298278							
WG3452430-3	DUP	L2533386-6						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2	LCS							
Chloride (Cl)			101.4		%		85-115	25-NOV-20
WG3452430-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	25-NOV-20
WG3452430-4	MS	L2533386-6						
Chloride (Cl)			113.9		%		75-125	25-NOV-20
EC-L-PCT-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5298100								
WG3452287-8 LCS								
Conductivity (@ 25C)			93.9		%		90-110	26-NOV-20
WG3452287-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	26-NOV-20
F-IC-N-CL								
Water								
Batch R5298278								
WG3452430-3 DUP								
Fluoride (F)		L2533386-6	<0.020	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2 LCS								
Fluoride (F)			100.5		%		90-110	25-NOV-20
WG3452430-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-NOV-20
WG3452430-4 MS								
Fluoride (F)		L2533386-6	116.5		%		75-125	25-NOV-20
HG-D-CVAA-VA								
Water								
Batch R5299206								
WG3453482-2 LCS								
Mercury (Hg)-Dissolved			97.7		%		80-120	28-NOV-20
WG3453482-1 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	28-NOV-20
HG-T-U-CVAF-VA								
Water								
Batch R5299395								
WG3453674-2 LCS								
Mercury (Hg)-Total			88.2		%		80-120	28-NOV-20
WG3453674-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-NOV-20
WG3453674-4 MS								
Mercury (Hg)-Total			74.8		%		70-130	28-NOV-20
MET-D-CCMS-VA								
Water								
Batch R5298880								
WG3452583-3 DUP								
Aluminum (Al)-Dissolved		L2533386-1	<0.0030	RPD-NA	mg/L	N/A	20	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Arsenic (As)-Dissolved			0.00017		mg/L	2.3	20	27-NOV-20
Barium (Ba)-Dissolved			0.0708		mg/L	1.9	20	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Boron (B)-Dissolved			<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298880							
WG3452583-3	DUP	L2533386-1						
Cadmium (Cd)-Dissolved		<0.0000050	0.0000073	RPD-NA	mg/L	N/A	20	27-NOV-20
Calcium (Ca)-Dissolved		145	146		mg/L	0.5	20	27-NOV-20
Chromium (Cr)-Dissolved		0.00012	0.00012		mg/L	2.0	20	27-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Lithium (Li)-Dissolved		0.0238	0.0236		mg/L	0.8	20	27-NOV-20
Magnesium (Mg)-Dissolved		99.4	99.4		mg/L	0.0	20	27-NOV-20
Manganese (Mn)-Dissolved		0.00046	0.00048		mg/L	3.1	20	27-NOV-20
Molybdenum (Mo)-Dissolved		0.00118	0.00119		mg/L	1.0	20	27-NOV-20
Nickel (Ni)-Dissolved		0.00127	0.00126		mg/L	0.8	20	27-NOV-20
Potassium (K)-Dissolved		2.71	2.75		mg/L	1.5	20	27-NOV-20
Selenium (Se)-Dissolved		0.00837	0.00854		mg/L	2.0	20	27-NOV-20
Silicon (Si)-Dissolved		3.77	3.76		mg/L	0.3	20	27-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Sodium (Na)-Dissolved		4.84	4.77		mg/L	1.5	20	27-NOV-20
Strontium (Sr)-Dissolved		0.254	0.250		mg/L	1.6	20	27-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Uranium (U)-Dissolved		0.00292	0.00310		mg/L	5.9	20	27-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Zinc (Zn)-Dissolved		<0.0010	0.0011	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3452583-2	LCS							
Aluminum (Al)-Dissolved			99.1		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			102.2		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			100.1		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			103.9		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			107.7		%		80-120	27-NOV-20
Boron (B)-Dissolved			87.4		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			95.5		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			105.2		%		80-120	27-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298880							
WG3452583-2	LCS							
Cobalt (Co)-Dissolved			98.1		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			99.4		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			96.3		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			102.6		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			95.0		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			99.98		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			101.6		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			96.5		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			99.6		%		80-120	27-NOV-20
Potassium (K)-Dissolved			104.2		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			105.2		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			103.4		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			94.0		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			102.1		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			95.6		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			102.7		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			95.2		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			99.4		%		80-120	27-NOV-20
Uranium (U)-Dissolved			97.8		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			99.6		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			97.9		%		80-120	27-NOV-20
WG3452583-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298880							
WG3452583-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
WG3452583-4	MS	L2533386-2						
Aluminum (Al)-Dissolved			93.7		%		70-130	27-NOV-20
Antimony (Sb)-Dissolved			96.5		%		70-130	27-NOV-20
Arsenic (As)-Dissolved			94.8		%		70-130	27-NOV-20
Barium (Ba)-Dissolved			98.6		%		70-130	27-NOV-20
Bismuth (Bi)-Dissolved			91.3		%		70-130	27-NOV-20
Boron (B)-Dissolved			90.2		%		70-130	27-NOV-20
Cadmium (Cd)-Dissolved			97.0		%		70-130	27-NOV-20
Calcium (Ca)-Dissolved			97.5		%		70-130	27-NOV-20
Chromium (Cr)-Dissolved			98.2		%		70-130	27-NOV-20
Cobalt (Co)-Dissolved			94.6		%		70-130	27-NOV-20
Copper (Cu)-Dissolved			96.7		%		70-130	27-NOV-20
Iron (Fe)-Dissolved			95.6		%		70-130	27-NOV-20
Lead (Pb)-Dissolved			97.1		%		70-130	27-NOV-20
Lithium (Li)-Dissolved			96.7		%		70-130	27-NOV-20
Magnesium (Mg)-Dissolved			94.6		%		70-130	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298880							
WG3452583-4	MS	L2533386-2						
Manganese (Mn)-Dissolved			99.96		%		70-130	27-NOV-20
Molybdenum (Mo)-Dissolved			94.5		%		70-130	27-NOV-20
Nickel (Ni)-Dissolved			95.8		%		70-130	27-NOV-20
Potassium (K)-Dissolved			100.1		%		70-130	27-NOV-20
Selenium (Se)-Dissolved			100.8		%		70-130	27-NOV-20
Silicon (Si)-Dissolved			90.5		%		70-130	27-NOV-20
Silver (Ag)-Dissolved			92.9		%		70-130	27-NOV-20
Sodium (Na)-Dissolved			95.0		%		70-130	27-NOV-20
Strontium (Sr)-Dissolved			97.1		%		70-130	27-NOV-20
Thallium (Tl)-Dissolved			93.1		%		70-130	27-NOV-20
Tin (Sn)-Dissolved			95.0		%		70-130	27-NOV-20
Titanium (Ti)-Dissolved			97.6		%		70-130	27-NOV-20
Uranium (U)-Dissolved			96.5		%		70-130	27-NOV-20
Vanadium (V)-Dissolved			94.3		%		70-130	27-NOV-20
Zinc (Zn)-Dissolved			100.9		%		70-130	27-NOV-20
Batch	R5299174							
WG3453349-2	LCS							
Aluminum (Al)-Dissolved			103.9		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			107.4		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			101.7		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			105.0		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	27-NOV-20
Boron (B)-Dissolved			104.8		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			103.7		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			101.0		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			101.1		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			98.4		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			95.7		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			97.3		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			110.8		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			105.8		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			109.3		%		80-120	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-2	LCS							
Nickel (Ni)-Dissolved			101.0		%		80-120	27-NOV-20
Potassium (K)-Dissolved			104.9		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			97.7		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			92.7		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			106.8		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			106.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			103.5		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			99.1		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			102.6		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			102.5		%		80-120	27-NOV-20
Uranium (U)-Dissolved			92.9		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			103.0		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			107.8		%		80-120	27-NOV-20
WG3453349-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
MET-T-CCMS-VA								
	Water							
Batch	R5298982							
WG3452574-2	LCS							
Aluminum (Al)-Total			99.98		%		80-120	27-NOV-20
Antimony (Sb)-Total			106.9		%		80-120	27-NOV-20
Arsenic (As)-Total			107.7		%		80-120	27-NOV-20
Barium (Ba)-Total			108.7		%		80-120	27-NOV-20
Bismuth (Bi)-Total			91.5		%		80-120	27-NOV-20
Boron (B)-Total			93.0		%		80-120	27-NOV-20
Cadmium (Cd)-Total			106.1		%		80-120	27-NOV-20
Calcium (Ca)-Total			101.0		%		80-120	27-NOV-20
Cobalt (Co)-Total			106.7		%		80-120	27-NOV-20
Copper (Cu)-Total			106.1		%		80-120	27-NOV-20
Iron (Fe)-Total			100.4		%		80-120	27-NOV-20
Lead (Pb)-Total			101.1		%		80-120	27-NOV-20
Lithium (Li)-Total			89.2		%		80-120	27-NOV-20
Magnesium (Mg)-Total			99.6		%		80-120	27-NOV-20
Manganese (Mn)-Total			107.9		%		80-120	27-NOV-20
Molybdenum (Mo)-Total			102.1		%		80-120	27-NOV-20
Potassium (K)-Total			105.7		%		80-120	27-NOV-20
Selenium (Se)-Total			116.6		%		80-120	27-NOV-20
Silicon (Si)-Total			96.8		%		80-120	27-NOV-20
Silver (Ag)-Total			104.4		%		80-120	27-NOV-20
Sodium (Na)-Total			101.5		%		80-120	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5298982							
WG3452574-2 LCS								
Strontium (Sr)-Total			103.1		%		80-120	27-NOV-20
Thallium (Tl)-Total			102.2		%		80-120	27-NOV-20
Tin (Sn)-Total			100.6		%		80-120	27-NOV-20
Titanium (Ti)-Total			105.2		%		80-120	27-NOV-20
Uranium (U)-Total			95.8		%		80-120	27-NOV-20
Vanadium (V)-Total			108.3		%		80-120	27-NOV-20
Zinc (Zn)-Total			115.2		%		80-120	27-NOV-20
WG3452574-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5298982							
WG3452574-1	MB							
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-NOV-20
Batch	R5299179							
WG3453481-2	LCS							
Aluminum (Al)-Total			97.8		%		80-120	28-NOV-20
Antimony (Sb)-Total			101.3		%		80-120	28-NOV-20
Arsenic (As)-Total			99.1		%		80-120	28-NOV-20
Barium (Ba)-Total			98.8		%		80-120	28-NOV-20
Bismuth (Bi)-Total			100.2		%		80-120	28-NOV-20
Boron (B)-Total			98.1		%		80-120	28-NOV-20
Cadmium (Cd)-Total			91.1		%		80-120	28-NOV-20
Calcium (Ca)-Total			97.3		%		80-120	28-NOV-20
Chromium (Cr)-Total			99.4		%		80-120	28-NOV-20
Cobalt (Co)-Total			102.9		%		80-120	28-NOV-20
Copper (Cu)-Total			98.9		%		80-120	28-NOV-20
Iron (Fe)-Total			97.6		%		80-120	28-NOV-20
Lead (Pb)-Total			93.0		%		80-120	28-NOV-20
Lithium (Li)-Total			96.2		%		80-120	28-NOV-20
Magnesium (Mg)-Total			101.8		%		80-120	28-NOV-20
Manganese (Mn)-Total			101.1		%		80-120	28-NOV-20
Molybdenum (Mo)-Total			99.4		%		80-120	28-NOV-20
Nickel (Ni)-Total			99.9		%		80-120	28-NOV-20
Potassium (K)-Total			100.9		%		80-120	28-NOV-20
Selenium (Se)-Total			93.6		%		80-120	28-NOV-20
Silicon (Si)-Total			99.9		%		80-120	28-NOV-20
Silver (Ag)-Total			91.9		%		80-120	28-NOV-20
Sodium (Na)-Total			105.8		%		80-120	28-NOV-20
Strontium (Sr)-Total			93.8		%		80-120	28-NOV-20
Thallium (Tl)-Total			93.5		%		80-120	28-NOV-20
Tin (Sn)-Total			93.7		%		80-120	28-NOV-20
Titanium (Ti)-Total			100.0		%		80-120	28-NOV-20
Uranium (U)-Total			93.1		%		80-120	28-NOV-20
Vanadium (V)-Total			102.3		%		80-120	28-NOV-20
Zinc (Zn)-Total			100.8		%		80-120	28-NOV-20
WG3453481-1								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5299179							
WG3453481-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	28-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	28-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	28-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	28-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	28-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-NOV-20

NH3-L-F-CL

Water

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5298379								
WG3451919-6	LCS							
Ammonia as N			106.2		%		85-115	25-NOV-20
WG3451919-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5298278								
WG3452430-3	DUP	L2533386-6						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2	LCS							
Nitrite (as N)			99.9		%		90-110	25-NOV-20
WG3452430-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	25-NOV-20
WG3452430-4	MS	L2533386-6						
Nitrite (as N)			110.2		%		75-125	25-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5298278								
WG3452430-3	DUP	L2533386-6						
Nitrate (as N)		<0.0050	0.0053	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2	LCS							
Nitrate (as N)			101.6		%		90-110	25-NOV-20
WG3452430-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	25-NOV-20
WG3452430-4	MS	L2533386-6						
Nitrate (as N)			114.2		%		75-125	25-NOV-20
ORP-CL								
Water								
Batch R5297769								
WG3451621-3	CRM	CL-ORP						
ORP			226		mV		210-230	25-NOV-20
P-T-L-COL-CL								
Water								
Batch R5297987								
WG3452173-10	LCS							
Phosphorus (P)-Total			95.2		%		80-120	26-NOV-20
WG3452173-6	LCS							
Phosphorus (P)-Total			96.3		%		80-120	26-NOV-20
WG3452173-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-NOV-20
WG3452173-9	MB							

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P-T-L-COL-CL Water								
Batch	R5297987							
WG3452173-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-NOV-20
PH-CL Water								
Batch	R5298100							
WG3452287-8	LCS							
pH			7.02		pH		6.9-7.1	26-NOV-20
PO4-DO-L-COL-CL Water								
Batch	R5297743							
WG3451750-7	DUP	L2533386-4						
Orthophosphate-Dissolved (as P)		0.0308	0.0309		mg/L	0.5	20	25-NOV-20
WG3451750-6	LCS							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	25-NOV-20
WG3451750-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-NOV-20
SO4-IC-N-CL Water								
Batch	R5298278							
WG3452430-3	DUP	L2533386-6						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	25-NOV-20
WG3452430-2	LCS							
Sulfate (SO4)			104.5		%		90-110	25-NOV-20
WG3452430-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-NOV-20
WG3452430-4	MS	L2533386-6						
Sulfate (SO4)			116.9		%		75-125	25-NOV-20
SOLIDS-TDS-CL Water								
Batch	R5300305							
WG3453851-2	LCS							
Total Dissolved Solids			97.1		%		85-115	30-NOV-20
WG3453851-1	MB							
Total Dissolved Solids			<10		mg/L		10	30-NOV-20
TKN-L-F-CL Water								
Batch	R5298084							
WG3452092-12	LCS							
Total Kjeldahl Nitrogen			85.1		%		75-125	26-NOV-20
WG3452092-18	LCS							

Quality Control Report

Workorder: L2533386

Report Date: 09-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5298084							
WG3452092-18	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	26-NOV-20
WG3452092-2	LCS							
Total Kjeldahl Nitrogen			86.4		%		75-125	26-NOV-20
WG3452092-20	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	26-NOV-20
WG3452092-22	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	26-NOV-20
WG3452092-8	LCS							
Total Kjeldahl Nitrogen			84.1		%		75-125	26-NOV-20
WG3452092-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
TSS-L-CL		Water						
Batch	R5300239							
WG3453850-2	LCS							
Total Suspended Solids			93.5		%		85-115	30-NOV-20
WG3453850-1	MB							
Total Suspended Solids			<1.0		mg/L		1	30-NOV-20
TURBIDITY-CL		Water						
Batch	R5297774							
WG3451619-5	LCS							
Turbidity			95.9		%		85-115	25-NOV-20
WG3451619-4	MB							
Turbidity			<0.10		NTU		0.1	25-NOV-20

Quality Control Report

Workorder: L2533386

Report Date: 09-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2533386

Report Date: 09-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	24-NOV-20 09:25	25-NOV-20 14:30	0.25	29	hours	EHTR-FM
	2	24-NOV-20 13:20	25-NOV-20 14:30	0.25	25	hours	EHTR-FM
	3	24-NOV-20 13:20	25-NOV-20 14:30	0.25	25	hours	EHTR-FM
	4	24-NOV-20 13:20	25-NOV-20 14:30	0.25	25	hours	EHTR-FM
	5	24-NOV-20 11:05	25-NOV-20 14:30	0.25	27	hours	EHTR-FM
	6	24-NOV-20 14:30	25-NOV-20 14:30	0.25	24	hours	EHTR-FM
pH							
	1	24-NOV-20 09:25	26-NOV-20 14:00	0.25	53	hours	EHTR-FM
	2	24-NOV-20 13:20	26-NOV-20 14:00	0.25	49	hours	EHTR-FM
	3	24-NOV-20 13:20	26-NOV-20 14:00	0.25	49	hours	EHTR-FM
	4	24-NOV-20 13:20	26-NOV-20 14:00	0.25	49	hours	EHTR-FM
	5	24-NOV-20 11:05	26-NOV-20 14:00	0.25	51	hours	EHTR-FM
	6	24-NOV-20 14:30	26-NOV-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2533386 were received on 25-NOV-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-11-24-WS

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
				Email 4:	jaydon.francis@teck.com			X	X	X		
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	Brendan.Peachey@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, H: Field & Lab, N: None



L2533386-COFC

Sample ID	Sys Loc Code	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL.	Preserv.	ANALYSIS	Y	Y	N	Y	N	N	N
											ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC
GH_GC1_WS_2020-11-02_NP	GH_GC1	WS		11/24/2020	9:25	G	7		H2SO4		1	1	1	1	1	1	1
GH_JDW3_WG_2020-10-05_NP	GH_GA-MW-1	WG		11/24/2020	13:20	G	6		HCL		1	1	1	1	1	1	1
GH_FOX3_WG_2020-10-05_NP	GH_GA-MW-1	WG		11/24/2020	13:20	G	6		NONE		1	1	1	1	1	1	1
GH_GA-MW-1_WG_2020-10-05_NP	GH_GA-MW-1	WG		11/24/2020	13:20	G	6		HNO3		1	1	1	1	1	1	1
GH_GA-MW-4_WG_2020-10-05_NP	GH_GA-MW-4	WG		11/24/2020	11:05	G	6		HNO3		1	1	1	1	1	1	1
GH_RD13_WG_2020-10-05_NP	GH_RD13	WG		11/24/2020	14:30	G	6		NONE		1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

M *H/S* *830*

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Sampler's Name	AF/JF/HS	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	NOV 24 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day: ASAP or Weekend - Contact ALS				

J



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 26-NOV-20
Report Date: 14-DEC-20 13:12 (MT)
Version: FINAL

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2534040
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers:
Legal Site Desc:

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-1 GH_MW-ERSC-1_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 11:25							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.82		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		27-NOV-20	R5298937
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	1.11		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.209		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.013		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0343		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	155		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	0.00094		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0173		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	53.1		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.00500		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00181		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00073		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.06		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	50.7		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	2.58		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	6.36		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.575		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.00172		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	606		0.50	mg/L		28-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.8		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	188		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-1 GH_MW-ERSC-1_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 11:25 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	188		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0221		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	6.08	DLHC	0.50	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	996		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.12	DLHC	0.10	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	0.8			%		02-DEC-20	
Anion Sum	12.2			meq/L		02-DEC-20	
Cation Sum	12.4			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	102		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	7.42	DLHC	0.025	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	359		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0038		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	372	DLHC	1.5	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	773	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	2.4		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	1.27		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.93		0.10	pH		27-NOV-20	R5299383
L2534040-2 GH_POTW10_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:52 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.54		0.50	mg/L		28-NOV-20	R5299473
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		26-NOV-20	R5308711
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		26-NOV-20	R5308711
Total Kjeldahl Nitrogen	0.242		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	0.67		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-2 GH_POTW10_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:52							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00097		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.0196		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.038		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0091		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	102		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.551		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	0.000274		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0179		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	46.3		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.0489		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00293		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00087		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.77		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	5.00		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.46		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	5.30		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.545		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000631		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	446		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00107		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0174		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.039		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0081		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	90.1		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.14		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.651		0.010	mg/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-2 GH_POTW10_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:52							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Lead (Pb)-Total	0.000279		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0159		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	43.3		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.0465		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00280		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00079		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.61		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	4.73		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.81		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	5.10		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.498		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.000618		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.0		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	209		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	209		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0792		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	7.79		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	721		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.802		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	3.7			%		02-DEC-20	
Anion Sum	8.57			meq/L		02-DEC-20	
Cation Sum	9.22			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	108		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.764		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0125		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	327		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-2 GH_POTW10_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:52 Matrix: WG							
Sulfate in Water by IC Sulfate (SO4)	195		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids Total Dissolved Solids	494	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity Turbidity	6.10		0.10	NTU		26-NOV-20	R5298493
pH pH	8.03		0.10	pH		27-NOV-20	R5299383
L2534040-3 GH_FOX2_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:52 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	0.316		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00099		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.0190		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.038		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0077		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	101		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.545		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	0.000217		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0178		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	44.7		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.0461		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00286		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00084		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.71		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	5.34		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.67		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	5.19		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.544		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-3 GH_FOX2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:52							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000644		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	436		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00105		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0177		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.038		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0098		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	87.9		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.14		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.646		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	0.000261		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0156		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	42.3		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.0458		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00285		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00080		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.61		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	4.65		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.78		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	5.00		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.510		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.000622		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.7		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	212		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	212		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.118		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-3 GH_FOX2_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:52 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	7.76		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC) Conductivity (@ 25C)	715		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC Fluoride (F)	0.807		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation Cation - Anion Balance	2.3			%		02-DEC-20	
Anion Sum	8.60			meq/L		02-DEC-20	
Cation Sum	9.01			meq/L		02-DEC-20	
Ion Balance Calculation Ion Balance	105		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.762		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level) Nitrite (as N)	0.0118		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect. ORP	433		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC Sulfate (SO4)	195		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids Total Dissolved Solids	530	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids Total Suspended Solids	3.9		1.0	mg/L		30-NOV-20	R5300239
Turbidity Turbidity	19.4		0.10	NTU		26-NOV-20	R5298493
pH pH	8.00		0.10	pH		27-NOV-20	R5299383
L2534040-4 GH_JDW2_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:52 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-4 GH_JDW2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:52							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		30-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	<0.050		0.050	mg/L		30-NOV-20	R5300088
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	<0.050		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	<0.050		0.050	ug/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-4 GH_JDW2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:52							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Silicon (Si)-Total	<0.10		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	<0.050		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		02-DEC-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-DEC-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-DEC-20	R5299383
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		02-DEC-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		02-DEC-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Ion Balance	72.2	RRV	-100	%		02-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	-16.1			%		02-DEC-20	
Anion Sum	<0.10			meq/L		02-DEC-20	
Cation Sum	<0.10			meq/L		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0079	RRV	0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	380		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	<0.10		0.10	NTU		26-NOV-20	R5298493

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-5 GH_POTW15_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 12:55							
Matrix: WG							
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00139		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0200		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.021		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0106		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	125		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.20		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.708		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	0.000363		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0150		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	46.2		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.188		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00248		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00064		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.51		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	0.053		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.35		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	11.0		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.367		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	0.000011		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.00126		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.0		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	240		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	240		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0535		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	30.1	DLHC	0.50	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	904		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.16	DLHC	0.10	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-5 GH_POTW15_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 12:55 Matrix: WG							
Ion Balance Calculation							
Ion Balance	101		-100	%		02-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	0.4			%		02-DEC-20	
Anion Sum	11.1			meq/L		02-DEC-20	
Cation Sum	11.2			meq/L		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	292		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	262	DLHC	1.5	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	632	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	6.54		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.95		0.10	pH		27-NOV-20	R5299383
L2534040-6 GH_POTW17_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 13:30 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.07		0.50	mg/L		28-NOV-20	R5299473
Iron Bacteria	25.0	IRB:BC	1.0	CFU/mL		26-NOV-20	R5308711
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		26-NOV-20	R5308711
Total Kjeldahl Nitrogen	0.075		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	1.22		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.0264		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.024		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0413		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	180		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-6 GH_POTW17_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 13:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.154		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0150		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	74.3		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.0838		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00113		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00483		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.69		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	4.94		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.38		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	8.60		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.498		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.00211		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	757		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00025		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0263		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.025		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0404		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	168		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	0.00014		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.17		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	0.00085		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.513		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	0.000155		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0139		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	76.6		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.0909		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00105		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00602		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.68		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	4.87		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.72		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	8.64		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.450		0.00020	mg/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-6 GH_POTW17_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 13:30							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.00203		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	0.0052		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.7		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	297		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	297		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0340		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	17.0	DLHC	0.50	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1200		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	-0.4			%		02-DEC-20	
Anion Sum	15.7			meq/L		02-DEC-20	
Cation Sum	15.6			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	99.1		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.185	DLHC	0.025	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	266		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	445	DLHC	1.5	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	944	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	3.26		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.99		0.10	pH		27-NOV-20	R5299383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-7 GH_POTW06_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 13:25							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.03		0.50	mg/L		28-NOV-20	R5299473
Iron Bacteria	500	IRB:BR	1.0	CFU/mL		26-NOV-20	R5308711
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		26-NOV-20	R5308711
Total Kjeldahl Nitrogen	0.280		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	1.07		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.0535		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.015		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0460		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	179		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	0.00156		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	0.000252		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0132		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	94.5		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.00194		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.000902		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00096		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.64		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	27.5		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.07		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	7.39		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.312		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.00338		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0033		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	835		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-7 GH_POTW06_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 13:25							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0538		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.016		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0449		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	165		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	0.00017		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	0.00410		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.049		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	0.000411		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0120		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	93.4		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.00196		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.000882		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00101		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.62		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	25.4		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.19		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	7.37		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.299		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	0.00014		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.00325		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	0.0037		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.0		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	285		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	285		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0094		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	17.9	DLHC	0.50	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1290		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.15	DLHC	0.10	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Ion Balance	103		-100	%		02-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	1.2			%		02-DEC-20	
Anion Sum	16.6			meq/L		02-DEC-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-7 GH_POTW06_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 13:25 Matrix: WG							
Ion Balance Calculation							
Cation Sum	17.0			meq/L		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.01	DLHC	0.025	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	427		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	498	DLHC	1.5	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	1020	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	0.27		0.10	NTU		26-NOV-20	R5298493
pH							
pH	8.11		0.10	pH		27-NOV-20	R5299383
L2534040-8 GH_POTW09_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 13:55 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.57		0.50	mg/L		28-NOV-20	R5299473
Iron Bacteria	<1.0		1.0	CFU/mL		26-NOV-20	R5308711
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		26-NOV-20	R5308711
Total Kjeldahl Nitrogen	0.067		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	0.64		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00046		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.0338		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.020		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0080		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	108		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	0.00097		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.153		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-8 GH_POTW09_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 13:55							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0127		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	43.9		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.186		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00256		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00112		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.59		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	1.92		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.60		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	7.39		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.364		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	0.000012		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.00212		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0059		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	449		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00052		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.0329		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.021		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0094		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	98.8		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.19		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	0.00305		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.186		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	0.000366		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0117		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	43.1		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.184		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00240		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00151		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	1.56		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	1.74		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.91		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	7.43		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.329		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	0.000011		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.00211		0.000010	mg/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-8 GH_POTW09_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 13:55 Matrix: WG							
Total Metals in Water by CRC ICPMS							
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	0.0102		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.4		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	260		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	260		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0406		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	6.68		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	760		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.766		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	1.1			%		02-DEC-20	
Anion Sum	9.15			meq/L		02-DEC-20	
Cation Sum	9.35			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	102		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0151		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	376		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	179		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	518	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	1.09		0.10	NTU		26-NOV-20	R5298493
pH							
pH	8.11		0.10	pH		27-NOV-20	R5299383
L2534040-9 GH_RDI2_WG_2020-10-05_NP Sampled By: CLIENT on 25-NOV-20 @ 14:45 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-NOV-20	R5298937

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-9 GH_RDI2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 14:45							
Matrix: WG							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-NOV-20	R5299395
Total Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299095
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-9 GH_RDI2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 14:45							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Boron (B)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	<0.050		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	<0.050		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	<0.050		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	<0.10		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	<0.050		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0095	RRV	0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		11-DEC-20	
Anion Sum	<0.10			meq/L		11-DEC-20	
Cation Sum	<0.10			meq/L		11-DEC-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		11-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534040-9 GH_RDI2_WG_2020-10-05_NP							
Sampled By: CLIENT on 25-NOV-20 @ 14:45							
Matrix: WG							
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	257		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	<0.10		0.10	NTU		26-NOV-20	R5298493
pH							
pH	5.50		0.10	pH		27-NOV-20	R5299383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
IRB:BC	Brown Cloudy: IRB dominant
IRB:BR	Brown Ring: IRB dominant
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
Iron Related Bacteria- IRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
		Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):	
		A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2534040

Report Date: 14-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0

Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299380							
WG3453663-6	DUP	L2534040-5						
Acidity (as CaCO3)		3.0	2.4	J	mg/L	0.6	2	27-NOV-20
WG3453663-5	LCS		108.5		%		85-115	27-NOV-20
Acidity (as CaCO3)								
WG3453663-4	MB		1.6		mg/L		2	27-NOV-20
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5299383							
WG3453669-9	DUP	L2534040-6						
Alkalinity, Total (as CaCO3)		297	295		mg/L	0.7	20	27-NOV-20
WG3453669-8	LCS		103.3		%		85-115	27-NOV-20
Alkalinity, Total (as CaCO3)								
WG3453669-4	MB		<1.0		mg/L		1	27-NOV-20
Alkalinity, Total (as CaCO3)								
WG3453669-7	MB		<1.0		mg/L		1	27-NOV-20
Alkalinity, Total (as CaCO3)								
BE-D-L-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-3	DUP	L2534040-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3453349-2	LCS		108.6		%		80-120	27-NOV-20
Beryllium (Be)-Dissolved								
WG3453349-1	MB	NP	<0.000020		mg/L		0.00002	27-NOV-20
Beryllium (Be)-Dissolved								
WG3453349-4	MS	L2534040-2	103.1		%		70-130	27-NOV-20
Beryllium (Be)-Dissolved								
BE-T-L-CCMS-VA								
	Water							
Batch	R5299179							
WG3453338-2	LCS		97.2		%		80-120	28-NOV-20
Beryllium (Be)-Total								
WG3453338-1	MB		<0.000020		mg/L		0.00002	28-NOV-20
Beryllium (Be)-Total								
BR-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-6	LCS		97.3		%		85-115	26-NOV-20
Bromide (Br)								
WG3452992-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-20
C-DIS-ORG-LOW-CL Water								
Batch	R5299473							
WG3453576-3	DUP	L2534040-1						
Dissolved Organic Carbon		0.82	1.20	J	mg/L	0.38	1	28-NOV-20
WG3453576-2	LCS							
Dissolved Organic Carbon			106.4		%		80-120	28-NOV-20
WG3453576-6	LCS							
Dissolved Organic Carbon			103.7		%		80-120	28-NOV-20
WG3453576-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453576-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453576-4	MS	L2534040-1						
Dissolved Organic Carbon			107.3		%		70-130	28-NOV-20
C-TOT-ORG-LOW-CL Water								
Batch	R5299473							
WG3453576-3	DUP	L2534040-1						
Total Organic Carbon		1.11	1.25		mg/L	12	20	28-NOV-20
WG3453576-2	LCS							
Total Organic Carbon			107.6		%		80-120	28-NOV-20
WG3453576-6	LCS							
Total Organic Carbon			104.8		%		80-120	28-NOV-20
WG3453576-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453576-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453576-4	MS	L2534040-1						
Total Organic Carbon			116.0		%		70-130	28-NOV-20
CL-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-6	LCS							
Chloride (Cl)			101.7		%		85-115	26-NOV-20
WG3452992-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	26-NOV-20
EC-L-PCT-CL Water								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch R5299383								
WG3453669-9	DUP	L2534040-6						
Conductivity (@ 25C)		1200	1200		uS/cm	0.1	10	27-NOV-20
WG3453669-8	LCS							
Conductivity (@ 25C)			95.8		%		90-110	27-NOV-20
WG3453669-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
WG3453669-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
F-IC-N-CL								
Batch R5298781								
WG3452992-6	LCS							
Fluoride (F)			98.6		%		90-110	26-NOV-20
WG3452992-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-20
HG-D-CVAA-VA								
Batch R5300167								
WG3454513-2	LCS							
Mercury (Hg)-Dissolved			95.9		%		80-120	01-DEC-20
WG3454513-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-DEC-20
HG-T-U-CVAF-VA								
Batch R5299395								
WG3453674-5	DUP	L2534040-1						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	28-NOV-20
WG3453674-2	LCS							
Mercury (Hg)-Total			88.2		%		80-120	28-NOV-20
WG3453674-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-NOV-20
IB-BART-SQ-CL								
Batch R5308711								
WG3457668-1	MB							
Iron Bacteria			<1.0		CFU/mL		1	26-NOV-20
MET-D-CCMS-VA								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-3	DUP	L2534040-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Arsenic (As)-Dissolved		0.00014	0.00014		mg/L	2.4	20	27-NOV-20
Barium (Ba)-Dissolved		0.209	0.209		mg/L	0.2	20	27-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Boron (B)-Dissolved		0.013	0.013		mg/L	1.5	20	27-NOV-20
Cadmium (Cd)-Dissolved		0.0000343	0.0000364		mg/L	6.1	20	27-NOV-20
Calcium (Ca)-Dissolved		155	154		mg/L	0.4	20	27-NOV-20
Chromium (Cr)-Dissolved		0.00016	0.00018		mg/L	13	20	27-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Copper (Cu)-Dissolved		0.00094	0.00101		mg/L	6.5	20	27-NOV-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Lithium (Li)-Dissolved		0.0173	0.0172		mg/L	0.2	20	27-NOV-20
Magnesium (Mg)-Dissolved		53.1	55.0		mg/L	3.6	20	27-NOV-20
Manganese (Mn)-Dissolved		0.00500	0.00507		mg/L	1.3	20	27-NOV-20
Molybdenum (Mo)-Dissolved		0.00181	0.00174		mg/L	4.0	20	27-NOV-20
Nickel (Ni)-Dissolved		0.00073	0.00074		mg/L	2.1	20	27-NOV-20
Potassium (K)-Dissolved		1.06	1.11		mg/L	4.2	20	27-NOV-20
Selenium (Se)-Dissolved		0.0507	0.0527		mg/L	3.7	20	27-NOV-20
Silicon (Si)-Dissolved		2.58	2.63		mg/L	1.7	20	27-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Sodium (Na)-Dissolved		6.36	6.39		mg/L	0.5	20	27-NOV-20
Strontium (Sr)-Dissolved		0.575	0.563		mg/L	2.1	20	27-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Uranium (U)-Dissolved		0.00172	0.00174		mg/L	0.9	20	27-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Zinc (Zn)-Dissolved		0.0027	0.0027		mg/L	1.7	20	27-NOV-20
WG3453349-2	LCS							
Aluminum (Al)-Dissolved			103.9		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			107.4		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			101.7		%		80-120	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-2	LCS							
Barium (Ba)-Dissolved			105.0		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	27-NOV-20
Boron (B)-Dissolved			104.8		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			103.7		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			101.0		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			101.1		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			98.4		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			95.7		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			97.3		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			110.8		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			105.8		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			109.3		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			101.0		%		80-120	27-NOV-20
Potassium (K)-Dissolved			104.9		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			97.7		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			92.7		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			106.8		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			106.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			103.5		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			99.1		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			102.6		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			102.5		%		80-120	27-NOV-20
Uranium (U)-Dissolved			92.9		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			103.0		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			107.8		%		80-120	27-NOV-20
WG3453349-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
WG3453349-4	MS	L2534040-2						
Aluminum (Al)-Dissolved			98.1		%		70-130	27-NOV-20
Antimony (Sb)-Dissolved			103.5		%		70-130	27-NOV-20
Arsenic (As)-Dissolved			99.7		%		70-130	27-NOV-20
Barium (Ba)-Dissolved			91.6		%		70-130	27-NOV-20
Bismuth (Bi)-Dissolved			76.2		%		70-130	27-NOV-20
Boron (B)-Dissolved			99.3		%		70-130	27-NOV-20
Cadmium (Cd)-Dissolved			96.6		%		70-130	27-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Chromium (Cr)-Dissolved			97.5		%		70-130	27-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-4	MS	L2534040-2						
Cobalt (Co)-Dissolved			92.1		%		70-130	27-NOV-20
Copper (Cu)-Dissolved			90.9		%		70-130	27-NOV-20
Iron (Fe)-Dissolved			92.5		%		70-130	27-NOV-20
Lead (Pb)-Dissolved			89.1		%		70-130	27-NOV-20
Lithium (Li)-Dissolved			104.5		%		70-130	27-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Molybdenum (Mo)-Dissolved			101.9		%		70-130	27-NOV-20
Nickel (Ni)-Dissolved			93.0		%		70-130	27-NOV-20
Potassium (K)-Dissolved			97.0		%		70-130	27-NOV-20
Selenium (Se)-Dissolved			97.5		%		70-130	27-NOV-20
Silicon (Si)-Dissolved			84.3		%		70-130	27-NOV-20
Silver (Ag)-Dissolved			76.6		%		70-130	27-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Thallium (Tl)-Dissolved			89.0		%		70-130	27-NOV-20
Tin (Sn)-Dissolved			100.6		%		70-130	27-NOV-20
Titanium (Ti)-Dissolved			99.8		%		70-130	27-NOV-20
Uranium (U)-Dissolved			89.4		%		70-130	27-NOV-20
Vanadium (V)-Dissolved			100.8		%		70-130	27-NOV-20
Zinc (Zn)-Dissolved			100.7		%		70-130	27-NOV-20
MET-T-CCMS-VA								
	Water							
Batch	R5299179							
WG3453338-2	LCS							
Aluminum (Al)-Total			97.8		%		80-120	28-NOV-20
Antimony (Sb)-Total			100.9		%		80-120	28-NOV-20
Arsenic (As)-Total			97.8		%		80-120	28-NOV-20
Barium (Ba)-Total			97.6		%		80-120	28-NOV-20
Bismuth (Bi)-Total			96.8		%		80-120	28-NOV-20
Boron (B)-Total			95.6		%		80-120	28-NOV-20
Cadmium (Cd)-Total			91.9		%		80-120	28-NOV-20
Calcium (Ca)-Total			97.1		%		80-120	28-NOV-20
Chromium (Cr)-Total			97.1		%		80-120	28-NOV-20
Cobalt (Co)-Total			100.2		%		80-120	28-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5299179							
WG3453338-2	LCS							
Copper (Cu)-Total			97.1		%		80-120	28-NOV-20
Iron (Fe)-Total			97.1		%		80-120	28-NOV-20
Lead (Pb)-Total			97.7		%		80-120	28-NOV-20
Lithium (Li)-Total			93.4		%		80-120	28-NOV-20
Magnesium (Mg)-Total			100.4		%		80-120	28-NOV-20
Manganese (Mn)-Total			101.0		%		80-120	28-NOV-20
Molybdenum (Mo)-Total			96.9		%		80-120	28-NOV-20
Nickel (Ni)-Total			98.8		%		80-120	28-NOV-20
Potassium (K)-Total			98.4		%		80-120	28-NOV-20
Selenium (Se)-Total			95.9		%		80-120	28-NOV-20
Silicon (Si)-Total			99.9		%		80-120	28-NOV-20
Silver (Ag)-Total			92.3		%		80-120	28-NOV-20
Sodium (Na)-Total			105.1		%		80-120	28-NOV-20
Strontium (Sr)-Total			93.3		%		80-120	28-NOV-20
Thallium (Tl)-Total			95.5		%		80-120	28-NOV-20
Tin (Sn)-Total			95.2		%		80-120	28-NOV-20
Titanium (Ti)-Total			97.6		%		80-120	28-NOV-20
Uranium (U)-Total			93.6		%		80-120	28-NOV-20
Vanadium (V)-Total			100.7		%		80-120	28-NOV-20
Zinc (Zn)-Total			101.7		%		80-120	28-NOV-20
WG3453338-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	28-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	28-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5299179							
WG3453338-1	MB							
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	28-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	28-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	28-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-NOV-20
Batch	R5300088							
WG3454094-2	LCS							
Aluminum (Al)-Total			100.5		%		80-120	30-NOV-20
Antimony (Sb)-Total			102.9		%		80-120	30-NOV-20
Arsenic (As)-Total			98.2		%		80-120	30-NOV-20
Barium (Ba)-Total			102.3		%		80-120	30-NOV-20
Bismuth (Bi)-Total			96.2		%		80-120	30-NOV-20
Boron (B)-Total			94.9		%		80-120	30-NOV-20
Cadmium (Cd)-Total			100.3		%		80-120	30-NOV-20
Calcium (Ca)-Total			101.6		%		80-120	30-NOV-20
Chromium (Cr)-Total			98.1		%		80-120	30-NOV-20
Cobalt (Co)-Total			99.8		%		80-120	30-NOV-20
Copper (Cu)-Total			98.0		%		80-120	30-NOV-20
Iron (Fe)-Total			98.0		%		80-120	30-NOV-20
Lead (Pb)-Total			98.4		%		80-120	30-NOV-20
Lithium (Li)-Total			92.0		%		80-120	30-NOV-20
Magnesium (Mg)-Total			98.1		%		80-120	30-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5300088							
WG3454094-2 LCS								
Manganese (Mn)-Total			99.6		%		80-120	30-NOV-20
Molybdenum (Mo)-Total			102.5		%		80-120	30-NOV-20
Nickel (Ni)-Total			98.5		%		80-120	30-NOV-20
Potassium (K)-Total			95.4		%		80-120	30-NOV-20
Selenium (Se)-Total			96.0		%		80-120	30-NOV-20
Silicon (Si)-Total			100.3		%		80-120	30-NOV-20
Silver (Ag)-Total			96.7		%		80-120	30-NOV-20
Sodium (Na)-Total			93.8		%		80-120	30-NOV-20
Strontium (Sr)-Total			97.9		%		80-120	30-NOV-20
Thallium (Tl)-Total			97.9		%		80-120	30-NOV-20
Tin (Sn)-Total			92.8		%		80-120	30-NOV-20
Titanium (Ti)-Total			100.1		%		80-120	30-NOV-20
Uranium (U)-Total			95.6		%		80-120	30-NOV-20
Vanadium (V)-Total			99.2		%		80-120	30-NOV-20
Zinc (Zn)-Total			98.6		%		80-120	30-NOV-20
WG3454094-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	30-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	30-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	30-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	30-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	30-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5300088							
WG3454094-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	30-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	30-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	30-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	30-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	30-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-NOV-20
WG3454094-4	MS	L2534040-4						
Aluminum (Al)-Total			92.5		%		70-130	30-NOV-20
Antimony (Sb)-Total			95.4		%		70-130	30-NOV-20
Arsenic (As)-Total			90.7		%		70-130	30-NOV-20
Barium (Ba)-Total			93.1		%		70-130	30-NOV-20
Bismuth (Bi)-Total			86.1		%		70-130	30-NOV-20
Boron (B)-Total			100.3		%		70-130	30-NOV-20
Cadmium (Cd)-Total			97.5		%		70-130	30-NOV-20
Calcium (Ca)-Total			92.2		%		70-130	30-NOV-20
Chromium (Cr)-Total			93.9		%		70-130	30-NOV-20
Cobalt (Co)-Total			93.7		%		70-130	30-NOV-20
Copper (Cu)-Total			94.7		%		70-130	30-NOV-20
Iron (Fe)-Total			94.3		%		70-130	30-NOV-20
Lead (Pb)-Total			87.0		%		70-130	30-NOV-20
Lithium (Li)-Total			86.6		%		70-130	30-NOV-20
Magnesium (Mg)-Total			90.4		%		70-130	30-NOV-20
Manganese (Mn)-Total			93.1		%		70-130	30-NOV-20
Molybdenum (Mo)-Total			100.2		%		70-130	30-NOV-20
Nickel (Ni)-Total			93.8		%		70-130	30-NOV-20
Potassium (K)-Total			88.3		%		70-130	30-NOV-20
Selenium (Se)-Total			92.7		%		70-130	30-NOV-20
Silicon (Si)-Total			95.2		%		70-130	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5300088							
WG3454094-4	MS	L2534040-4						
Silver (Ag)-Total			92.3		%		70-130	30-NOV-20
Sodium (Na)-Total			91.0		%		70-130	30-NOV-20
Strontium (Sr)-Total			95.4		%		70-130	30-NOV-20
Thallium (Tl)-Total			84.6		%		70-130	30-NOV-20
Tin (Sn)-Total			92.6		%		70-130	30-NOV-20
Titanium (Ti)-Total			97.7		%		70-130	30-NOV-20
Uranium (U)-Total			89.3		%		70-130	30-NOV-20
Vanadium (V)-Total			92.0		%		70-130	30-NOV-20
Zinc (Zn)-Total			95.1		%		70-130	30-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5298936							
WG3452713-11	DUP	L2534040-4						
Ammonia as N		<0.0050	0.0051	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452713-10	LCS							
Ammonia as N			102.8		%		85-115	26-NOV-20
WG3452713-6	LCS							
Ammonia as N			100.3		%		85-115	26-NOV-20
WG3452713-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-20
WG3452713-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-20
WG3452713-12	MS	L2534040-4						
Ammonia as N			84.3		%		75-125	26-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-6	LCS							
Nitrite (as N)			99.0		%		90-110	26-NOV-20
WG3452992-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-20
NO3-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-6	LCS							
Nitrate (as N)			100.5		%		90-110	26-NOV-20
WG3452992-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-20
ORP-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL		Water						
Batch	R5298490							
WG3452546-3	CRM	CL-ORP						
ORP			223		mV		210-230	26-NOV-20
WG3452546-5	CRM	CL-ORP						
ORP			230		mV		210-230	26-NOV-20
WG3452546-6	DUP	L2534040-9						
ORP		257	267	J	mV	10.1	15	26-NOV-20
P-T-L-COL-CL		Water						
Batch	R5298968							
WG3453126-15	DUP	L2534040-9						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3453126-10	LCS							
Phosphorus (P)-Total			93.0		%		80-120	27-NOV-20
WG3453126-14	LCS							
Phosphorus (P)-Total			93.8		%		80-120	27-NOV-20
WG3453126-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-NOV-20
WG3453126-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-NOV-20
WG3453126-16	MS	L2534040-9						
Phosphorus (P)-Total			79.1		%		70-130	27-NOV-20
PH-CL		Water						
Batch	R5299383							
WG3453669-9	DUP	L2534040-6						
pH		7.99	8.01	J	pH	0.02	0.2	27-NOV-20
WG3453669-8	LCS							
pH			7.03		pH		6.9-7.1	27-NOV-20
PO4-DO-L-COL-CL		Water						
Batch	R5298450							
WG3452559-6	LCS							
Orthophosphate-Dissolved (as P)			98.0		%		80-120	26-NOV-20
WG3452559-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-20
SO4-IC-N-CL		Water						
Batch	R5298781							
WG3452992-6	LCS							
Sulfate (SO4)			105.0		%		90-110	26-NOV-20
WG3452992-5	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch R5298781								
WG3452992-5 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	26-NOV-20
SOLIDS-TDS-CL								
Water								
Batch R5300305								
WG3453851-9 DUP								
Total Dissolved Solids								
		L2534040-6 944	952		mg/L	0.8	20	30-NOV-20
WG3453851-8 LCS								
Total Dissolved Solids								
			85.5		%		85-115	30-NOV-20
WG3453851-7 MB								
Total Dissolved Solids								
			<10		mg/L		10	30-NOV-20
SRB-BART-SQ-CL								
Water								
Batch R5308711								
WG3457668-1 MB								
Sulfur Reducing Bacteria								
			<1.0		CFU/mL		1	26-NOV-20
TKN-L-F-CL								
Water								
Batch R5298937								
WG3452899-7 DUP								
Total Kjeldahl Nitrogen								
		L2534040-4 <0.050	<0.050	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3452899-10 LCS								
Total Kjeldahl Nitrogen								
			110.0		%		75-125	27-NOV-20
WG3452899-12 LCS								
Total Kjeldahl Nitrogen								
			112.0		%		75-125	27-NOV-20
WG3452899-2 LCS								
Total Kjeldahl Nitrogen								
			115.0		%		75-125	27-NOV-20
WG3452899-6 LCS								
Total Kjeldahl Nitrogen								
			117.0		%		75-125	27-NOV-20
WG3452899-1 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	27-NOV-20
WG3452899-11 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	27-NOV-20
WG3452899-5 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	27-NOV-20
WG3452899-9 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	27-NOV-20
WG3452899-8 MS								
Total Kjeldahl Nitrogen								
		L2534040-4	107.0		%		70-130	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL								
	Water							
Batch	R5300239							
WG3453850-6	LCS							
Total Suspended Solids			96.6		%		85-115	30-NOV-20
WG3453850-5	MB							
Total Suspended Solids			<1.0		mg/L		1	30-NOV-20
TURBIDITY-CL								
	Water							
Batch	R5298493							
WG3452472-9	DUP	L2534040-9						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	26-NOV-20
WG3452472-5	LCS							
Turbidity			97.4		%		85-115	26-NOV-20
WG3452472-8	LCS							
Turbidity			95.9		%		85-115	26-NOV-20
WG3452472-4	MB							
Turbidity			<0.10		NTU		0.1	26-NOV-20
WG3452472-7	MB							
Turbidity			<0.10		NTU		0.1	26-NOV-20

Quality Control Report

Workorder: L2534040

Report Date: 14-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2534040

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	25-NOV-20 11:25	26-NOV-20 14:15	0.25	27	hours	EHTR-FM
	2	25-NOV-20 12:52	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	3	25-NOV-20 12:52	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	4	25-NOV-20 12:52	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	5	25-NOV-20 12:55	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	6	25-NOV-20 13:30	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	7	25-NOV-20 13:25	26-NOV-20 14:15	0.25	25	hours	EHTR-FM
	8	25-NOV-20 13:55	26-NOV-20 14:15	0.25	24	hours	EHTR-FM
	9	25-NOV-20 14:45	26-NOV-20 14:15	0.25	24	hours	EHTR-FM
pH							
	1	25-NOV-20 11:25	27-NOV-20 12:00	0.25	48	hours	EHTR-FM
	2	25-NOV-20 12:52	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	3	25-NOV-20 12:52	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	4	25-NOV-20 12:52	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	5	25-NOV-20 12:55	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	6	25-NOV-20 13:30	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	7	25-NOV-20 13:25	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	8	25-NOV-20 13:55	27-NOV-20 12:00	0.25	46	hours	EHTR-FM
	9	25-NOV-20 14:45	27-NOV-20 12:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2534040 were received on 26-NOV-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **2020-11-25-WS** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@eculsonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED								Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sys Loc Code	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PHL	Y	Y	N	Y	N	N	N					
								Preserv.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4					
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	Iron Sulfure Bacteria				
GH_MW-ERS-1_WG_2020-10-05_NP	GH_MW-ERS-1	WG		11/25/2020	11:25	G	6		1	1	1	1		1	1	1				
GH_POTW10_WG_2020-10-05_NP	GH_POTW10	WG		11/25/2020	12:52	G	7		1	1		1	1	1	1	1				
GH_FOX2_WG_2020-10-05_NP	GH_POTW10	WG		11/25/2020	12:52	G	6		1	1		1	1	1	1					
GH_JDW3_WG_2020-10-05_NP	GH_POTW10	WG		11/25/2020	12:52	G	6		1	1		1	1	1	1					
GH_POTW15_WG_2020-10-05_NP	GH_POTW15	WG		11/25/2020	12:55	G	7		1	1		1	1	1	1	1				
GH_POTW17_WG_2020-10-05_NP	GH_POTW17	WG		11/25/2020	13:30	G	7		1	1		1	1	1	1	1				
GH_POTW06_WG_2020-10-05_NP	GH_POTW06	WG		11/25/2020	13:25	G	7		1	1		1	1	1	1	1				
GH_POTW09_WG_2020-10-05_NP	GH_POTW09	WG		11/25/2020	13:55	G	7		1	1		1	1	1	1	1				
GH_RDI2_WG_2020-10-05_NP	GH_RDI2	WG		11/25/2020	14:45	G	7		1	1		1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	11/25/2020

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	AE/JF	Mobile #	
Sampler's Signature		Date/Time	NOV 25 2020



L2534040-COFC



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 27-NOV-20
Report Date: 07-DEC-20 15:16 (MT)
Version: FINAL

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2534368
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-11-26-WG
Legal Site Desc:

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534368-1 GH_MW-TD_WG_2020-10-05_NP							
Sampled By: AF/BP on 26-NOV-20 @ 13:02							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.71		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	0.058		0.050	mg/L		28-NOV-20	R5299262
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-DEC-20	R5299940
Total Organic Carbon	0.69		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-NOV-20	30-NOV-20	R5299690
Dissolved Metals Filtration Location	FIELD					29-NOV-20	R5299442
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					29-NOV-20	R5299442
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-NOV-20	30-NOV-20	R5299690
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Barium (Ba)-Dissolved	0.0232		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Boron (B)-Dissolved	0.328		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Cadmium (Cd)-Dissolved	0.120		0.0050	ug/L	29-NOV-20	30-NOV-20	R5299690
Calcium (Ca)-Dissolved	85.3		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Cobalt (Co)-Dissolved	0.50		0.10	ug/L	29-NOV-20	30-NOV-20	R5299690
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-NOV-20	30-NOV-20	R5299690
Iron (Fe)-Dissolved	0.241		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Lithium (Li)-Dissolved	0.0386		0.0010	mg/L	29-NOV-20	30-NOV-20	R5299690
Magnesium (Mg)-Dissolved	34.6		0.10	mg/L	29-NOV-20	30-NOV-20	R5299690
Manganese (Mn)-Dissolved	0.747		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Molybdenum (Mo)-Dissolved	0.00283		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Nickel (Ni)-Dissolved	0.00108		0.00050	mg/L	29-NOV-20	30-NOV-20	R5299690
Potassium (K)-Dissolved	2.39		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Selenium (Se)-Dissolved	0.177		0.050	ug/L	29-NOV-20	30-NOV-20	R5299690
Silicon (Si)-Dissolved	6.54		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Sodium (Na)-Dissolved	28.5		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Strontium (Sr)-Dissolved	1.10		0.00020	mg/L	29-NOV-20	30-NOV-20	R5299690
Thallium (Tl)-Dissolved	0.000187		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Uranium (U)-Dissolved	0.00105		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-20	30-NOV-20	R5299690
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	29-NOV-20	30-NOV-20	R5299690
Hardness							
Hardness (as CaCO3)	355		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		28-NOV-20	R5299414
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	340		1.0	mg/L		29-NOV-20	R5299459
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-NOV-20	R5299459

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534368-1 GH_MW-TD_WG_2020-10-05_NP Sampled By: AF/BP on 26-NOV-20 @ 13:02 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-NOV-20	R5299459
Alkalinity, Total (as CaCO3)	340		1.0	mg/L		29-NOV-20	R5299459
Ammonia, Total (as N)							
Ammonia as N	0.116		0.0050	mg/L		28-NOV-20	R5299432
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-NOV-20	R5299301
Chloride in Water by IC							
Chloride (Cl)	0.24		0.10	mg/L		27-NOV-20	R5299301
Electrical Conductivity (EC)							
Conductivity (@ 25C)	702		2.0	uS/cm		29-NOV-20	R5299459
Fluoride in Water by IC							
Fluoride (F)	0.222		0.020	mg/L		27-NOV-20	R5299301
Ion Balance Calculation							
Ion Balance	98.1		-100	%		30-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.0			%		30-NOV-20	
Anion Sum	8.62			meq/L		30-NOV-20	
Cation Sum	8.45			meq/L		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0420		0.0050	mg/L		27-NOV-20	R5299301
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-NOV-20	R5299301
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		27-NOV-20	R5299009
Oxidation redution potential by elect.							
ORP	383		-1000	mV		27-NOV-20	R5299160
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		30-NOV-20	R5299819
Sulfate in Water by IC							
Sulfate (SO4)	86.3		0.30	mg/L		27-NOV-20	R5299301
Total Dissolved Solids							
Total Dissolved Solids	443	DLHC	20	mg/L		02-DEC-20	R5304888
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-DEC-20	R5304350
Turbidity							
Turbidity	2.05		0.10	NTU		27-NOV-20	R5299163
pH							
pH	7.81		0.10	pH		29-NOV-20	R5299459
L2534368-2 GH_MW-RLP-1D_WG_2020-10-05_NP Sampled By: AF/BP on 26-NOV-20 @ 14:35 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		28-NOV-20	R5299262
Mercury (Hg)-Total	0.00087		0.00050	ug/L		01-DEC-20	R5299940
Total Organic Carbon	0.89		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-NOV-20	30-NOV-20	R5299690
Dissolved Metals Filtration Location	FIELD					29-NOV-20	R5299442
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534368-2 GH_MW-RLP-1D_WG_2020-10-05_NP							
Sampled By: AF/BP on 26-NOV-20 @ 14:35							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	01-DEC-20	01-DEC-20	R5300167
Dissolved Mercury Filtration Location	FIELD					01-DEC-20	R5300141
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					29-NOV-20	R5299442
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-NOV-20	30-NOV-20	R5299690
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Arsenic (As)-Dissolved	0.00125		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Barium (Ba)-Dissolved	0.0428		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Boron (B)-Dissolved	0.018		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Cadmium (Cd)-Dissolved	<0.00050		0.0050	ug/L	29-NOV-20	30-NOV-20	R5299690
Calcium (Ca)-Dissolved	55.6		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-NOV-20	30-NOV-20	R5299690
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-NOV-20	30-NOV-20	R5299690
Iron (Fe)-Dissolved	0.516		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Lithium (Li)-Dissolved	0.0066		0.0010	mg/L	29-NOV-20	30-NOV-20	R5299690
Magnesium (Mg)-Dissolved	28.8		0.10	mg/L	29-NOV-20	30-NOV-20	R5299690
Manganese (Mn)-Dissolved	0.0871		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Molybdenum (Mo)-Dissolved	0.00334		0.000050	mg/L	29-NOV-20	30-NOV-20	R5299690
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-20	30-NOV-20	R5299690
Potassium (K)-Dissolved	1.18		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-NOV-20	30-NOV-20	R5299690
Silicon (Si)-Dissolved	4.83		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Sodium (Na)-Dissolved	3.31		0.050	mg/L	29-NOV-20	30-NOV-20	R5299690
Strontium (Sr)-Dissolved	0.185		0.00020	mg/L	29-NOV-20	30-NOV-20	R5299690
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-20	30-NOV-20	R5299690
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-NOV-20	30-NOV-20	R5299690
Uranium (U)-Dissolved	0.000933		0.000010	mg/L	29-NOV-20	30-NOV-20	R5299690
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-20	30-NOV-20	R5299690
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	29-NOV-20	30-NOV-20	R5299690
Hardness							
Hardness (as CaCO3)	257		0.50	mg/L		30-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.2		1.0	mg/L		28-NOV-20	R5299414
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	239		1.0	mg/L		29-NOV-20	R5299459
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-NOV-20	R5299459
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-NOV-20	R5299459
Alkalinity, Total (as CaCO3)	239		1.0	mg/L		29-NOV-20	R5299459
Ammonia, Total (as N)							
Ammonia as N	0.0708		0.0050	mg/L		28-NOV-20	R5299432
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-NOV-20	R5299301
Chloride in Water by IC							
Chloride (Cl)	0.21		0.10	mg/L		27-NOV-20	R5299301
Electrical Conductivity (EC)							
Conductivity (@ 25C)	450		2.0	uS/cm		29-NOV-20	R5299459

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2534368-2 GH_MW-RLP-1D_WG_2020-10-05_NP							
Sampled By: AF/BP on 26-NOV-20 @ 14:35							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	1.77		0.020	mg/L		27-NOV-20	R5299301
Ion Balance Calculation							
Ion Balance	93.2		-100	%		30-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.5			%		30-NOV-20	
Anion Sum	5.74			meq/L		30-NOV-20	
Cation Sum	5.35			meq/L		30-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		27-NOV-20	R5299301
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-NOV-20	R5299301
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-NOV-20	R5299009
Oxidation redution potential by elect.							
ORP	119		-1000	mV		27-NOV-20	R5299160
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0281		0.0020	mg/L		30-NOV-20	R5299819
Sulfate in Water by IC							
Sulfate (SO4)	41.5		0.30	mg/L		27-NOV-20	R5299301
Total Dissolved Solids							
Total Dissolved Solids	273	DLHC	20	mg/L		02-DEC-20	R5304888
Total Suspended Solids							
Total Suspended Solids	9.4		1.0	mg/L		02-DEC-20	R5304350
Turbidity							
Turbidity	20.5		0.10	NTU		27-NOV-20	R5299163
pH							
pH	7.89		0.10	pH		29-NOV-20	R5299459

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
			This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
			This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-11-26-WG

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2534368

Report Date: 07-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299414							
WG3453684-3	DUP	L2534368-1						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	28-NOV-20
WG3453684-2	LCS							
Acidity (as CaCO3)			112.1		%		85-115	28-NOV-20
WG3453684-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	28-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5299459							
WG3453711-6	DUP	L2534368-2						
Alkalinity, Total (as CaCO3)		239	237		mg/L	1.0	20	29-NOV-20
WG3453711-5	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	29-NOV-20
WG3453711-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-2	LCS							
Beryllium (Be)-Dissolved			93.0		%		80-120	30-NOV-20
WG3453699-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5299301							
WG3453559-6	LCS							
Bromide (Br)			104.8		%		85-115	27-NOV-20
WG3453559-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5299473							
WG3453576-6	LCS							
Dissolved Organic Carbon			103.7		%		80-120	28-NOV-20
WG3453576-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5299473							
WG3453576-6	LCS							
Total Organic Carbon			104.8		%		80-120	28-NOV-20
WG3453576-5	MB							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5299473							
WG3453576-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5299301							
WG3453559-6 LCS								
Chloride (Cl)			101.8		%		85-115	27-NOV-20
WG3453559-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	27-NOV-20
EC-L-PCT-CL	Water							
Batch	R5299459							
WG3453711-6 DUP		L2534368-2						
Conductivity (@ 25C)		450	444		uS/cm	1.3	10	29-NOV-20
WG3453711-5 LCS								
Conductivity (@ 25C)			95.0		%		90-110	29-NOV-20
WG3453711-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-NOV-20
F-IC-N-CL	Water							
Batch	R5299301							
WG3453559-6 LCS								
Fluoride (F)			94.4		%		90-110	27-NOV-20
WG3453559-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	27-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5300167							
WG3454513-6 LCS								
Mercury (Hg)-Dissolved			95.5		%		80-120	01-DEC-20
WG3454513-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-DEC-20
HG-T-U-CVAF-VA	Water							
Batch	R5299940							
WG3454296-2 LCS								
Mercury (Hg)-Total			95.0		%		80-120	30-NOV-20
WG3454296-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	30-NOV-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2534368

Report Date: 07-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-2	LCS							
Aluminum (Al)-Dissolved			104.0		%		80-120	30-NOV-20
Antimony (Sb)-Dissolved			98.8		%		80-120	30-NOV-20
Arsenic (As)-Dissolved			98.1		%		80-120	30-NOV-20
Barium (Ba)-Dissolved			103.0		%		80-120	30-NOV-20
Bismuth (Bi)-Dissolved			95.1		%		80-120	30-NOV-20
Boron (B)-Dissolved			92.0		%		80-120	30-NOV-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	30-NOV-20
Calcium (Ca)-Dissolved			99.8		%		80-120	30-NOV-20
Chromium (Cr)-Dissolved			100.7		%		80-120	30-NOV-20
Cobalt (Co)-Dissolved			102.7		%		80-120	30-NOV-20
Copper (Cu)-Dissolved			98.8		%		80-120	30-NOV-20
Iron (Fe)-Dissolved			100.6		%		80-120	30-NOV-20
Lead (Pb)-Dissolved			91.5		%		80-120	30-NOV-20
Lithium (Li)-Dissolved			91.1		%		80-120	30-NOV-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	30-NOV-20
Manganese (Mn)-Dissolved			99.8		%		80-120	30-NOV-20
Molybdenum (Mo)-Dissolved			98.8		%		80-120	30-NOV-20
Nickel (Ni)-Dissolved			100.8		%		80-120	30-NOV-20
Potassium (K)-Dissolved			101.0		%		80-120	30-NOV-20
Selenium (Se)-Dissolved			93.1		%		80-120	30-NOV-20
Silicon (Si)-Dissolved			98.5		%		60-140	30-NOV-20
Silver (Ag)-Dissolved			96.3		%		80-120	30-NOV-20
Sodium (Na)-Dissolved			102.3		%		80-120	30-NOV-20
Strontium (Sr)-Dissolved			105.1		%		80-120	30-NOV-20
Thallium (Tl)-Dissolved			96.4		%		80-120	30-NOV-20
Tin (Sn)-Dissolved			94.8		%		80-120	30-NOV-20
Titanium (Ti)-Dissolved			96.0		%		80-120	30-NOV-20
Uranium (U)-Dissolved			112.3		%		80-120	30-NOV-20
Vanadium (V)-Dissolved			101.1		%		80-120	30-NOV-20
Zinc (Zn)-Dissolved			95.9		%		80-120	30-NOV-20
WG3453699-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5299432							
WG3453672-11	DUP	L2534368-2						
Ammonia as N		0.0708	0.0743		mg/L	4.8	20	28-NOV-20
WG3453672-10	LCS							
Ammonia as N			102.6		%		85-115	28-NOV-20
WG3453672-6	LCS							
Ammonia as N			104.5		%		85-115	28-NOV-20



Quality Control Report

Workorder: L2534368

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5299432								
WG3453672-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-NOV-20
WG3453672-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-NOV-20
WG3453672-12	MS	L2534368-2						
Ammonia as N			121.2		%		75-125	28-NOV-20
COMMENTS: rrv								
NO2-L-IC-N-CL								
Water								
Batch R5299301								
WG3453559-6	LCS							
Nitrite (as N)			100.1		%		90-110	27-NOV-20
WG3453559-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5299301								
WG3453559-6	LCS							
Nitrate (as N)			99.4		%		90-110	27-NOV-20
WG3453559-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-NOV-20
ORP-CL								
Water								
Batch R5299160								
WG3453423-3	CRM	CL-ORP						
ORP			225		mV		210-230	27-NOV-20
P-T-L-COL-CL								
Water								
Batch R5299819								
WG3454165-6	LCS							
Phosphorus (P)-Total			99.3		%		80-120	30-NOV-20
WG3454165-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-NOV-20
PH-CL								
Water								
Batch R5299459								
WG3453711-6	DUP	L2534368-2						
pH		7.89	7.85	J	pH	0.04	0.2	29-NOV-20
WG3453711-5	LCS							
pH			7.00		pH		6.9-7.1	29-NOV-20
PO4-DO-L-COL-CL								
Water								

Quality Control Report

Workorder: L2534368

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R5299009							
WG3453394-3	DUP	L2534368-1						
Orthophosphate-Dissolved (as P)		0.0012	0.0014		mg/L	14	20	27-NOV-20
WG3453186-14	LCS							
Orthophosphate-Dissolved (as P)			101.5		%		80-120	27-NOV-20
WG3453394-2	LCS							
Orthophosphate-Dissolved (as P)			101.2		%		80-120	27-NOV-20
WG3453186-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-NOV-20
WG3453394-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-NOV-20
WG3453394-4	MS	L2534368-2						
Orthophosphate-Dissolved (as P)			94.7		%		70-130	27-NOV-20
SO4-IC-N-CL								
	Water							
Batch	R5299301							
WG3453559-6	LCS							
Sulfate (SO4)			100.6		%		90-110	27-NOV-20
WG3453559-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-NOV-20
SOLIDS-TDS-CL								
	Water							
Batch	R5304888							
WG3455281-8	LCS							
Total Dissolved Solids			93.1		%		85-115	02-DEC-20
WG3455281-7	MB							
Total Dissolved Solids			<10		mg/L		10	02-DEC-20
TKN-L-F-CL								
	Water							
Batch	R5299262							
WG3453412-10	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	28-NOV-20
WG3453412-12	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	28-NOV-20
WG3453412-14	LCS							
Total Kjeldahl Nitrogen			91.3		%		75-125	28-NOV-20
WG3453412-2	LCS							
Total Kjeldahl Nitrogen			93.8		%		75-125	28-NOV-20
WG3453412-8	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	28-NOV-20
WG3453412-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5299262							
WG3453412-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
TSS-L-CL		Water						
Batch	R5304350							
WG3455278-4	LCS							
Total Suspended Solids			95.8		%		85-115	02-DEC-20
WG3455278-3	MB							
Total Suspended Solids			<1.0		mg/L		1	02-DEC-20
TURBIDITY-CL		Water						
Batch	R5299163							
WG3453425-5	LCS							
Turbidity			97.4		%		85-115	27-NOV-20
WG3453425-6	MB							
Turbidity			<0.10		NTU		0.1	27-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2534368

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	26-NOV-20 13:02	27-NOV-20 15:45	0.25	27	hours	EHTR-FM
	2	26-NOV-20 14:35	27-NOV-20 15:45	0.25	25	hours	EHTR-FM
pH							
	1	26-NOV-20 13:02	29-NOV-20 09:00	0.25	68	hours	EHTR-FM
	2	26-NOV-20 14:35	29-NOV-20 09:00	0.25	66	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2534368 were received on 27-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2020-11-26-WG TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jeremy Enns			Lab Contact	Justine Burmaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burmaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number				

SAMPLE DETAILS ANALYSIS REQUESTED Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



Sample ID	Sys Loc Code	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL	ANALYSIS REQUESTED							Iron SulfURE Bacteria	Turbidity/TSS	VSS	BACTERIOLOGICAL
									ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC				
GH_MW-TD_WG_2020-10-05_NP	GH_MW-TD	WG		11/26/2020	13:02	G	6		1	1	1	1		1	1				
GH_MW-RLP-ID_WG_2020-10-05_NP	GH_MW-RLP-ID	WG		11/26/2020	14:35	G	6		1	1	1	1		1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Jm</i>	27/11 8:40

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	AF/BP	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/>				
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				
				NOV 26 2020

Jm



TECK COAL LIMITED (GREENHILLS)
ATTN: Jeremy Enns
BOX 5000
Elkford BC V0B1H0

Date Received: 04-DEC-20
Report Date: 14-DEC-20 14:40 (MT)
Version: FINAL

Client Phone: 250-865-3048

Certificate of Analysis

Lab Work Order #: L2536905
Project P.O. #: VPO00684125
Job Reference: GREENHILLS OPERATION
C of C Numbers: 2020-12-03-WS
Legal Site Desc:

Justine Buma-a
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-1 GH_MW_PC_WG_2020-10-05_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 11:15							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.65		0.50	mg/L		12-DEC-20	R5314536
Total Kjeldahl Nitrogen	0.350		0.050	mg/L		06-DEC-20	R5308539
Mercury (Hg)-Total	0.00316		0.00050	ug/L		09-DEC-20	R5309606
Total Organic Carbon	1.47		0.50	mg/L		12-DEC-20	R5314536
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	07-DEC-20	R5309048
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5310107
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	07-DEC-20	R5309048
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Barium (Ba)-Dissolved	0.0851		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cadmium (Cd)-Dissolved	0.0360		0.0050	ug/L	06-DEC-20	07-DEC-20	R5309048
Calcium (Ca)-Dissolved	122		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Chromium (Cr)-Dissolved	0.00026		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-DEC-20	07-DEC-20	R5309048
Copper (Cu)-Dissolved	0.0192		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Lithium (Li)-Dissolved	0.0076		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Magnesium (Mg)-Dissolved	75.3		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Manganese (Mn)-Dissolved	0.00112		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Molybdenum (Mo)-Dissolved	0.00236		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Nickel (Ni)-Dissolved	0.00086		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Potassium (K)-Dissolved	1.10		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Selenium (Se)-Dissolved	66.1		0.050	ug/L	06-DEC-20	07-DEC-20	R5309048
Silicon (Si)-Dissolved	2.36		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Sodium (Na)-Dissolved	0.920		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Strontium (Sr)-Dissolved	0.144		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Uranium (U)-Dissolved	0.00426		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Zinc (Zn)-Dissolved	0.0030		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Hardness							
Hardness (as CaCO3)	615		0.50	mg/L		08-DEC-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309084
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-1 GH_MW_PC_WG_2020-10-05_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 11:15 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		07-DEC-20	R5309082
Ammonia, Total (as N)							
Ammonia as N	0.0109		0.0050	mg/L		05-DEC-20	R5308556
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-DEC-20	R5308426
Chloride in Water by IC							
Chloride (Cl)	1.25	DLHC	0.50	mg/L		04-DEC-20	R5308426
Electrical Conductivity (EC)							
Conductivity (@ 25C)	948		2.0	uS/cm		07-DEC-20	R5309082
Fluoride in Water by IC							
Fluoride (F)	0.35	DLHC	0.10	mg/L		04-DEC-20	R5308426
Ion Balance Calculation							
Cation - Anion Balance	-2.1			%		11-DEC-20	
Anion Sum	12.9			meq/L		11-DEC-20	
Cation Sum	12.4			meq/L		11-DEC-20	
Ion Balance Calculation							
Ion Balance	95.9		-100	%		11-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.67	DLHC	0.025	mg/L		04-DEC-20	R5308426
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		04-DEC-20	R5308426
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0078		0.0010	mg/L		04-DEC-20	R5308291
Oxidation redution potential by elect.							
ORP	430		-1000	mV		04-DEC-20	R5308295
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.055	DLM	0.020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC							
Sulfate (SO4)	416	DLHC	1.5	mg/L		04-DEC-20	R5308426
Total Dissolved Solids							
Total Dissolved Solids	777	DLHC	20	mg/L		10-DEC-20	R5311721
Total Suspended Solids							
Total Suspended Solids	37.0		1.0	mg/L		10-DEC-20	R5311296
Turbidity							
Turbidity	26.7		0.10	NTU		04-DEC-20	R5308301
pH							
pH	8.21		0.10	pH		07-DEC-20	R5309082
L2536905-2 GH_LC3_WS_2020-12-07_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 12:55 Matrix: WS							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.81		0.50	mg/L		12-DEC-20	R5314536
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		06-DEC-20	R5308539
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		09-DEC-20	R5309606
Total Organic Carbon	0.72		0.50	mg/L		12-DEC-20	R5314536
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	07-DEC-20	R5309048
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-2 GH_LC3_WS_2020-12-07_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 12:55							
Matrix: WS							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5310107
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	07-DEC-20	R5309048
Antimony (Sb)-Dissolved	0.00399		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Arsenic (As)-Dissolved	0.00026		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Barium (Ba)-Dissolved	0.0284		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Boron (B)-Dissolved	0.014		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cadmium (Cd)-Dissolved	0.496		0.0050	ug/L	06-DEC-20	07-DEC-20	R5309048
Calcium (Ca)-Dissolved	201		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cobalt (Co)-Dissolved	0.77		0.10	ug/L	06-DEC-20	07-DEC-20	R5309048
Copper (Cu)-Dissolved	0.00053		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Lithium (Li)-Dissolved	0.229		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Magnesium (Mg)-Dissolved	125		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Manganese (Mn)-Dissolved	0.00055		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Molybdenum (Mo)-Dissolved	0.0239		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Nickel (Ni)-Dissolved	0.0876		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Potassium (K)-Dissolved	6.87		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Selenium (Se)-Dissolved	48.2		0.050	ug/L	06-DEC-20	07-DEC-20	R5309048
Silicon (Si)-Dissolved	2.26		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Sodium (Na)-Dissolved	12.9		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Strontium (Sr)-Dissolved	0.753		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Thallium (Tl)-Dissolved	0.000050		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Uranium (U)-Dissolved	0.00931		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Zinc (Zn)-Dissolved	0.0391		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Hardness							
Hardness (as CaCO3)	1020		0.50	mg/L		08-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		07-DEC-20	R5309041
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0640		0.0030	mg/L		07-DEC-20	R5309041
Antimony (Sb)-Total	0.00357		0.00010	mg/L		07-DEC-20	R5309041
Arsenic (As)-Total	0.00036		0.00010	mg/L		07-DEC-20	R5309041
Barium (Ba)-Total	0.0303		0.00010	mg/L		07-DEC-20	R5309041
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-DEC-20	R5309041
Boron (B)-Total	0.017		0.010	mg/L		07-DEC-20	R5309041
Cadmium (Cd)-Total	0.534		0.0050	ug/L		07-DEC-20	R5309041
Calcium (Ca)-Total	194		0.050	mg/L		07-DEC-20	R5309041
Chromium (Cr)-Total	0.00014		0.00010	mg/L		07-DEC-20	R5309041
Cobalt (Co)-Total	0.85		0.10	ug/L		07-DEC-20	R5309041
Copper (Cu)-Total	0.00073		0.00050	mg/L		07-DEC-20	R5309041
Iron (Fe)-Total	0.090		0.010	mg/L		07-DEC-20	R5309041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-2 GH_LC3_WS_2020-12-07_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 12:55							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Lead (Pb)-Total	0.000054		0.000050	mg/L		07-DEC-20	R5309041
Lithium (Li)-Total	0.208		0.0010	mg/L		07-DEC-20	R5309041
Magnesium (Mg)-Total	127		0.10	mg/L		07-DEC-20	R5309041
Manganese (Mn)-Total	0.00433		0.00010	mg/L		07-DEC-20	R5309041
Molybdenum (Mo)-Total	0.0227		0.000050	mg/L		07-DEC-20	R5309041
Nickel (Ni)-Total	0.0907		0.00050	mg/L		07-DEC-20	R5309041
Potassium (K)-Total	6.46		0.050	mg/L		07-DEC-20	R5309041
Selenium (Se)-Total	45.7		0.050	ug/L		07-DEC-20	R5309041
Silicon (Si)-Total	2.46		0.10	mg/L		07-DEC-20	R5309041
Silver (Ag)-Total	<0.000010		0.000010	mg/L		07-DEC-20	R5309041
Sodium (Na)-Total	12.7		0.050	mg/L		07-DEC-20	R5309041
Strontium (Sr)-Total	0.684		0.00020	mg/L		07-DEC-20	R5309041
Thallium (Tl)-Total	0.000047		0.000010	mg/L		07-DEC-20	R5309041
Tin (Sn)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-DEC-20	R5309041
Uranium (U)-Total	0.0105		0.000010	mg/L		07-DEC-20	R5309041
Vanadium (V)-Total	0.00061		0.00050	mg/L		07-DEC-20	R5309041
Zinc (Zn)-Total	0.0390		0.0030	mg/L		07-DEC-20	R5309041
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309084
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	282		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Carbonate (as CaCO3)	8.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Total (as CaCO3)	290		1.0	mg/L		07-DEC-20	R5309082
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		05-DEC-20	R5308556
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-DEC-20	R5308426
Chloride in Water by IC							
Chloride (Cl)	3.58	DLHC	0.50	mg/L		04-DEC-20	R5308426
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1490		2.0	uS/cm		07-DEC-20	R5309082
Fluoride in Water by IC							
Fluoride (F)	0.27	DLHC	0.10	mg/L		04-DEC-20	R5308426
Ion Balance Calculation							
Cation - Anion Balance	-0.8			%		11-DEC-20	
Anion Sum	21.4			meq/L		11-DEC-20	
Cation Sum	21.0			meq/L		11-DEC-20	
Ion Balance Calculation							
Ion Balance	98.4		-100	%		11-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	16.2	DLHC	0.025	mg/L		04-DEC-20	R5308426
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		04-DEC-20	R5308426
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		04-DEC-20	R5308291
Oxidation redution potential by elect.							
ORP	464		-1000	mV		04-DEC-20	R5308295
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0030		0.0020	mg/L		08-DEC-20	R5309431

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-2 GH_LC3_WS_2020-12-07_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 12:55 Matrix: WS							
Sulfate in Water by IC Sulfate (SO4)	687	DLHC	1.5	mg/L		04-DEC-20	R5308426
Total Dissolved Solids Total Dissolved Solids	1300	DLHC	20	mg/L		10-DEC-20	R5311721
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		10-DEC-20	R5311296
Turbidity Turbidity	0.57		0.10	NTU		04-DEC-20	R5308301
pH pH	8.33		0.10	pH		07-DEC-20	R5309082
L2536905-3 GH_WC4_WS_2020-12-07_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 13:45 Matrix: WS							
Miscellaneous Parameters Dissolved Organic Carbon	2.13		0.50	mg/L		12-DEC-20	R5314536
Total Kjeldahl Nitrogen	<0.25		0.25	mg/L		06-DEC-20	R5308539
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		09-DEC-20	R5309606
Total Organic Carbon	2.24		0.50	mg/L		14-DEC-20	R5314536
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	06-DEC-20	07-DEC-20	R5309048
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5310107
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	07-DEC-20	R5309048
Antimony (Sb)-Dissolved	0.00158		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Barium (Ba)-Dissolved	0.0481		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Boron (B)-Dissolved	0.025		0.020	mg/L	06-DEC-20	07-DEC-20	R5309048
Cadmium (Cd)-Dissolved	0.035		0.010	ug/L	06-DEC-20	07-DEC-20	R5309048
Calcium (Ca)-Dissolved	303		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	06-DEC-20	07-DEC-20	R5309048
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	06-DEC-20	07-DEC-20	R5309048
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	06-DEC-20	07-DEC-20	R5309048
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Lithium (Li)-Dissolved	0.143		0.0020	mg/L	06-DEC-20	07-DEC-20	R5309048
Magnesium (Mg)-Dissolved	194		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Manganese (Mn)-Dissolved	0.00228		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Molybdenum (Mo)-Dissolved	0.00712		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Nickel (Ni)-Dissolved	0.0777		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Potassium (K)-Dissolved	5.37		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Selenium (Se)-Dissolved	169		0.10	ug/L	06-DEC-20	07-DEC-20	R5309048
Silicon (Si)-Dissolved	3.12		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-DEC-20	07-DEC-20	R5309048
Sodium (Na)-Dissolved	21.0		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Strontium (Sr)-Dissolved	0.816		0.00040	mg/L	06-DEC-20	07-DEC-20	R5309048
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-DEC-20	07-DEC-20	R5309048

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-3 GH_WC4_WS_2020-12-07_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 13:45							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Uranium (U)-Dissolved	0.0142		0.000020	mg/L	06-DEC-20	07-DEC-20	R5309048
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	06-DEC-20	07-DEC-20	R5309048
Hardness							
Hardness (as CaCO3)	1550		0.50	mg/L		08-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		07-DEC-20	R5309041
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0043		0.0030	mg/L		07-DEC-20	R5309041
Antimony (Sb)-Total	0.00148		0.00010	mg/L		07-DEC-20	R5309041
Arsenic (As)-Total	0.00026		0.00010	mg/L		07-DEC-20	R5309041
Barium (Ba)-Total	0.0536		0.00010	mg/L		07-DEC-20	R5309041
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-DEC-20	R5309041
Boron (B)-Total	0.028		0.010	mg/L		07-DEC-20	R5309041
Cadmium (Cd)-Total	0.0418		0.0050	ug/L		07-DEC-20	R5309041
Calcium (Ca)-Total	298		0.050	mg/L		07-DEC-20	R5309041
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Cobalt (Co)-Total	0.19		0.10	ug/L		07-DEC-20	R5309041
Copper (Cu)-Total	<0.00050		0.00050	mg/L		07-DEC-20	R5309041
Iron (Fe)-Total	<0.010		0.010	mg/L		07-DEC-20	R5309041
Lead (Pb)-Total	<0.000050		0.000050	mg/L		07-DEC-20	R5309041
Lithium (Li)-Total	0.126		0.0010	mg/L		07-DEC-20	R5309041
Magnesium (Mg)-Total	215		0.10	mg/L		07-DEC-20	R5309041
Manganese (Mn)-Total	0.00255		0.00010	mg/L		07-DEC-20	R5309041
Molybdenum (Mo)-Total	0.00724		0.000050	mg/L		07-DEC-20	R5309041
Nickel (Ni)-Total	0.0841		0.00050	mg/L		07-DEC-20	R5309041
Potassium (K)-Total	5.65		0.050	mg/L		07-DEC-20	R5309041
Selenium (Se)-Total	176		0.050	ug/L		07-DEC-20	R5309041
Silicon (Si)-Total	3.33		0.10	mg/L		07-DEC-20	R5309041
Silver (Ag)-Total	<0.000010		0.000010	mg/L		07-DEC-20	R5309041
Sodium (Na)-Total	22.9		0.050	mg/L		07-DEC-20	R5309041
Strontium (Sr)-Total	0.819		0.00020	mg/L		07-DEC-20	R5309041
Thallium (Tl)-Total	0.000019		0.000010	mg/L		07-DEC-20	R5309041
Tin (Sn)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-DEC-20	R5309041
Uranium (U)-Total	0.0159		0.000010	mg/L		07-DEC-20	R5309041
Vanadium (V)-Total	<0.00050		0.00050	mg/L		07-DEC-20	R5309041
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		07-DEC-20	R5309041
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309084
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	288		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Total (as CaCO3)	288		1.0	mg/L		07-DEC-20	R5309082
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		05-DEC-20	R5308556
Bromide in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-3 GH_WC4_WS_2020-12-07_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 13:45 Matrix: WS							
Bromide in Water by IC (Low Level) Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-DEC-20	R5308426
Chloride in Water by IC Chloride (Cl)	4.74	DLHC	0.50	mg/L		04-DEC-20	R5308426
Electrical Conductivity (EC) Conductivity (@ 25C)	2300		2.0	uS/cm		07-DEC-20	R5309082
Fluoride in Water by IC Fluoride (F)	0.11	DLHC	0.10	mg/L		04-DEC-20	R5308426
Ion Balance Calculation Ion Balance	93.9		-100	%		11-DEC-20	
Ion Balance Calculation Cation - Anion Balance	-3.1			%		11-DEC-20	
Anion Sum	34.2			meq/L		11-DEC-20	
Cation Sum	32.1			meq/L		11-DEC-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	53.6	DLHC	0.025	mg/L		04-DEC-20	R5308426
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		04-DEC-20	R5308426
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		04-DEC-20	R5308291
Oxidation redution potential by elect. ORP	452		-1000	mV		04-DEC-20	R5308295
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC Sulfate (SO4)	1170	DLHC	1.5	mg/L		04-DEC-20	R5308426
Total Dissolved Solids Total Dissolved Solids	2130	DLHC	40	mg/L		10-DEC-20	R5311721
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		10-DEC-20	R5311296
Turbidity Turbidity	0.25		0.10	NTU		04-DEC-20	R5308301
pH pH	8.28		0.10	pH		07-DEC-20	R5309082
L2536905-4 GH_TC3_WS_2020-12-07_NP Sampled By: AF/JF/HS on 03-DEC-20 @ 14:10 Matrix: WS							
Miscellaneous Parameters Dissolved Organic Carbon	2.85		0.50	mg/L		12-DEC-20	R5314536
Total Kjeldahl Nitrogen	<0.25		0.25	mg/L		06-DEC-20	R5308539
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		09-DEC-20	R5309606
Total Organic Carbon	2.76		0.50	mg/L		12-DEC-20	R5314536
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	07-DEC-20	R5309048
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5310107
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308561
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	07-DEC-20	R5309048

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-4 GH_TC3_WS_2020-12-07_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 14:10							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	0.00014		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Barium (Ba)-Dissolved	0.0690		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Boron (B)-Dissolved	0.020		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cadmium (Cd)-Dissolved	0.0191		0.0050	ug/L	06-DEC-20	07-DEC-20	R5309048
Calcium (Ca)-Dissolved	279		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-DEC-20	07-DEC-20	R5309048
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Lithium (Li)-Dissolved	0.0280		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Magnesium (Mg)-Dissolved	144		0.10	mg/L	06-DEC-20	07-DEC-20	R5309048
Manganese (Mn)-Dissolved	0.00184		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Molybdenum (Mo)-Dissolved	0.00131		0.000050	mg/L	06-DEC-20	07-DEC-20	R5309048
Nickel (Ni)-Dissolved	0.00166		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Potassium (K)-Dissolved	2.06		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Selenium (Se)-Dissolved	167		0.050	ug/L	06-DEC-20	07-DEC-20	R5309048
Silicon (Si)-Dissolved	3.65		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Sodium (Na)-Dissolved	11.9		0.050	mg/L	06-DEC-20	07-DEC-20	R5309048
Strontium (Sr)-Dissolved	0.653		0.00020	mg/L	06-DEC-20	07-DEC-20	R5309048
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	07-DEC-20	R5309048
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	07-DEC-20	R5309048
Uranium (U)-Dissolved	0.00575		0.000010	mg/L	06-DEC-20	07-DEC-20	R5309048
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-DEC-20	07-DEC-20	R5309048
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-DEC-20	07-DEC-20	R5309048
Hardness							
Hardness (as CaCO3)	1290		0.50	mg/L		08-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		07-DEC-20	R5309041
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0119		0.0030	mg/L		07-DEC-20	R5309041
Antimony (Sb)-Total	0.00013		0.00010	mg/L		07-DEC-20	R5309041
Arsenic (As)-Total	0.00020		0.00010	mg/L		07-DEC-20	R5309041
Barium (Ba)-Total	0.0710		0.00010	mg/L		07-DEC-20	R5309041
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-DEC-20	R5309041
Boron (B)-Total	0.023		0.010	mg/L		07-DEC-20	R5309041
Cadmium (Cd)-Total	0.0202		0.0050	ug/L		07-DEC-20	R5309041
Calcium (Ca)-Total	279		0.050	mg/L		07-DEC-20	R5309041
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Cobalt (Co)-Total	<0.10		0.10	ug/L		07-DEC-20	R5309041
Copper (Cu)-Total	<0.00050		0.00050	mg/L		07-DEC-20	R5309041
Iron (Fe)-Total	0.014		0.010	mg/L		07-DEC-20	R5309041
Lead (Pb)-Total	<0.000050		0.000050	mg/L		07-DEC-20	R5309041
Lithium (Li)-Total	0.0264		0.0010	mg/L		07-DEC-20	R5309041
Magnesium (Mg)-Total	151		0.10	mg/L		07-DEC-20	R5309041
Manganese (Mn)-Total	0.00261		0.00010	mg/L		07-DEC-20	R5309041
Molybdenum (Mo)-Total	0.00129		0.000050	mg/L		07-DEC-20	R5309041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536905-4 GH_TC3_WS_2020-12-07_NP							
Sampled By: AF/JF/HS on 03-DEC-20 @ 14:10							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Nickel (Ni)-Total	0.00138		0.00050	mg/L		07-DEC-20	R5309041
Potassium (K)-Total	1.86		0.050	mg/L		07-DEC-20	R5309041
Selenium (Se)-Total	157		0.050	ug/L		07-DEC-20	R5309041
Silicon (Si)-Total	3.79		0.10	mg/L		07-DEC-20	R5309041
Silver (Ag)-Total	<0.000010		0.000010	mg/L		07-DEC-20	R5309041
Sodium (Na)-Total	12.1		0.050	mg/L		07-DEC-20	R5309041
Strontium (Sr)-Total	0.637		0.00020	mg/L		07-DEC-20	R5309041
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		07-DEC-20	R5309041
Tin (Sn)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-DEC-20	R5309041
Uranium (U)-Total	0.00579		0.000010	mg/L		07-DEC-20	R5309041
Vanadium (V)-Total	<0.00050		0.00050	mg/L		07-DEC-20	R5309041
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		07-DEC-20	R5309041
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309084
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	260		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Carbonate (as CaCO3)	4.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-DEC-20	R5309082
Alkalinity, Total (as CaCO3)	264		1.0	mg/L		07-DEC-20	R5309082
Ammonia, Total (as N)							
Ammonia as N	0.0140		0.0050	mg/L		05-DEC-20	R5308556
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		04-DEC-20	R5308426
Chloride in Water by IC							
Chloride (Cl)	16.4	DLHC	0.50	mg/L		04-DEC-20	R5308426
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1850		2.0	uS/cm		07-DEC-20	R5309082
Fluoride in Water by IC							
Fluoride (F)	0.11	DLHC	0.10	mg/L		04-DEC-20	R5308426
Ion Balance Calculation							
Cation - Anion Balance	-1.1			%		11-DEC-20	
Anion Sum	27.0			meq/L		11-DEC-20	
Cation Sum	26.4			meq/L		11-DEC-20	
Ion Balance Calculation							
Ion Balance	97.8		-100	%		11-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	15.4	DLHC	0.025	mg/L		04-DEC-20	R5308426
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0088	DLHC	0.0050	mg/L		04-DEC-20	R5308426
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0047		0.0010	mg/L		04-DEC-20	R5308291
Oxidation redution potential by elect.							
ORP	341		-1000	mV		04-DEC-20	R5308295
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0050		0.0020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC							
Sulfate (SO4)	968	DLHC	1.5	mg/L		04-DEC-20	R5308426
Total Dissolved Solids							
Total Dissolved Solids	1680	DLHC	40	mg/L		10-DEC-20	R5311721
Total Suspended Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SOLIDS-VOLSUS-CL	Water	Volatile Suspended Solids	APHA 2540 E-Gravimetric

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Volatile Suspended Solids (VSS) are determined by filtering a sample through a glass fibre filter, VSS is determined by igniting the filter at 550°C.</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

2020-12-03-WS

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2536905

Report Date: 14-DEC-20

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Client: TECK COAL LIMITED (GREENHILLS)
 BOX 5000
 Elkford BC V0B1H0
 Contact: Jeremy Enns

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5309084							
WG3458050-3	DUP	L2536905-4						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	07-DEC-20
WG3458050-2	LCS		106.8		%		85-115	07-DEC-20
Acidity (as CaCO3)								
WG3458050-1	MB		1.3		mg/L		2	07-DEC-20
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5309082							
WG3458046-5	LCS		103.0		%		85-115	07-DEC-20
Alkalinity, Total (as CaCO3)								
WG3458046-4	MB		<1.0		mg/L		1	07-DEC-20
Alkalinity, Total (as CaCO3)								
BE-T-L-CCMS-VA								
	Water							
Batch	R5309041							
WG3457906-2	LCS		106.6		%		80-120	07-DEC-20
Beryllium (Be)-Total								
WG3457906-1	MB		<0.000020		mg/L		0.00002	07-DEC-20
Beryllium (Be)-Total								
BR-L-IC-N-CL								
	Water							
Batch	R5308426							
WG3457286-10	LCS		104.0		%		85-115	04-DEC-20
Bromide (Br)								
WG3457286-6	LCS		114.8		%		85-115	04-DEC-20
Bromide (Br)								
WG3457286-5	MB		<0.050		mg/L		0.05	04-DEC-20
Bromide (Br)								
WG3457286-9	MB		<0.050		mg/L		0.05	04-DEC-20
Bromide (Br)								
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5314536							
WG3461427-2	LCS		111.0		%		80-120	13-DEC-20
Dissolved Organic Carbon								
WG3461427-1	MB		<0.50		mg/L		0.5	13-DEC-20
Dissolved Organic Carbon								
C-TOT-ORG-LOW-CL								
	Water							

Quality Control Report

Workorder: L2536905

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R5314536							
WG3461427-2	LCS							
Total Organic Carbon			113.4		%		80-120	13-DEC-20
WG3461427-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	13-DEC-20
CL-L-IC-N-CL Water								
Batch	R5308426							
WG3457286-10	LCS							
Chloride (Cl)			105.1		%		85-115	04-DEC-20
WG3457286-6	LCS							
Chloride (Cl)			104.9		%		85-115	04-DEC-20
WG3457286-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-DEC-20
WG3457286-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-DEC-20
EC-L-PCT-CL Water								
Batch	R5309082							
WG3458046-5	LCS							
Conductivity (@ 25C)			96.7		%		90-110	07-DEC-20
WG3458046-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-DEC-20
F-IC-N-CL Water								
Batch	R5308426							
WG3457286-10	LCS							
Fluoride (F)			109.1		%		90-110	04-DEC-20
WG3457286-6	LCS							
Fluoride (F)			106.8		%		90-110	04-DEC-20
WG3457286-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-DEC-20
WG3457286-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-DEC-20
HG-D-CVAA-VA Water								
Batch	R5309746							
WG3459277-3	DUP	L2536905-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	09-DEC-20
WG3459277-2	LCS							
Mercury (Hg)-Dissolved			99.3		%		80-120	09-DEC-20
WG3459277-1	MB	NP						



Quality Control Report

Workorder: L2536905

Report Date: 14-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5309746							
WG3459277-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-DEC-20
HG-T-U-CVAF-VA								
	Water							
Batch	R5309606							
WG3458712-2	LCS							
Mercury (Hg)-Total			96.4		%		80-120	08-DEC-20
WG3458712-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	08-DEC-20
WG3458712-8	MS	L2536905-4						
Mercury (Hg)-Total			72.0		%		70-130	09-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457404-3	DUP	L2536905-1						
Aluminum (Al)-Dissolved			<0.0030	RPD-NA	mg/L	N/A	20	07-DEC-20
Antimony (Sb)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Arsenic (As)-Dissolved			0.00020		mg/L	12	20	07-DEC-20
Barium (Ba)-Dissolved			0.0851		mg/L	1.3	20	07-DEC-20
Bismuth (Bi)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	07-DEC-20
Boron (B)-Dissolved			<0.010	RPD-NA	mg/L	N/A	20	07-DEC-20
Cadmium (Cd)-Dissolved			0.0000360		mg/L	11	20	07-DEC-20
Calcium (Ca)-Dissolved			122		mg/L	5.2	20	07-DEC-20
Chromium (Cr)-Dissolved			0.00026		mg/L	2.5	20	07-DEC-20
Cobalt (Co)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Copper (Cu)-Dissolved			0.0192		mg/L	1.1	20	07-DEC-20
Iron (Fe)-Dissolved			<0.010	RPD-NA	mg/L	N/A	20	07-DEC-20
Lead (Pb)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	07-DEC-20
Lithium (Li)-Dissolved			0.0076		mg/L	3.3	20	07-DEC-20
Magnesium (Mg)-Dissolved			75.3		mg/L	1.0	20	07-DEC-20
Manganese (Mn)-Dissolved			0.00112		mg/L	10	20	07-DEC-20
Molybdenum (Mo)-Dissolved			0.00236		mg/L	0.7	20	07-DEC-20
Nickel (Ni)-Dissolved			0.00086		mg/L	3.6	20	07-DEC-20
Potassium (K)-Dissolved			1.10		mg/L	0.6	20	07-DEC-20
Selenium (Se)-Dissolved			0.0661		mg/L	1.0	20	07-DEC-20
Silicon (Si)-Dissolved			2.36		mg/L	1.3	20	07-DEC-20
Silver (Ag)-Dissolved			<0.000010	RPD-NA	mg/L	N/A	20	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457404-3	DUP	L2536905-1						
Sodium (Na)-Dissolved		0.920	0.910		mg/L	1.1	20	07-DEC-20
Strontium (Sr)-Dissolved		0.144	0.150		mg/L	3.9	20	07-DEC-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-DEC-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-DEC-20
Uranium (U)-Dissolved		0.00426	0.00422		mg/L	0.8	20	07-DEC-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-DEC-20
Zinc (Zn)-Dissolved		0.0030	0.0030		mg/L	0.5	20	07-DEC-20
WG3457404-2	LCS							
Aluminum (Al)-Dissolved			98.6		%		80-120	07-DEC-20
Antimony (Sb)-Dissolved			107.2		%		80-120	07-DEC-20
Arsenic (As)-Dissolved			101.7		%		80-120	07-DEC-20
Barium (Ba)-Dissolved			102.2		%		80-120	07-DEC-20
Bismuth (Bi)-Dissolved			104.3		%		80-120	07-DEC-20
Boron (B)-Dissolved			88.6		%		80-120	07-DEC-20
Cadmium (Cd)-Dissolved			100.5		%		80-120	07-DEC-20
Calcium (Ca)-Dissolved			102.0		%		80-120	07-DEC-20
Chromium (Cr)-Dissolved			103.9		%		80-120	07-DEC-20
Cobalt (Co)-Dissolved			99.4		%		80-120	07-DEC-20
Copper (Cu)-Dissolved			97.9		%		80-120	07-DEC-20
Iron (Fe)-Dissolved			95.9		%		80-120	07-DEC-20
Lead (Pb)-Dissolved			99.3		%		80-120	07-DEC-20
Lithium (Li)-Dissolved			98.6		%		80-120	07-DEC-20
Magnesium (Mg)-Dissolved			97.9		%		80-120	07-DEC-20
Manganese (Mn)-Dissolved			99.9		%		80-120	07-DEC-20
Molybdenum (Mo)-Dissolved			101.8		%		80-120	07-DEC-20
Nickel (Ni)-Dissolved			97.8		%		80-120	07-DEC-20
Potassium (K)-Dissolved			103.0		%		80-120	07-DEC-20
Selenium (Se)-Dissolved			106.9		%		80-120	07-DEC-20
Silicon (Si)-Dissolved			97.8		%		60-140	07-DEC-20
Silver (Ag)-Dissolved			101.0		%		80-120	07-DEC-20
Sodium (Na)-Dissolved			98.4		%		80-120	07-DEC-20
Strontium (Sr)-Dissolved			100.8		%		80-120	07-DEC-20
Thallium (Tl)-Dissolved			102.5		%		80-120	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457404-2	LCS							
Tin (Sn)-Dissolved			100.6		%		80-120	07-DEC-20
Titanium (Ti)-Dissolved			100.6		%		80-120	07-DEC-20
Uranium (U)-Dissolved			96.8		%		80-120	07-DEC-20
Vanadium (V)-Dissolved			101.0		%		80-120	07-DEC-20
Zinc (Zn)-Dissolved			102.0		%		80-120	07-DEC-20
WG3457404-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457404-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
WG3457404-4	MS	L2536905-2						
Aluminum (Al)-Dissolved			95.3		%		70-130	07-DEC-20
Antimony (Sb)-Dissolved			106.5		%		70-130	07-DEC-20
Arsenic (As)-Dissolved			102.9		%		70-130	07-DEC-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Bismuth (Bi)-Dissolved			84.3		%		70-130	07-DEC-20
Boron (B)-Dissolved			90.7		%		70-130	07-DEC-20
Cadmium (Cd)-Dissolved			96.4		%		70-130	07-DEC-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Chromium (Cr)-Dissolved			100.6		%		70-130	07-DEC-20
Cobalt (Co)-Dissolved			92.4		%		70-130	07-DEC-20
Copper (Cu)-Dissolved			89.3		%		70-130	07-DEC-20
Iron (Fe)-Dissolved			96.6		%		70-130	07-DEC-20
Lead (Pb)-Dissolved			91.8		%		70-130	07-DEC-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Manganese (Mn)-Dissolved			97.0		%		70-130	07-DEC-20
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Nickel (Ni)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Silicon (Si)-Dissolved			92.8		%		70-130	07-DEC-20
Silver (Ag)-Dissolved			101.0		%		70-130	07-DEC-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Thallium (Tl)-Dissolved			93.5		%		70-130	07-DEC-20
Tin (Sn)-Dissolved			103.5		%		70-130	07-DEC-20
Titanium (Ti)-Dissolved			101.1		%		70-130	07-DEC-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	07-DEC-20
Vanadium (V)-Dissolved			101.5		%		70-130	07-DEC-20
Zinc (Zn)-Dissolved			95.0		%		70-130	07-DEC-20
MET-T-CCMS-VA								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5309041							
WG3457906-2	LCS							
Aluminum (Al)-Total			105.0		%		80-120	07-DEC-20
Antimony (Sb)-Total			108.4		%		80-120	07-DEC-20
Arsenic (As)-Total			101.1		%		80-120	07-DEC-20
Barium (Ba)-Total			103.9		%		80-120	07-DEC-20
Bismuth (Bi)-Total			103.3		%		80-120	07-DEC-20
Boron (B)-Total			103.0		%		80-120	07-DEC-20
Cadmium (Cd)-Total			94.9		%		80-120	07-DEC-20
Calcium (Ca)-Total			104.8		%		80-120	07-DEC-20
Chromium (Cr)-Total			102.7		%		80-120	07-DEC-20
Cobalt (Co)-Total			102.6		%		80-120	07-DEC-20
Copper (Cu)-Total			101.0		%		80-120	07-DEC-20
Iron (Fe)-Total			97.0		%		80-120	07-DEC-20
Lead (Pb)-Total			104.1		%		80-120	07-DEC-20
Lithium (Li)-Total			99.0		%		80-120	07-DEC-20
Magnesium (Mg)-Total			103.5		%		80-120	07-DEC-20
Manganese (Mn)-Total			101.3		%		80-120	07-DEC-20
Molybdenum (Mo)-Total			104.0		%		80-120	07-DEC-20
Nickel (Ni)-Total			102.7		%		80-120	07-DEC-20
Potassium (K)-Total			99.6		%		80-120	07-DEC-20
Selenium (Se)-Total			98.1		%		80-120	07-DEC-20
Silicon (Si)-Total			102.5		%		80-120	07-DEC-20
Silver (Ag)-Total			97.1		%		80-120	07-DEC-20
Sodium (Na)-Total			108.4		%		80-120	07-DEC-20
Strontium (Sr)-Total			98.4		%		80-120	07-DEC-20
Thallium (Tl)-Total			106.7		%		80-120	07-DEC-20
Tin (Sn)-Total			95.6		%		80-120	07-DEC-20
Titanium (Ti)-Total			101.9		%		80-120	07-DEC-20
Uranium (U)-Total			93.2		%		80-120	07-DEC-20
Vanadium (V)-Total			102.9		%		80-120	07-DEC-20
Zinc (Zn)-Total			99.6		%		80-120	07-DEC-20
WG3457906-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5309041							
WG3457906-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	07-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	07-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	07-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	07-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Silicon (Si)-Total			<0.10		mg/L		0.1	07-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	07-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-DEC-20
NH3-L-F-CL		Water						
Batch	R5308556							
WG3457328-6	LCS							
Ammonia as N			97.1		%		85-115	05-DEC-20
WG3457328-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-DEC-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch	R5308426							
WG3457286-10	LCS							
Nitrite (as N)			105.9		%		90-110	04-DEC-20
WG3457286-6	LCS							
Nitrite (as N)			105.5		%		90-110	04-DEC-20
WG3457286-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-DEC-20
WG3457286-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-DEC-20
NO3-L-IC-N-CL								
Batch	R5308426							
WG3457286-10	LCS							
Nitrate (as N)			105.8		%		90-110	04-DEC-20
WG3457286-6	LCS							
Nitrate (as N)			104.8		%		90-110	04-DEC-20
WG3457286-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-DEC-20
WG3457286-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-DEC-20
ORP-CL								
Batch	R5308295							
WG3457158-1	CRM	CL-ORP						
ORP			220		mV		210-230	04-DEC-20
P-T-L-COL-CL								
Batch	R5309431							
WG3458407-14	LCS							
Phosphorus (P)-Total			103.8		%		80-120	08-DEC-20
WG3458407-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-DEC-20
PH-CL								
Batch	R5309082							
WG3458046-5	LCS							
pH			7.04		pH		6.9-7.1	07-DEC-20
PO4-DO-L-COL-CL								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
Batch R5308291								
WG3456965-7	DUP	L2536905-1						
	Orthophosphate-Dissolved (as P)	0.0078	0.0079		mg/L	1.7	20	04-DEC-20
WG3456965-6	LCS							
	Orthophosphate-Dissolved (as P)		103.0		%		80-120	04-DEC-20
WG3456965-5	MB							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	04-DEC-20
SO4-IC-N-CL								
Batch R5308426								
WG3457286-10	LCS							
	Sulfate (SO4)		106.0		%		90-110	04-DEC-20
WG3457286-6	LCS							
	Sulfate (SO4)		105.9		%		90-110	04-DEC-20
WG3457286-5	MB							
	Sulfate (SO4)		<0.30		mg/L		0.3	04-DEC-20
WG3457286-9	MB							
	Sulfate (SO4)		<0.30		mg/L		0.3	04-DEC-20
SOLIDS-TDS-CL								
Batch R5311721								
WG3459662-6	DUP	L2536905-4						
	Total Dissolved Solids	1680	1650		mg/L	1.6	20	10-DEC-20
WG3459662-5	LCS							
	Total Dissolved Solids		92.5		%		85-115	10-DEC-20
WG3459662-4	MB							
	Total Dissolved Solids		<10		mg/L		10	10-DEC-20
SOLIDS-VOLSUS-CL								
Batch R5308432								
WG3457055-1	MB							
	Volatile Suspended Solids		<10		mg/L		10	05-DEC-20
TKN-L-F-CL								
Batch R5308539								
WG3457360-10	LCS							
	Total Kjeldahl Nitrogen		99.1		%		75-125	06-DEC-20
WG3457360-12	LCS							
	Total Kjeldahl Nitrogen		97.2		%		75-125	06-DEC-20
WG3457360-14	LCS							
	Total Kjeldahl Nitrogen		96.9		%		75-125	06-DEC-20
WG3457360-2	LCS							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5308539							
WG3457360-2	LCS							
Total Kjeldahl Nitrogen			89.6		%		75-125	06-DEC-20
WG3457360-4	LCS							
Total Kjeldahl Nitrogen			97.5		%		75-125	06-DEC-20
WG3457360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
TSS-L-CL		Water						
Batch	R5307498							
WG3456653-2	LCS							
Total Suspended Solids			91.6		%		85-115	04-DEC-20
WG3456653-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-DEC-20
Batch	R5311296							
WG3459677-4	LCS							
Total Suspended Solids			93.8		%		85-115	10-DEC-20
WG3459677-3	MB							
Total Suspended Solids			<1.0		mg/L		1	10-DEC-20
TURBIDITY-CL		Water						
Batch	R5308301							
WG3457154-2	LCS							
Turbidity			96.9		%		85-115	04-DEC-20
WG3457154-5	LCS							
Turbidity			96.9		%		85-115	04-DEC-20
WG3457154-1	MB							
Turbidity			<0.10		NTU		0.1	04-DEC-20
WG3457154-4	MB							
Turbidity			<0.10		NTU		0.1	04-DEC-20

Quality Control Report

Workorder: L2536905

Report Date: 14-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2536905

Report Date: 14-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	03-DEC-20 11:15	04-DEC-20 15:15	0.25	28	hours	EHTR-FM
	2	03-DEC-20 12:55	04-DEC-20 15:15	0.25	26	hours	EHTR-FM
	3	03-DEC-20 13:45	04-DEC-20 15:15	0.25	25	hours	EHTR-FM
	4	03-DEC-20 14:10	04-DEC-20 15:15	0.25	25	hours	EHTR-FM
pH	1	03-DEC-20 11:15	07-DEC-20 13:00	0.25	98	hours	EHTR-FM
	2	03-DEC-20 12:55	07-DEC-20 13:00	0.25	96	hours	EHTR-FM
	3	03-DEC-20 13:45	07-DEC-20 13:00	0.25	95	hours	EHTR-FM
	4	03-DEC-20 14:10	07-DEC-20 13:00	0.25	95	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2536905 were received on 04-DEC-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **2020-12-03-WS** TURNAROUND TIME: **REGULAR** RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Justine Burnaa			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	jeremy.enns@teck.com			Email	Justine.burnaa@alsglobal.com			Email 2:	Heather.stevenson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Can	Email 5:		X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								Email 7:	ashlee.fudge@teck.com	X	X	X
								PO number	684125			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	Fill	Y	Y	N	Y	N	N	N	N	N	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
								Preserv.	H2SO4	HCL	NONE	HNO3	HNO3	NONE	H2SO4			
GH_MW_PC_WG_2020-10-05_NP	GH_MW_PC	WG	N	12/3/2020	11:15	G	6	ALS_Package-DOC	1	1	1	1		1	1			
GH_LC3_WS_2020-12-07_NP	GH_LC3	WS	N	12/3/2020	12:55	G	7	HG-D-CVAF-VA	1	1	1	1	1	1	1			
GH_WC4_WS_2020-12-07_NP	GH_WC4	WS	N	12/3/2020	13:45	G	7	HG-T-U-CVAF-VA	1	1	1	1	1	1	1			
GH_TC3_WS_2020-12-07_NP	GH_TC3	WS	N	12/3/2020	14:10	G	7	TECKCOAL-MET-D-VA	1	1	1	1	1	1	1			
GH_SMC-CL_WW_2020-12-03_NP	GH_SMC-CL	WW	Y	12/3/2020	15:00	G	2	TECKCOAL-MET-T-VA								1	1	
								TECKCOAL-ROUTINE-VA										
								ALS_Package-TKN/TOC										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
RUSH 1 day TAT for GH_SMC-CL	Heather Stevenson		<i>ds</i>	12/8 835
SERVICE REQUEST (rush - subject to availability)				

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	AF/JF/HS	Mobile #	Sampler's Signature	Date/Time	DEC 03 2020
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SNC-Lavalin
ATTN: Mark Newman
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 11-DEC-20
Report Date: 20-DEC-20 12:48 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2539679
Project P.O. #: 672225
Job Reference: GREENHILLS OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2539679-1	L2539679-2		
		Description	WG	WG		
		Sampled Date	10-DEC-20	10-DEC-20		
		Sampled Time	12:45	13:30		
		Client ID	GH_MW_BG1B_W G_2020_12_10_NP	GH_MW_BG1C_W G_2020_12_10_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	497	523			
	Hardness (as CaCO3) (mg/L)	290	287			
	pH (pH)	8.20	8.23			
	ORP (mV)	315	394			
	Total Suspended Solids (mg/L)	9.5	8.3			
	Total Dissolved Solids (mg/L)	278 ^{DLHC}	299 ^{DLHC}			
	Turbidity (NTU)	44.8	32.2			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.4	1.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	290	284			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	290	284			
	Ammonia as N (mg/L)	0.144	0.145			
	Bicarbonate (HCO3) (mg/L)	354	346			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0			
	Chloride (Cl) (mg/L)	0.91	<0.10			
	Fluoride (F) (mg/L)	0.467	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0			
	Ion Balance (%)	103	116			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.307	0.463			
	Total Nitrogen (mg/L)	0.307	0.463			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0116	0.0067			
	Sulfate (SO4) (mg/L)	9.83	<0.30			
	Anion Sum (meq/L)	6.06	5.67			
	Cation Sum (meq/L)	6.24	6.56			
Cation - Anion Balance (%)	1.5	7.3				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.36	3.05			
	Total Organic Carbon (mg/L)	3.21	3.31			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0012	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2539679-1 WG 10-DEC-20 12:45 GH_MW_BG1B_W G_2020_12_10_NP	L2539679-2 WG 10-DEC-20 13:30 GH_MW_BG1C_W G_2020_12_10_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00094	0.00108		
	Barium (Ba)-Dissolved (mg/L)	0.234	0.199		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.015	0.014		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000094	0.0000052		
	Calcium (Ca)-Dissolved (mg/L)	73.8	73.3		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	0.00254	0.00176		
	Copper (Cu)-Dissolved (mg/L)	0.00198	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	3.16	2.82		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0043	0.0050		
	Magnesium (Mg)-Dissolved (mg/L)	25.8	25.2		
	Manganese (Mn)-Dissolved (mg/L)	0.150	0.157		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00943	0.00986		
	Nickel (Ni)-Dissolved (mg/L)	0.00482	0.00392		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.22	1.23		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	3.41	3.46		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	5.04	14.6		
	Strontium (Sr)-Dissolved (mg/L)	0.116	0.174		
	Sulfur (S)-Dissolved (mg/L)	3.33	6.23		
	Thallium (Tl)-Dissolved (mg/L)	0.000042	0.000020		
	Tin (Sn)-Dissolved (mg/L)	0.00051	0.00022		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000292	0.000871		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0064	0.0024		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2539679

Report Date: 20-DEC-20

Page 1 of 9

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Mark Newman

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5319584							
WG3464463-11	LCS							
Acidity (as CaCO3)			105.4		%		85-115	17-DEC-20
WG3464463-10	MB							
Acidity (as CaCO3)			1.4		mg/L		2	17-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5319497							
WG3464423-14	LCS							
Alkalinity, Total (as CaCO3)			102.9		%		85-115	17-DEC-20
WG3464423-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-DEC-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5317634							
WG3462306-6	LCS	TMRM						
Beryllium (Be)-Dissolved			97.3		%		80-120	15-DEC-20
WG3462306-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-DEC-20
BIC-CL								
	Water							
Batch	R5319497							
WG3464423-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5313000							
WG3460962-10	LCS							
Bromide (Br)			107.9		%		85-115	11-DEC-20
WG3460962-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5319769							
WG3464649-2	LCS							
Dissolved Organic Carbon			100.5		%		80-120	18-DEC-20
WG3464649-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-DEC-20
C-TOT-ORG-LOW-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5319769							
WG3464649-2 LCS								
Total Organic Carbon			103.3		%		80-120	18-DEC-20
WG3464649-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	18-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5313000							
WG3460962-10 LCS								
Chloride (Cl)			105.4		%		85-115	11-DEC-20
WG3460962-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	11-DEC-20
CO3-CL	Water							
Batch	R5319497							
WG3464423-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-DEC-20
EC-L-PCT-CL	Water							
Batch	R5319497							
WG3464423-14 LCS								
Conductivity (@ 25C)			103.6		%		90-110	17-DEC-20
WG3464423-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-DEC-20
F-IC-N-CL	Water							
Batch	R5313000							
WG3460962-10 LCS								
Fluoride (F)			103.1		%		90-110	11-DEC-20
WG3460962-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-DEC-20
HG-D-CVAA-CL	Water							
Batch	R5318846							
WG3463460-6 LCS								
Mercury (Hg)-Dissolved			114.0		%		80-120	17-DEC-20
WG3463460-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-DEC-20
MET-D-CCMS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5317634							
WG3462306-6	LCS	TMRM						
Aluminum (Al)-Dissolved			100.2		%		80-120	15-DEC-20
Antimony (Sb)-Dissolved			98.3		%		80-120	15-DEC-20
Arsenic (As)-Dissolved			98.9		%		80-120	15-DEC-20
Barium (Ba)-Dissolved			102.1		%		80-120	15-DEC-20
Bismuth (Bi)-Dissolved			95.4		%		80-120	15-DEC-20
Boron (B)-Dissolved			100.5		%		80-120	15-DEC-20
Cadmium (Cd)-Dissolved			99.4		%		80-120	15-DEC-20
Calcium (Ca)-Dissolved			100.3		%		80-120	15-DEC-20
Chromium (Cr)-Dissolved			100.2		%		80-120	15-DEC-20
Cobalt (Co)-Dissolved			98.7		%		80-120	15-DEC-20
Copper (Cu)-Dissolved			97.2		%		80-120	15-DEC-20
Iron (Fe)-Dissolved			101.4		%		80-120	15-DEC-20
Lead (Pb)-Dissolved			98.5		%		80-120	15-DEC-20
Lithium (Li)-Dissolved			102.0		%		80-120	15-DEC-20
Magnesium (Mg)-Dissolved			101.4		%		80-120	15-DEC-20
Manganese (Mn)-Dissolved			99.3		%		80-120	15-DEC-20
Molybdenum (Mo)-Dissolved			100.7		%		80-120	15-DEC-20
Nickel (Ni)-Dissolved			98.0		%		80-120	15-DEC-20
Phosphorus (P)-Dissolved			97.0		%		70-130	15-DEC-20
Potassium (K)-Dissolved			98.6		%		80-120	15-DEC-20
Selenium (Se)-Dissolved			95.0		%		80-120	15-DEC-20
Silicon (Si)-Dissolved			98.8		%		60-140	15-DEC-20
Silver (Ag)-Dissolved			102.9		%		80-120	15-DEC-20
Sodium (Na)-Dissolved			101.8		%		80-120	15-DEC-20
Strontium (Sr)-Dissolved			107.8		%		80-120	15-DEC-20
Sulfur (S)-Dissolved			100.3		%		80-120	15-DEC-20
Thallium (Tl)-Dissolved			97.5		%		80-120	15-DEC-20
Tin (Sn)-Dissolved			98.1		%		80-120	15-DEC-20
Titanium (Ti)-Dissolved			95.4		%		80-120	15-DEC-20
Uranium (U)-Dissolved			102.7		%		80-120	15-DEC-20
Vanadium (V)-Dissolved			99.4		%		80-120	15-DEC-20
Zinc (Zn)-Dissolved			95.6		%		80-120	15-DEC-20
Zirconium (Zr)-Dissolved			99.0		%		80-120	15-DEC-20
WG3462306-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5317634							
WG3462306-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-DEC-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	15-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-DEC-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5319315							
WG3464283-10	LCS							
Ammonia as N			98.6		%		85-115	18-DEC-20
WG3464283-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-20
NO2-L-IC-N-CL	Water							
Batch	R5313000							
WG3460962-10	LCS							
Nitrite (as N)			105.2		%		90-110	11-DEC-20
WG3460962-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5313000							
WG3460962-10	LCS							
Nitrate (as N)			106.6		%		90-110	11-DEC-20
WG3460962-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-20
OH-CL	Water							
Batch	R5319497							
WG3464423-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-DEC-20
ORP-CL	Water							
Batch	R5319506							
WG3464454-3	CRM	CL-ORP						
ORP			224		mV		210-230	18-DEC-20
P-T-L-COL-CL	Water							
Batch	R5317617							
WG3462296-2	LCS							
Phosphorus (P)-Total			100.8		%		80-120	15-DEC-20
WG3462296-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-20
PH-CL	Water							
Batch	R5319497							
WG3464423-14	LCS							
pH			7.00		pH		6.9-7.1	17-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5312789							
WG3460863-14 LCS								
Orthophosphate-Dissolved (as P)			100.3		%		80-120	11-DEC-20
WG3460863-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-20
SO4-IC-N-CL	Water							
Batch	R5313000							
WG3460962-10 LCS								
Sulfate (SO4)			103.4		%		90-110	11-DEC-20
WG3460962-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5319384							
WG3463284-11 LCS								
Total Dissolved Solids			98.2		%		85-115	17-DEC-20
WG3463284-10 MB								
Total Dissolved Solids			<10		mg/L		10	17-DEC-20
TKN-L-F-CL	Water							
Batch	R5317701							
WG3462410-10 LCS								
Total Kjeldahl Nitrogen			101.8		%		75-125	15-DEC-20
WG3462410-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-DEC-20
WG3462410-6 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	15-DEC-20
WG3462410-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
WG3462410-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
WG3462410-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
TSS-L-CL	Water							
Batch	R5319152							
WG3463283-8 LCS								
Total Suspended Solids			91.7		%		85-115	17-DEC-20
WG3463283-7 MB								
Total Suspended Solids			<1.0		mg/L		1	17-DEC-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R5313536							
WG3461040-12	DUP	L2539679-1						
Turbidity		44.8	44.9		NTU	0.2	15	12-DEC-20
WG3461040-11	LCS							
Turbidity			95.9		%		85-115	12-DEC-20
WG3461040-10	MB							
Turbidity			<0.10		NTU		0.1	12-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	10-DEC-20 12:45	18-DEC-20 12:30	0.25	192	hours	EHTR-FM
	2	10-DEC-20 13:30	18-DEC-20 12:30	0.25	191	hours	EHTR-FM
pH	1	10-DEC-20 12:45	17-DEC-20 19:00	0.25	174	hours	EHTR-FM
	2	10-DEC-20 13:30	17-DEC-20 19:00	0.25	174	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2539679 were received on 11-DEC-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Line Creek Operations





TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 08-JAN-20
Report Date: 15-JAN-20 16:56 (MT)
Version: FINAL

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2403428
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATIONS
C of C Numbers: LCO_PIZP1103_WG_Q1
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403428-1 LC_PIZP1103_WG_Q1_2020_N							
Sampled By: KC/DT on 07-JAN-20 @ 11:23							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	4.33		0.50	mg/L		10-JAN-20	R4966678
Total Kjeldahl Nitrogen	0.260		0.050	mg/L		09-JAN-20	R4965916
Total Organic Carbon	4.13		0.50	mg/L		10-JAN-20	R4966678
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-JAN-20	10-JAN-20	R4966413
Dissolved Metals Filtration Location	FIELD					10-JAN-20	R4966135
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-JAN-20	09-JAN-20	R4965176
Dissolved Mercury Filtration Location	FIELD					09-JAN-20	R4965954
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-JAN-20	R4966135
Aluminum (Al)-Dissolved	0.0033		0.0030	mg/L	10-JAN-20	10-JAN-20	R4966413
Antimony (Sb)-Dissolved	0.00033		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Arsenic (As)-Dissolved	0.00085		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Barium (Ba)-Dissolved	0.0685		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-JAN-20	10-JAN-20	R4966413
Boron (B)-Dissolved	0.467		0.010	mg/L	10-JAN-20	10-JAN-20	R4966413
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-JAN-20	10-JAN-20	R4966413
Calcium (Ca)-Dissolved	28.9		0.050	mg/L	10-JAN-20	10-JAN-20	R4966413
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Cobalt (Co)-Dissolved	0.53		0.10	ug/L	10-JAN-20	10-JAN-20	R4966413
Copper (Cu)-Dissolved	0.00052		0.00020	mg/L	10-JAN-20	10-JAN-20	R4966413
Iron (Fe)-Dissolved	0.122		0.010	mg/L	10-JAN-20	10-JAN-20	R4966413
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JAN-20	10-JAN-20	R4966413
Lithium (Li)-Dissolved	0.115		0.0010	mg/L	10-JAN-20	10-JAN-20	R4966413
Magnesium (Mg)-Dissolved	15.6		0.10	mg/L	10-JAN-20	10-JAN-20	R4966413
Manganese (Mn)-Dissolved	0.590		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Molybdenum (Mo)-Dissolved	0.00565		0.000050	mg/L	10-JAN-20	10-JAN-20	R4966413
Nickel (Ni)-Dissolved	0.00235		0.00050	mg/L	10-JAN-20	10-JAN-20	R4966413
Potassium (K)-Dissolved	1.61		0.050	mg/L	10-JAN-20	10-JAN-20	R4966413
Selenium (Se)-Dissolved	0.639	DTSE	0.050	ug/L	10-JAN-20	10-JAN-20	R4966413
Silicon (Si)-Dissolved	4.43		0.050	mg/L	10-JAN-20	10-JAN-20	R4966413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-JAN-20	10-JAN-20	R4966413
Sodium (Na)-Dissolved	133		0.050	mg/L	10-JAN-20	10-JAN-20	R4966413
Strontium (Sr)-Dissolved	0.795		0.00020	mg/L	10-JAN-20	10-JAN-20	R4966413
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-JAN-20	10-JAN-20	R4966413
Tin (Sn)-Dissolved	0.00017		0.00010	mg/L	10-JAN-20	10-JAN-20	R4966413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-JAN-20	10-JAN-20	R4966413
Uranium (U)-Dissolved	0.00169		0.000010	mg/L	10-JAN-20	10-JAN-20	R4966413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-JAN-20	10-JAN-20	R4966413
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	10-JAN-20	10-JAN-20	R4966413
Hardness							
Hardness (as CaCO3)	137		0.50	mg/L		10-JAN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		10-JAN-20	R4966574
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0921		0.0030	mg/L		10-JAN-20	R4966574
Antimony (Sb)-Total	0.00067		0.00010	mg/L		10-JAN-20	R4966574
Arsenic (As)-Total	0.00092		0.00010	mg/L		10-JAN-20	R4966574

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403428-1 LC_PIZP1103_WG_Q1_2020_N							
Sampled By: KC/DT on 07-JAN-20 @ 11:23							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Barium (Ba)-Total	0.0660		0.00010	mg/L		10-JAN-20	R4966574
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		10-JAN-20	R4966574
Boron (B)-Total	0.527		0.010	mg/L		10-JAN-20	R4966574
Cadmium (Cd)-Total	0.0129		0.0050	ug/L		10-JAN-20	R4966574
Calcium (Ca)-Total	30.4		0.050	mg/L		10-JAN-20	R4966574
Chromium (Cr)-Total	0.00033		0.00010	mg/L		10-JAN-20	R4966574
Cobalt (Co)-Total	0.80		0.10	ug/L		10-JAN-20	R4966574
Copper (Cu)-Total	0.00709		0.00050	mg/L		10-JAN-20	R4966574
Iron (Fe)-Total	0.257		0.010	mg/L		10-JAN-20	R4966574
Lead (Pb)-Total	0.000654		0.000050	mg/L		10-JAN-20	R4966574
Lithium (Li)-Total	0.113		0.0010	mg/L		10-JAN-20	R4966574
Magnesium (Mg)-Total	14.3		0.10	mg/L		10-JAN-20	R4966574
Manganese (Mn)-Total	0.619		0.00010	mg/L		10-JAN-20	R4966574
Molybdenum (Mo)-Total	0.00769		0.000050	mg/L		10-JAN-20	R4966574
Nickel (Ni)-Total	0.00287		0.00050	mg/L		10-JAN-20	R4966574
Potassium (K)-Total	1.60		0.050	mg/L		10-JAN-20	R4966574
Selenium (Se)-Total	<0.050		0.050	ug/L		10-JAN-20	R4966574
Silicon (Si)-Total	4.51		0.10	mg/L		10-JAN-20	R4966574
Silver (Ag)-Total	<0.000010		0.000010	mg/L		10-JAN-20	R4966574
Sodium (Na)-Total	129		0.050	mg/L		10-JAN-20	R4966574
Strontium (Sr)-Total	0.801		0.00020	mg/L		10-JAN-20	R4966574
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		10-JAN-20	R4966574
Tin (Sn)-Total	0.00042		0.00010	mg/L		10-JAN-20	R4966574
Titanium (Ti)-Total	<0.010		0.010	mg/L		10-JAN-20	R4966574
Uranium (U)-Total	0.00144		0.000010	mg/L		10-JAN-20	R4966574
Vanadium (V)-Total	<0.00050		0.00050	mg/L		10-JAN-20	R4966574
Zinc (Zn)-Total	0.0234		0.0030	mg/L		10-JAN-20	R4966574
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	14.4		1.0	mg/L		08-JAN-20	R4965767
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	417		1.0	mg/L		08-JAN-20	R4965689
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-JAN-20	R4965689
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-JAN-20	R4965689
Alkalinity, Total (as CaCO3)	417		1.0	mg/L		08-JAN-20	R4965689
Ammonia, Total (as N)							
Ammonia as N	0.0441		0.0050	mg/L		08-JAN-20	R4965508
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.126		0.050	mg/L		08-JAN-20	R4965841
Chloride in Water by IC							
Chloride (Cl)	3.46		0.50	mg/L		08-JAN-20	R4965841
Electrical Conductivity (EC)							
Conductivity (@ 25C)	728		2.0	uS/cm		08-JAN-20	R4965689
Fluoride in Water by IC							
Fluoride (F)	0.403		0.020	mg/L		08-JAN-20	R4965841
Ion Balance Calculation							
Cation - Anion Balance	-2.2			%		10-JAN-20	
Anion Sum	8.95			meq/L		10-JAN-20	
Cation Sum	8.57			meq/L		10-JAN-20	
Ion Balance Calculation							
Ion Balance	95.7		-100	%		10-JAN-20	
Nitrate in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403428-1 LC_PIZP1103_WG_Q1_2020_N Sampled By: KC/DT on 07-JAN-20 @ 11:23 Matrix: WG							
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.0131		0.0050	mg/L		08-JAN-20	R4965841
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		08-JAN-20	R4965841
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0142		0.0010	mg/L		08-JAN-20	R4964749
Oxidation redution potential by elect. ORP	217		-1000	mV		10-JAN-20	R4966797
Phosphorus (P)-Total Phosphorus (P)-Total	0.0327		0.0020	mg/L		09-JAN-20	R4965796
Sulfate in Water by IC Sulfate (SO4)	23.9		0.30	mg/L		08-JAN-20	R4965841
Total Dissolved Solids Total Dissolved Solids	462	DLHC	20	mg/L		12-JAN-20	R4967184
Total Suspended Solids Total Suspended Solids	4.9		1.0	mg/L		12-JAN-20	R4967187
Turbidity Turbidity	4.74		0.10	NTU		08-JAN-20	R4965852
pH pH	7.77		0.10	pH		08-JAN-20	R4965689
L2403428-2 LC_LC11_WW_2020-01-06_N Sampled By: KC/DT on 07-JAN-20 @ 13:45 Matrix: WW							
Miscellaneous Parameters Biochemical Oxygen Demand	95	BODQ	20	mg/L		10-JAN-20	R4970247
Total Suspended Solids	24.0		1.0	mg/L		08-JAN-20	R4965842

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
BODQ	BOD Qualification: Lab Control Sample outside standard 85-115% objective (see QC report). Sample(s) cannot be rerun due to hold time expiry.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_PIZP1103_WG_Q1

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2403428

Report Date: 15-JAN-20

Page 1 of 10

Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0
 Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4965767							
WG3255119-8	LCS							
Acidity (as CaCO3)			99.5		%		85-115	08-JAN-20
WG3255119-7	MB							
Acidity (as CaCO3)			1.2		mg/L		2	08-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4965689							
WG3255020-8	LCS							
Alkalinity, Total (as CaCO3)			103.4		%		85-115	08-JAN-20
WG3255020-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4966413							
WG3255548-2	LCS							
Beryllium (Be)-Dissolved			103.0		%		80-120	10-JAN-20
WG3255548-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JAN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4966574							
WG3255818-2	LCS							
Beryllium (Be)-Total			93.9		%		80-120	10-JAN-20
WG3255818-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	10-JAN-20
BOD-BC-CL								
	Water							
Batch	R4970247							
WG3258313-2	LCS							
Biochemical Oxygen Demand			78.6	LCS-ND	%		85-115	10-JAN-20
WG3258313-1	MB							
Biochemical Oxygen Demand			<2.0		mg/L		2	10-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4965841							
WG3255192-6	LCS							
Bromide (Br)			103.7		%		85-115	08-JAN-20
WG3255192-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-JAN-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2403428

Report Date: 15-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4966678							
WG3256113-6 LCS								
Dissolved Organic Carbon			89.1		%		80-120	10-JAN-20
WG3256113-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-JAN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4966678							
WG3256113-6 LCS								
Total Organic Carbon			92.5		%		80-120	10-JAN-20
WG3256113-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	10-JAN-20
CL-IC-N-CL	Water							
Batch	R4965841							
WG3255192-6 LCS								
Chloride (Cl)			98.0		%		90-110	08-JAN-20
WG3255192-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-JAN-20
EC-L-PCT-CL	Water							
Batch	R4965689							
WG3255020-8 LCS								
Conductivity (@ 25C)			94.8		%		90-110	08-JAN-20
WG3255020-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-JAN-20
F-IC-N-CL	Water							
Batch	R4965841							
WG3255192-6 LCS								
Fluoride (F)			105.8		%		90-110	08-JAN-20
WG3255192-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	08-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4965176							
WG3255314-2 LCS								
Mercury (Hg)-Dissolved			101.0		%		80-120	09-JAN-20
WG3255314-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-JAN-20
WG3255314-4 MS		L2403428-1						
Mercury (Hg)-Dissolved			99.3		%		70-130	09-JAN-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2403428

Report Date: 15-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4966413							
WG3255548-2	LCS							
Aluminum (Al)-Dissolved			102.1		%		80-120	10-JAN-20
Antimony (Sb)-Dissolved			102.4		%		80-120	10-JAN-20
Arsenic (As)-Dissolved			107.4		%		80-120	10-JAN-20
Barium (Ba)-Dissolved			102.9		%		80-120	10-JAN-20
Bismuth (Bi)-Dissolved			105.1		%		80-120	10-JAN-20
Boron (B)-Dissolved			105.2		%		80-120	10-JAN-20
Cadmium (Cd)-Dissolved			104.3		%		80-120	10-JAN-20
Calcium (Ca)-Dissolved			103.8		%		80-120	10-JAN-20
Chromium (Cr)-Dissolved			103.7		%		80-120	10-JAN-20
Cobalt (Co)-Dissolved			106.4		%		80-120	10-JAN-20
Copper (Cu)-Dissolved			103.2		%		80-120	10-JAN-20
Iron (Fe)-Dissolved			101.7		%		80-120	10-JAN-20
Lead (Pb)-Dissolved			111.1		%		80-120	10-JAN-20
Lithium (Li)-Dissolved			102.0		%		80-120	10-JAN-20
Magnesium (Mg)-Dissolved			105.9		%		80-120	10-JAN-20
Manganese (Mn)-Dissolved			103.2		%		80-120	10-JAN-20
Molybdenum (Mo)-Dissolved			107.5		%		80-120	10-JAN-20
Nickel (Ni)-Dissolved			104.2		%		80-120	10-JAN-20
Potassium (K)-Dissolved			103.5		%		80-120	10-JAN-20
Selenium (Se)-Dissolved			104.3		%		80-120	10-JAN-20
Silicon (Si)-Dissolved			110.0		%		60-140	10-JAN-20
Silver (Ag)-Dissolved			104.6		%		80-120	10-JAN-20
Sodium (Na)-Dissolved			108.7		%		80-120	10-JAN-20
Strontium (Sr)-Dissolved			106.8		%		80-120	10-JAN-20
Thallium (Tl)-Dissolved			103.0		%		80-120	10-JAN-20
Tin (Sn)-Dissolved			102.9		%		80-120	10-JAN-20
Titanium (Ti)-Dissolved			95.9		%		80-120	10-JAN-20
Uranium (U)-Dissolved			109.7		%		80-120	10-JAN-20
Vanadium (V)-Dissolved			106.5		%		80-120	10-JAN-20
Zinc (Zn)-Dissolved			102.0		%		80-120	10-JAN-20
WG3255548-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20



Quality Control Report

Workorder: L2403428

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4966413							
WG325548-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JAN-20
MET-T-CCMS-VA								
	Water							
Batch	R4966574							
WG3255818-2	LCS							
Aluminum (Al)-Total			101.8		%		80-120	10-JAN-20
Antimony (Sb)-Total			102.2		%		80-120	10-JAN-20
Arsenic (As)-Total			100.6		%		80-120	10-JAN-20
Barium (Ba)-Total			101.1		%		80-120	10-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4966574							
WG3255818-2	LCS							
Bismuth (Bi)-Total			93.1		%		80-120	10-JAN-20
Boron (B)-Total			96.3		%		80-120	10-JAN-20
Cadmium (Cd)-Total			97.6		%		80-120	10-JAN-20
Calcium (Ca)-Total			104.2		%		80-120	10-JAN-20
Chromium (Cr)-Total			97.8		%		80-120	10-JAN-20
Cobalt (Co)-Total			100.3		%		80-120	10-JAN-20
Copper (Cu)-Total			98.7		%		80-120	10-JAN-20
Iron (Fe)-Total			99.2		%		80-120	10-JAN-20
Lead (Pb)-Total			95.8		%		80-120	10-JAN-20
Lithium (Li)-Total			90.1		%		80-120	10-JAN-20
Magnesium (Mg)-Total			98.3		%		80-120	10-JAN-20
Manganese (Mn)-Total			103.2		%		80-120	10-JAN-20
Molybdenum (Mo)-Total			102.4		%		80-120	10-JAN-20
Nickel (Ni)-Total			97.4		%		80-120	10-JAN-20
Potassium (K)-Total			102.2		%		80-120	10-JAN-20
Selenium (Se)-Total			99.1		%		80-120	10-JAN-20
Silicon (Si)-Total			105.8		%		80-120	10-JAN-20
Silver (Ag)-Total			98.3		%		80-120	10-JAN-20
Sodium (Na)-Total			98.0		%		80-120	10-JAN-20
Strontium (Sr)-Total			98.5		%		80-120	10-JAN-20
Thallium (Tl)-Total			93.9		%		80-120	10-JAN-20
Tin (Sn)-Total			97.1		%		80-120	10-JAN-20
Titanium (Ti)-Total			95.3		%		80-120	10-JAN-20
Uranium (U)-Total			91.5		%		80-120	10-JAN-20
Vanadium (V)-Total			100.0		%		80-120	10-JAN-20
Zinc (Zn)-Total			97.5		%		80-120	10-JAN-20
WG3255818-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	10-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JAN-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	10-JAN-20



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Workorder: L2403428

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4966574							
WG3255818-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	10-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JAN-20
NH3-L-F-CL		Water						
Batch	R4965508							
WG3253930-14	LCS							
Ammonia as N			98.5		%		85-115	08-JAN-20
WG3253930-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	08-JAN-20
NO2-L-IC-N-CL		Water						
Batch	R4965841							
WG3255192-6	LCS							
Nitrite (as N)			100.8		%		90-110	08-JAN-20
WG3255192-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R4965841							
WG3255192-6	LCS							
Nitrate (as N)			99.1		%		90-110	08-JAN-20
WG3255192-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-JAN-20
ORP-CL	Water							
Batch	R4966797							
WG3256345-1	CRM	CL-ORP						
ORP			222		mV		210-230	10-JAN-20
P-T-L-COL-CL	Water							
Batch	R4965796							
WG3255155-6	LCS							
Phosphorus (P)-Total			101.9		%		80-120	09-JAN-20
WG3255155-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-JAN-20
PH-CL	Water							
Batch	R4965689							
WG3255020-8	LCS							
pH			7.01		pH		6.9-7.1	08-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4964749							
WG3254612-7	DUP	L2403428-1						
Orthophosphate-Dissolved (as P)		0.0142	0.0165		mg/L	15	20	08-JAN-20
WG3254612-6	LCS							
Orthophosphate-Dissolved (as P)			103.1		%		80-120	08-JAN-20
WG3254612-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-JAN-20
SO4-IC-N-CL	Water							
Batch	R4965841							
WG3255192-6	LCS							
Sulfate (SO4)			99.2		%		90-110	08-JAN-20
WG3255192-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-JAN-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R4967184							
WG3256446-6	DUP	L2403428-1						
Total Dissolved Solids		462	462		mg/L	0.0	20	12-JAN-20
WG3256446-5	LCS							
Total Dissolved Solids			102.5		%		85-115	12-JAN-20
WG3256446-4	MB							
Total Dissolved Solids			<10		mg/L		10	12-JAN-20
TKN-L-F-CL								
Water								
Batch	R4965916							
WG3255066-14	LCS							
Total Kjeldahl Nitrogen			96.5		%		75-125	09-JAN-20
WG3255066-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-JAN-20
TSS-L-CL								
Water								
Batch	R4965842							
WG3254415-6	LCS							
Total Suspended Solids			104.8		%		85-115	08-JAN-20
WG3254415-5	MB							
Total Suspended Solids			<1.0		mg/L		1	08-JAN-20
Batch	R4967187							
WG3256421-4	LCS							
Total Suspended Solids			98.0		%		85-115	12-JAN-20
WG3256421-3	MB							
Total Suspended Solids			<1.0		mg/L		1	12-JAN-20
TURBIDITY-CL								
Water								
Batch	R4965852							
WG3254698-9	DUP	L2403428-1						
Turbidity		4.74	4.79		NTU	1.0	15	08-JAN-20
WG3254698-8	LCS							
Turbidity			103.0		%		85-115	08-JAN-20
WG3254698-7	MB							
Turbidity			<0.10		NTU		0.1	08-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-JAN-20 11:23	10-JAN-20 10:00	0.25	71	hours	EHTR-FM
pH	1	07-JAN-20 11:23	08-JAN-20 12:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2403428 were received on 08-JAN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: LCO_P1ZP1103_WG_Q1_2020-01-07		TURNAROUND TIME:			RUSH:							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets		Email 1:	carla.frymanparter@teck.com		x		
Email	Chris.Blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	teckcoal@equisonline.com			x	
Address	Box 2003			Address	2559 29 Street NE		Email 3:	drake.tymstra@teck.com		x	x	
	15km North Hwy 43						Email 4:	kirsten.campbell@teck.com		x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kennedy.allen@teck.com		x	x
Postal Code	VOB 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada		PO number	VPO00680643
Phone Number	250-425-3196			Phone Number	403 407 1794							

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	HG-T-U-CVAF-VA	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH	ALS_Package-Bromate	ALS_Package-Sulfide-T	TSS	
L.C_P1ZP1103_WG_Q1_2020_N	L.C_P1ZP1103	WG	No	2020/01/07	11:23	G	6			X	X	X	X	X	X					
LC_LC11_WW_2020-01-06_N	LC_LC11	WW	No	2020/01/07	13:45	G	1													X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORWARD METALS SAMPLES TO ALS-BU (NABM) FOR ANALYSIS	D.Tymstra/K.Campbell	7-Jan	<i>Dk</i> / <i>1/8</i> <i>2020</i>	January 7, 2020

SERVICE REQUEST (rush subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	K. Campbell/D. Tymstra	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			January 7, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

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TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 24-JAN-20
Report Date: 02-FEB-21 17:01 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2409421
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LCO_PIZP1105
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2409421-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409421-1 LC_PIZP1105_WG_Q1-2020_N							
Sampled By: D. NICHOLAS on 23-JAN-20 @ 12:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	573		5.0	mg/L		28-JAN-20	R4983052
Carbonate (CO3)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Dissolved Organic Carbon	0.88		0.50	mg/L		24-JAN-20	R4979529
Hydroxide (OH)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Total Kjeldahl Nitrogen	2.67	DLM	0.10	mg/L		25-JAN-20	R4979597
Total Organic Carbon	20	DLM	10	mg/L		24-JAN-20	R4979529
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	30-JAN-20	01-FEB-20	R4986393
EPH19-32	<0.25		0.25	mg/L	30-JAN-20	01-FEB-20	R4986393
Surrogate: 2-Bromobenzotrifluoride	78.6		60-140	%	30-JAN-20	01-FEB-20	R4986393
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		02-FEB-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	30-JAN-20	01-FEB-20	R4986393
Surrogate: 2-Bromobenzotrifluoride	78.6		60-140	%	30-JAN-20	01-FEB-20	R4986393
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-JAN-20	30-JAN-20	R4983771
Dissolved Metals Filtration Location	FIELD					29-JAN-20	R4982840
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-20	29-JAN-20	R4982896
Dissolved Mercury Filtration Location	FIELD					29-JAN-20	R4983330
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					29-JAN-20	R4982840
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-JAN-20	30-JAN-20	R4983771
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771
Barium (Ba)-Dissolved	0.0896		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-20	30-JAN-20	R4983771
Boron (B)-Dissolved	0.019		0.010	mg/L	29-JAN-20	30-JAN-20	R4983771
Cadmium (Cd)-Dissolved	0.0597		0.0050	ug/L	29-JAN-20	30-JAN-20	R4983771
Calcium (Ca)-Dissolved	172		0.050	mg/L	29-JAN-20	30-JAN-20	R4983771
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771
Cobalt (Co)-Dissolved	0.11		0.10	ug/L	29-JAN-20	30-JAN-20	R4983771
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	29-JAN-20	30-JAN-20	R4983771
Iron (Fe)-Dissolved	0.012		0.010	mg/L	29-JAN-20	30-JAN-20	R4983771
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-20	30-JAN-20	R4983771
Lithium (Li)-Dissolved	0.0173		0.0010	mg/L	29-JAN-20	30-JAN-20	R4983771
Magnesium (Mg)-Dissolved	49.4		0.10	mg/L	29-JAN-20	30-JAN-20	R4983771
Manganese (Mn)-Dissolved	0.0152		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771
Molybdenum (Mo)-Dissolved	0.000245		0.000050	mg/L	29-JAN-20	30-JAN-20	R4983771
Nickel (Ni)-Dissolved	0.00064		0.00050	mg/L	29-JAN-20	30-JAN-20	R4983771
Potassium (K)-Dissolved	1.79		0.050	mg/L	29-JAN-20	30-JAN-20	R4983771
Selenium (Se)-Dissolved	0.411		0.050	ug/L	29-JAN-20	30-JAN-20	R4983771
Silicon (Si)-Dissolved	4.73		0.050	mg/L	29-JAN-20	30-JAN-20	R4983771
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-JAN-20	30-JAN-20	R4983771
Sodium (Na)-Dissolved	13.7		0.050	mg/L	29-JAN-20	30-JAN-20	R4983771
Strontium (Sr)-Dissolved	0.376		0.00020	mg/L	29-JAN-20	30-JAN-20	R4983771
Thallium (Tl)-Dissolved	0.000025		0.000010	mg/L	29-JAN-20	30-JAN-20	R4983771
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	29-JAN-20	30-JAN-20	R4983771

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409421-1 LC_PIZP1105_WG_Q1-2020_N							
Sampled By: D. NICHOLAS on 23-JAN-20 @ 12:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-JAN-20	30-JAN-20	R4983771
Uranium (U)-Dissolved	0.000414		0.000010	mg/L	29-JAN-20	30-JAN-20	R4983771
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-JAN-20	30-JAN-20	R4983771
Zinc (Zn)-Dissolved	0.0037		0.0010	mg/L	29-JAN-20	30-JAN-20	R4983771
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	632		0.50	mg/L		30-JAN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	2.17		0.020	ug/L		30-JAN-20	R4983771
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.000282		0.000025	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	32.0		0.0030	mg/L		30-JAN-20	R4983771
Antimony (Sb)-Total	0.00166		0.00010	mg/L		30-JAN-20	R4983771
Arsenic (As)-Total	0.0220		0.00010	mg/L		30-JAN-20	R4983771
Barium (Ba)-Total	1.10		0.00010	mg/L		30-JAN-20	R4983771
Bismuth (Bi)-Total	0.000499		0.000050	mg/L		30-JAN-20	R4983771
Boron (B)-Total	0.054		0.010	mg/L		30-JAN-20	R4983771
Cadmium (Cd)-Total	5.21		0.0050	ug/L		30-JAN-20	R4983771
Calcium (Ca)-Total	421		0.050	mg/L		30-JAN-20	R4983771
Chromium (Cr)-Total	0.0615		0.00010	mg/L		30-JAN-20	R4983771
Cobalt (Co)-Total	29.2		0.10	ug/L		30-JAN-20	R4983771
Copper (Cu)-Total	0.0745		0.00050	mg/L		30-JAN-20	R4983771
Iron (Fe)-Total	69.1		0.010	mg/L		30-JAN-20	R4983771
Lead (Pb)-Total	0.0306		0.000050	mg/L		30-JAN-20	R4983771
Lithium (Li)-Total	0.0617		0.0010	mg/L		30-JAN-20	R4983771
Magnesium (Mg)-Total	100		0.10	mg/L		30-JAN-20	R4983771
Manganese (Mn)-Total	2.87		0.00010	mg/L		30-JAN-20	R4983771
Molybdenum (Mo)-Total	0.00321		0.000050	mg/L		30-JAN-20	R4983771
Nickel (Ni)-Total	0.0775		0.00050	mg/L		30-JAN-20	R4983771
Potassium (K)-Total	9.22		0.050	mg/L		30-JAN-20	R4983771
Selenium (Se)-Total	3.84		0.050	ug/L		30-JAN-20	R4983771
Silicon (Si)-Total	50.6		0.10	mg/L		30-JAN-20	R4983771
Silver (Ag)-Total	0.00102		0.000010	mg/L		30-JAN-20	R4983771
Sodium (Na)-Total	14.8		0.050	mg/L		30-JAN-20	R4983771
Strontium (Sr)-Total	0.713		0.00020	mg/L		30-JAN-20	R4983771
Thallium (Tl)-Total	0.00163		0.000010	mg/L		30-JAN-20	R4983771
Tin (Sn)-Total	0.00148		0.00010	mg/L		30-JAN-20	R4983771
Titanium (Ti)-Total	0.202		0.010	mg/L		30-JAN-20	R4983771
Uranium (U)-Total	0.00328		0.000010	mg/L		30-JAN-20	R4983771
Vanadium (V)-Total	0.0899		0.00050	mg/L		30-JAN-20	R4983771
Zinc (Zn)-Total	0.495		0.0030	mg/L		30-JAN-20	R4983771
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	14	DLM	10	mg/L		31-JAN-20	R4985448
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	470		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Total (as CaCO3)	470		1.0	mg/L		28-JAN-20	R4983052
Ammonia, Total (as N)							
Ammonia as N	0.0194		0.0050	mg/L		26-JAN-20	R4979959

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409421-1 LC_PIZP1105_WG_Q1-2020_N Sampled By: D. NICHOLAS on 23-JAN-20 @ 12:15 Matrix: WG							
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.63	DLHC	0.25	mg/L		24-JAN-20	R4981868
Chloride in Water by IC							
Chloride (Cl)	134	DLHC	2.5	mg/L		24-JAN-20	R4981868
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1120		2.0	uS/cm		28-JAN-20	R4983052
Fluoride in Water by IC							
Fluoride (F)	0.25	DLHC	0.10	mg/L		24-JAN-20	R4981868
Ion Balance Calculation							
Ion Balance	87.2		-100	%		31-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	-6.8			%		31-JAN-20	
Anion Sum	15.2			meq/L		31-JAN-20	
Cation Sum	13.3			meq/L		31-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.057	DLHC	0.025	mg/L		24-JAN-20	R4981868
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		24-JAN-20	R4981868
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0080		0.0010	mg/L		24-JAN-20	R4979382
Oxidation redution potential by elect.							
ORP	415		-1000	mV		25-JAN-20	R4981547
Phosphorus (P)-Total							
Phosphorus (P)-Total	4.99	DLHC	0.25	mg/L		27-JAN-20	R4980066
Sulfate in Water by IC							
Sulfate (SO4)	97.9	DLHC	1.5	mg/L		24-JAN-20	R4981868
Total Dissolved Solids							
Total Dissolved Solids	803	DLHC	20	mg/L		27-JAN-20	R4981936
Total Suspended Solids							
Total Suspended Solids	3190	DLM	8.0	mg/L		27-JAN-20	R4982648
Turbidity							
Turbidity	>4000		0.10	NTU		25-JAN-20	R4979687
pH							
pH	7.62		0.10	pH		28-JAN-20	R4983052

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_PIZP1105

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.
 < - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2409421

Report Date: 02-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4985448							
WG3267402-5	LCS							
Acidity (as CaCO3)			105.7		%		85-115	31-JAN-20
WG3267402-4	MB							
Acidity (as CaCO3)			2.0		mg/L		2	31-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4983052							
WG3265758-2	LCS							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	28-JAN-20
WG3265758-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4983215							
WG3265494-2	LCS							
Beryllium (Be)-Dissolved			93.9		%		80-120	29-JAN-20
WG3265494-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-JAN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4983771							
WG3266231-2	LCS							
Beryllium (Be)-Total			97.3		%		80-120	30-JAN-20
WG3266231-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	30-JAN-20
BIC-CL								
	Water							
Batch	R4983052							
WG3265758-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4981868							
WG3265069-6	LCS							
Bromide (Br)			102.3		%		85-115	24-JAN-20
WG3265069-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-JAN-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2409421

Report Date: 02-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4979529							
WG3263672-6	LCS							
Dissolved Organic Carbon			112.2		%		80-120	24-JAN-20
WG3263672-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4979529							
WG3263672-6	LCS							
Total Organic Carbon			111.3		%		80-120	24-JAN-20
WG3263672-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
CL-IC-N-CL	Water							
Batch	R4981868							
WG3265069-6	LCS							
Chloride (Cl)			102.0		%		90-110	24-JAN-20
WG3265069-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	24-JAN-20
CO3-CL	Water							
Batch	R4983052							
WG3265758-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-JAN-20
EC-L-PCT-CL	Water							
Batch	R4983052							
WG3265758-2	LCS							
Conductivity (@ 25C)			98.8		%		90-110	28-JAN-20
WG3265758-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-20
F-IC-N-CL	Water							
Batch	R4981868							
WG3265069-6	LCS							
Fluoride (F)			102.5		%		90-110	24-JAN-20
WG3265069-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-JAN-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2409421

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4982896							
WG3265868-2	LCS							
Mercury (Hg)-Dissolved			94.2		%		80-120	29-JAN-20
WG3265868-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-JAN-20
WG3265868-4	MS	L2409421-1						
Mercury (Hg)-Dissolved			105.5		%		70-130	29-JAN-20
HG-T-CVAA-VA								
Water								
Batch	R4982896							
WG3265542-2	LCS							
Mercury (Hg)-Total			94.6		%		80-120	29-JAN-20
WG3265542-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-JAN-20
MET-D-CCMS-VA								
Water								
Batch	R4983215							
WG3265494-2	LCS							
Aluminum (Al)-Dissolved			106.2		%		80-120	29-JAN-20
Antimony (Sb)-Dissolved			102.8		%		80-120	29-JAN-20
Arsenic (As)-Dissolved			99.7		%		80-120	29-JAN-20
Barium (Ba)-Dissolved			102.5		%		80-120	29-JAN-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	29-JAN-20
Boron (B)-Dissolved			98.8		%		80-120	29-JAN-20
Cadmium (Cd)-Dissolved			98.5		%		80-120	29-JAN-20
Calcium (Ca)-Dissolved			100.5		%		80-120	29-JAN-20
Chromium (Cr)-Dissolved			100.2		%		80-120	29-JAN-20
Cobalt (Co)-Dissolved			98.5		%		80-120	29-JAN-20
Copper (Cu)-Dissolved			98.1		%		80-120	29-JAN-20
Iron (Fe)-Dissolved			95.0		%		80-120	29-JAN-20
Lead (Pb)-Dissolved			97.2		%		80-120	29-JAN-20
Lithium (Li)-Dissolved			103.3		%		80-120	29-JAN-20
Magnesium (Mg)-Dissolved			107.5		%		80-120	29-JAN-20
Manganese (Mn)-Dissolved			103.0		%		80-120	29-JAN-20
Molybdenum (Mo)-Dissolved			99.5		%		80-120	29-JAN-20
Nickel (Ni)-Dissolved			101.3		%		80-120	29-JAN-20
Potassium (K)-Dissolved			103.1		%		80-120	29-JAN-20
Selenium (Se)-Dissolved			96.4		%		80-120	29-JAN-20
Silicon (Si)-Dissolved			103.6		%		60-140	29-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4983215							
WG3265494-2	LCS							
Silver (Ag)-Dissolved			94.6		%		80-120	29-JAN-20
Sodium (Na)-Dissolved			101.8		%		80-120	29-JAN-20
Strontium (Sr)-Dissolved			97.2		%		80-120	29-JAN-20
Thallium (Tl)-Dissolved			103.2		%		80-120	29-JAN-20
Tin (Sn)-Dissolved			98.2		%		80-120	29-JAN-20
Titanium (Ti)-Dissolved			100.0		%		80-120	29-JAN-20
Uranium (U)-Dissolved			94.3		%		80-120	29-JAN-20
Vanadium (V)-Dissolved			101.8		%		80-120	29-JAN-20
Zinc (Zn)-Dissolved			97.9		%		80-120	29-JAN-20
WG3265494-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4983215							
WG3265494-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-JAN-20
MET-T-CCMS-VA								
	Water							
Batch	R4983771							
WG3266231-2	LCS							
Aluminum (Al)-Total			101.7		%		80-120	30-JAN-20
Antimony (Sb)-Total			99.3		%		80-120	30-JAN-20
Arsenic (As)-Total			101.9		%		80-120	30-JAN-20
Barium (Ba)-Total			95.9		%		80-120	30-JAN-20
Bismuth (Bi)-Total			95.3		%		80-120	30-JAN-20
Boron (B)-Total			100.2		%		80-120	30-JAN-20
Cadmium (Cd)-Total			99.5		%		80-120	30-JAN-20
Calcium (Ca)-Total			96.7		%		80-120	30-JAN-20
Chromium (Cr)-Total			100.4		%		80-120	30-JAN-20
Cobalt (Co)-Total			102.7		%		80-120	30-JAN-20
Copper (Cu)-Total			100.1		%		80-120	30-JAN-20
Iron (Fe)-Total			98.8		%		80-120	30-JAN-20
Lead (Pb)-Total			100.8		%		80-120	30-JAN-20
Lithium (Li)-Total			94.6		%		80-120	30-JAN-20
Magnesium (Mg)-Total			100.3		%		80-120	30-JAN-20
Manganese (Mn)-Total			104.2		%		80-120	30-JAN-20
Molybdenum (Mo)-Total			95.3		%		80-120	30-JAN-20
Nickel (Ni)-Total			104.7		%		80-120	30-JAN-20
Potassium (K)-Total			102.1		%		80-120	30-JAN-20
Selenium (Se)-Total			94.5		%		80-120	30-JAN-20
Silicon (Si)-Total			104.3		%		80-120	30-JAN-20
Silver (Ag)-Total			93.4		%		80-120	30-JAN-20
Sodium (Na)-Total			106.1		%		80-120	30-JAN-20
Strontium (Sr)-Total			93.3		%		80-120	30-JAN-20
Thallium (Tl)-Total			98.4		%		80-120	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4983771							
WG3266231-2	LCS							
Tin (Sn)-Total			97.2		%		80-120	30-JAN-20
Titanium (Ti)-Total			94.2		%		80-120	30-JAN-20
Uranium (U)-Total			95.0		%		80-120	30-JAN-20
Vanadium (V)-Total			101.4		%		80-120	30-JAN-20
Zinc (Zn)-Total			102.7		%		80-120	30-JAN-20
WG3266231-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	30-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	30-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	30-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	30-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	30-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	30-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	30-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	30-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	30-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	30-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Water								
Batch R4983771								
WG3266231-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-JAN-20
NH3-L-F-CL								
Water								
Batch R4979959								
WG3264171-6 LCS								
Ammonia as N			104.2		%		85-115	26-JAN-20
WG3264171-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	26-JAN-20
NO2-L-IC-N-CL								
Water								
Batch R4981868								
WG3265069-6 LCS								
Nitrite (as N)			101.6		%		90-110	24-JAN-20
WG3265069-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	24-JAN-20
NO3-L-IC-N-CL								
Water								
Batch R4981868								
WG3265069-6 LCS								
Nitrate (as N)			102.1		%		90-110	24-JAN-20
WG3265069-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	24-JAN-20
OH-CL								
Water								
Batch R4983052								
WG3265758-1 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-JAN-20
ORP-CL								
Water								
Batch R4981547								
WG3263751-3 CRM								
ORP			222		mV		210-230	25-JAN-20
P-T-L-COL-CL								
Water								
Batch R4980066								
WG3264299-6 LCS								
Phosphorus (P)-Total			101.5		%		80-120	27-JAN-20
WG3264299-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R4983052							
WG3265758-2	LCS							
pH			7.01		pH		6.9-7.1	28-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4979382							
WG3263257-2	LCS							
Orthophosphate-Dissolved (as P)			101.7		%		80-120	24-JAN-20
WG3263257-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-20
SO4-IC-N-CL	Water							
Batch	R4981868							
WG3265069-6	LCS							
Sulfate (SO4)			100.8		%		90-110	24-JAN-20
WG3265069-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-JAN-20
SOLIDS-TDS-CL	Water							
Batch	R4981936							
WG3264177-11	LCS							
Total Dissolved Solids			100.4		%		85-115	27-JAN-20
WG3264177-10	MB							
Total Dissolved Solids			<10		mg/L		10	27-JAN-20
TEH-BC-VA-CL	Water							
Batch	R4986393							
WG3266534-2	LCS							
EPH10-19			93.6		%		70-130	01-FEB-20
EPH19-32			85.6		%		70-130	01-FEB-20
WG3266534-1	MB							
EPH10-19			<0.25		mg/L		0.25	01-FEB-20
EPH19-32			<0.25		mg/L		0.25	01-FEB-20
Surrogate: 2-Bromobenzotrifluoride			94.1		%		60-140	01-FEB-20
TEH-WATER-VA-CL	Water							
Batch	R4986393							
WG3266534-2	LCS							
TEH (C10-C30)			91.6		%		70-130	01-FEB-20
WG3266534-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	01-FEB-20
Surrogate: 2-Bromobenzotrifluoride			94.1		%		60-140	01-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R4979597							
WG3263649-2	LCS							
Total Kjeldahl Nitrogen			95.0		%		75-125	25-JAN-20
WG3263649-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-JAN-20
TSS-L-CL								
	Water							
Batch	R4982648							
WG3264264-4	LCS							
Total Suspended Solids			90.9		%		85-115	27-JAN-20
WG3264264-3	MB							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-20
TURBIDITY-CL								
	Water							
Batch	R4979687							
WG3263754-3	DUP	L2409421-1						
WG3263754-2	LCS							
Turbidity			103.5		%		85-115	25-JAN-20
WG3263754-1	MB							
Turbidity			<0.10		NTU		0.1	25-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	23-JAN-20 12:15	25-JAN-20 09:30	0.25	45	hours	EHTR-FM
pH	1	23-JAN-20 12:15	28-JAN-20 14:00	0.25	122	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2409421 were received on 24-JAN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

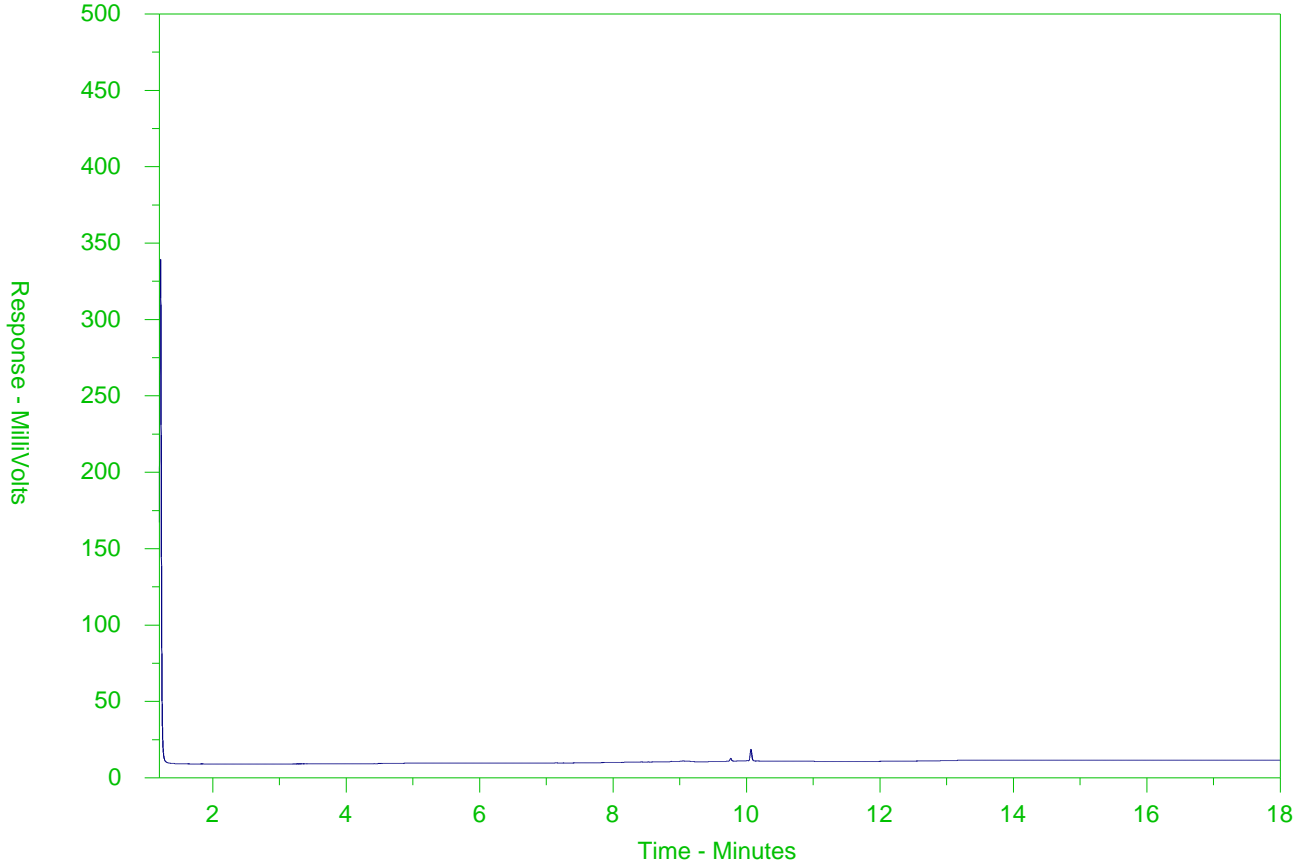
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2409421-1
 Client Sample ID: LC_PIZP1105_WG_Q1-2020_N



← F2 →		← F3 →		← F4 →	
nC10	nC16			nC34	nC50
174°C	287°C			481°C	575°C
346°F	549°F			898°F	1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: LCO_PIZP1105_WG_Q1-2020_N		TURNAROUND TIME:			RUSH:						
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets		Email 1:	carla.froyman@teck.com	x		
Email	Chris.Blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	teckcoal@equisonline.com		x	
Address	Box 2003 15km North Hwy 43			Address	2559 29 Street NE		Email 3:	drake.tymstra@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kirsten.campbell@teck.com	x	x
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 4:	dominique.pichot@teck.com	x	x
Phone Number	250-425-3196			Phone Number	403 407 1794		PO number	VPO00680643			

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	HG-T-U-CVAF-VA	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH	ALS_Package-Bromate	ALS_Package-Sulfide-T	TSS	
L2409421-COFC	L2409421-COFC																			
LC_PIZP1105_WG_Q1-2020_N	LC_PIZp1105	WG	No	1/23/2020	12:15	G	7			X	X	X	X	X	X	X				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS PLEASE FORWARD MET SAMPLES TO ABBOTTSFORD FOR ANALYSIS	RELINQUISHED BY/AFFILIATION D.Tymstra/K.Campbell	DATE/TIME 23-Jan	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME January 23, 2020 <i>1/29/20</i>
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SERVICE REQUEST (rush ? subject to availability)	Sampler's Name	Mobile #
Regular (default) X	D.Nicholas	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		January 23, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 20-FEB-20
Report Date: 21-DEC-20 17:41 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2419089
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATIONS
C of C Numbers: LCO_WEEKLY_2020-02
Legal Site Desc:

Comments: ADDITIONAL 18-DEC-20 21:18

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419089-1 LC_LC7_WS_2020-02-18_N							
Sampled By: KC/DT on 19-FEB-20 @ 10:45							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	185		5.0	mg/L		20-FEB-20	R4999442
Carbonate (CO3)	<5.0		5.0	mg/L		20-FEB-20	R4999442
Dissolved Organic Carbon	1.45	DTC	0.50	mg/L		26-FEB-20	R5009388
Hydroxide (OH)	<5.0		5.0	mg/L		20-FEB-20	R4999442
Sulphide (as S)	0.0378	RRV	0.0015	mg/L		21-FEB-20	R4999125
Sulphide (as H2S)	0.0402		0.0016	mg/L		24-FEB-20	
Total Kjeldahl Nitrogen	0.134		0.050	mg/L		22-FEB-20	R5000747
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		24-FEB-20	R5003786
Total Organic Carbon	0.54	DTC	0.50	mg/L		26-FEB-20	R5009388
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-FEB-20	22-FEB-20	R5000727
Dissolved Metals Filtration Location	FIELD					21-FEB-20	R5000427
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	24-FEB-20	24-FEB-20	R5002548
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003487
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-FEB-20	R5000427
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-FEB-20	22-FEB-20	R5000727
Antimony (Sb)-Dissolved	0.00015		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Barium (Ba)-Dissolved	0.0967		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-FEB-20	22-FEB-20	R5000727
Boron (B)-Dissolved	<0.010		0.010	mg/L	21-FEB-20	22-FEB-20	R5000727
Cadmium (Cd)-Dissolved	0.0399	DTMF	0.0050	ug/L	21-FEB-20	22-FEB-20	R5000727
Calcium (Ca)-Dissolved	57.2		0.050	mg/L	21-FEB-20	22-FEB-20	R5000727
Chromium (Cr)-Dissolved	0.00017		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-FEB-20	22-FEB-20	R5000727
Copper (Cu)-Dissolved	0.00029		0.00020	mg/L	21-FEB-20	22-FEB-20	R5000727
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-FEB-20	22-FEB-20	R5000727
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-FEB-20	22-FEB-20	R5000727
Lithium (Li)-Dissolved	0.0088		0.0010	mg/L	21-FEB-20	22-FEB-20	R5000727
Magnesium (Mg)-Dissolved	16.7		0.10	mg/L	21-FEB-20	22-FEB-20	R5000727
Manganese (Mn)-Dissolved	0.00115		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Molybdenum (Mo)-Dissolved	0.00102		0.000050	mg/L	21-FEB-20	22-FEB-20	R5000727
Nickel (Ni)-Dissolved	0.00228		0.00050	mg/L	21-FEB-20	22-FEB-20	R5000727
Potassium (K)-Dissolved	0.652		0.050	mg/L	21-FEB-20	22-FEB-20	R5000727
Selenium (Se)-Dissolved	3.93		0.050	ug/L	21-FEB-20	22-FEB-20	R5000727
Silicon (Si)-Dissolved	1.81		0.050	mg/L	21-FEB-20	22-FEB-20	R5000727
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-FEB-20	22-FEB-20	R5000727
Sodium (Na)-Dissolved	1.99		0.050	mg/L	21-FEB-20	22-FEB-20	R5000727
Strontium (Sr)-Dissolved	0.170		0.00020	mg/L	21-FEB-20	22-FEB-20	R5000727
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-FEB-20	22-FEB-20	R5000727
Tin (Sn)-Dissolved	0.00028		0.00010	mg/L	21-FEB-20	22-FEB-20	R5000727
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-FEB-20	22-FEB-20	R5000727
Uranium (U)-Dissolved	0.00138		0.000010	mg/L	21-FEB-20	22-FEB-20	R5000727
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-FEB-20	22-FEB-20	R5000727
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	21-FEB-20	22-FEB-20	R5000727
Hardness							
Hardness (as CaCO3)	211		0.50	mg/L		27-FEB-20	
Total Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419089-1 LC_LC7_WS_2020-02-18_N							
Sampled By: KC/DT on 19-FEB-20 @ 10:45							
Matrix: WS							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-FEB-20	R5010446
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00015		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00013		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0972		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.0284		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	59.1		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00017		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0088		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	17.5		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.00123		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.000997		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.00238		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	0.640		0.050	mg/L		27-FEB-20	R5010446
Selenium (Se)-Total	3.46		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	1.90		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	2.06		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.161		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	0.00012		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00136		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		20-FEB-20	R4999495
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	151		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Total (as CaCO3)	151		1.0	mg/L		20-FEB-20	R4999442
Ammonia, Total (as N)							
Ammonia as N	0.0240		0.0050	mg/L		25-FEB-20	R5008232
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		20-FEB-20	R4999564
Chloride in Water by IC							
Chloride (Cl)	0.72		0.50	mg/L		20-FEB-20	R4999564
Electrical Conductivity (EC)							
Conductivity (@ 25C)	415		2.0	uS/cm		20-FEB-20	R4999442
Fluoride in Water by IC							
Fluoride (F)	0.185		0.020	mg/L		20-FEB-20	R4999564
Ion Balance Calculation							
Ion Balance	90.0		-100	%		27-FEB-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419089-1 LC_LC7_WS_2020-02-18_N Sampled By: KC/DT on 19-FEB-20 @ 10:45 Matrix: WS							
Ion Balance Calculation							
Cation - Anion Balance	-5.2			%		27-FEB-20	
Anion Sum	4.81			meq/L		27-FEB-20	
Cation Sum	4.33			meq/L		27-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.909		0.0050	mg/L		20-FEB-20	R4999564
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		20-FEB-20	R4999564
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0035		0.0010	mg/L		20-FEB-20	R4999174
Oxidation redution potential by elect.							
ORP	453		-1000	mV		25-FEB-20	R5005687
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0053	DLM	0.0050	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	80.9		0.30	mg/L		20-FEB-20	R4999564
Total Dissolved Solids							
Total Dissolved Solids	232	DLHC	20	mg/L		24-FEB-20	R5005172
Total Suspended Solids							
Total Suspended Solids	45.1		1.0	mg/L		25-FEB-20	R5007766
Turbidity							
Turbidity	5.39		0.10	NTU		22-FEB-20	R5001247
pH							
pH	8.16		0.10	pH		20-FEB-20	R4999442
L2419089-2 LC_PIZP1104_WG_Q1-2020_NP Sampled By: KC/DT on 19-FEB-20 @ 13:25 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	321		5.0	mg/L		20-FEB-20	R4999442
Carbonate (CO3)	<5.0		5.0	mg/L		20-FEB-20	R4999442
Dissolved Organic Carbon	1.05		0.50	mg/L		26-FEB-20	R5009388
Hydroxide (OH)	<5.0		5.0	mg/L		20-FEB-20	R4999442
Total Kjeldahl Nitrogen	0.66	DLM	0.10	mg/L		22-FEB-20	R5000747
Total Organic Carbon	7.41		0.50	mg/L		26-FEB-20	R5009388
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	27-FEB-20	R5008327
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008114
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	24-FEB-20	R5002548
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003487
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008114
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	27-FEB-20	R5008327
Antimony (Sb)-Dissolved	0.00015		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327
Arsenic (As)-Dissolved	0.00085		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327
Barium (Ba)-Dissolved	0.300		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	27-FEB-20	R5008327
Boron (B)-Dissolved	0.022		0.010	mg/L	26-FEB-20	27-FEB-20	R5008327
Cadmium (Cd)-Dissolved	0.0143		0.0050	ug/L	26-FEB-20	27-FEB-20	R5008327
Calcium (Ca)-Dissolved	140		0.050	mg/L	26-FEB-20	27-FEB-20	R5008327
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419089-2 LC_PIZP1104_WG_Q1-2020_NP							
Sampled By: KC/DT on 19-FEB-20 @ 13:25							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	1.36		0.10	ug/L	26-FEB-20	27-FEB-20	R5008327
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-FEB-20	27-FEB-20	R5008327
Iron (Fe)-Dissolved	1.30		0.010	mg/L	26-FEB-20	27-FEB-20	R5008327
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	27-FEB-20	R5008327
Lithium (Li)-Dissolved	0.0196		0.0010	mg/L	26-FEB-20	27-FEB-20	R5008327
Magnesium (Mg)-Dissolved	42.2		0.10	mg/L	26-FEB-20	27-FEB-20	R5008327
Manganese (Mn)-Dissolved	0.755		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327
Molybdenum (Mo)-Dissolved	0.00225		0.000050	mg/L	26-FEB-20	27-FEB-20	R5008327
Nickel (Ni)-Dissolved	0.00215		0.00050	mg/L	26-FEB-20	27-FEB-20	R5008327
Potassium (K)-Dissolved	2.50		0.050	mg/L	26-FEB-20	27-FEB-20	R5008327
Selenium (Se)-Dissolved	0.065		0.050	ug/L	26-FEB-20	27-FEB-20	R5008327
Silicon (Si)-Dissolved	4.65		0.050	mg/L	26-FEB-20	27-FEB-20	R5008327
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	27-FEB-20	R5008327
Sodium (Na)-Dissolved	12.5		0.050	mg/L	26-FEB-20	27-FEB-20	R5008327
Strontium (Sr)-Dissolved	0.450		0.00020	mg/L	26-FEB-20	27-FEB-20	R5008327
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	27-FEB-20	R5008327
Tin (Sn)-Dissolved	0.00056		0.00010	mg/L	26-FEB-20	27-FEB-20	R5008327
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	27-FEB-20	R5008327
Uranium (U)-Dissolved	0.00308		0.000010	mg/L	26-FEB-20	27-FEB-20	R5008327
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	27-FEB-20	R5008327
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	26-FEB-20	27-FEB-20	R5008327
Hardness							
Hardness (as CaCO3)	524		0.50	mg/L		27-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.373		0.020	ug/L		26-FEB-20	R5007887
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000417		0.0000050	mg/L		25-FEB-20	R5004286
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	3.98		0.0030	mg/L		26-FEB-20	R5007887
Antimony (Sb)-Total	0.00287		0.00010	mg/L		26-FEB-20	R5007887
Arsenic (As)-Total	0.00468		0.00010	mg/L		26-FEB-20	R5007887
Barium (Ba)-Total	0.327		0.00010	mg/L		26-FEB-20	R5007887
Bismuth (Bi)-Total	0.000080		0.000050	mg/L		26-FEB-20	R5007887
Boron (B)-Total	0.042		0.010	mg/L		26-FEB-20	R5007887
Cadmium (Cd)-Total	0.759		0.0050	ug/L		26-FEB-20	R5007887
Calcium (Ca)-Total	173		0.050	mg/L		26-FEB-20	R5007887
Chromium (Cr)-Total	0.00916		0.00010	mg/L		26-FEB-20	R5007887
Cobalt (Co)-Total	3.76		0.10	ug/L		26-FEB-20	R5007887
Copper (Cu)-Total	0.0147		0.00050	mg/L		26-FEB-20	R5007887
Iron (Fe)-Total	11.9		0.010	mg/L		26-FEB-20	R5007887
Lead (Pb)-Total	0.00530		0.000050	mg/L		26-FEB-20	R5007887
Lithium (Li)-Total	0.0298		0.0010	mg/L		26-FEB-20	R5007887
Magnesium (Mg)-Total	50.5		0.10	mg/L		26-FEB-20	R5007887
Manganese (Mn)-Total	0.667		0.00010	mg/L		26-FEB-20	R5007887
Molybdenum (Mo)-Total	0.00209		0.000050	mg/L		26-FEB-20	R5007887
Nickel (Ni)-Total	0.0129		0.00050	mg/L		26-FEB-20	R5007887
Potassium (K)-Total	4.27		0.050	mg/L		26-FEB-20	R5007887
Selenium (Se)-Total	0.649		0.050	ug/L		26-FEB-20	R5007887
Silicon (Si)-Total	10.2		0.10	mg/L		26-FEB-20	R5007887
Silver (Ag)-Total	0.000416		0.000010	mg/L		26-FEB-20	R5007887
Sodium (Na)-Total	15.8		0.050	mg/L		26-FEB-20	R5007887

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419089-2 LC_PIZP1104_WG_Q1-2020_NP							
Sampled By: KC/DT on 19-FEB-20 @ 13:25							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Strontium (Sr)-Total	0.547		0.00020	mg/L		26-FEB-20	R5007887
Thallium (Tl)-Total	0.000219		0.000010	mg/L		26-FEB-20	R5007887
Tin (Sn)-Total	0.00168		0.00010	mg/L		26-FEB-20	R5007887
Titanium (Ti)-Total	<0.027	DLM	0.027	mg/L		26-FEB-20	R5007887
Uranium (U)-Total	0.00406		0.000010	mg/L		26-FEB-20	R5007887
Vanadium (V)-Total	0.0155		0.00050	mg/L		26-FEB-20	R5007887
Zinc (Zn)-Total	0.0637		0.0030	mg/L		26-FEB-20	R5007887
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	27.6		1.0	mg/L		20-FEB-20	R4999495
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	263		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-FEB-20	R4999442
Alkalinity, Total (as CaCO3)	263		1.0	mg/L		20-FEB-20	R4999442
Ammonia, Total (as N)							
Ammonia as N	0.0282		0.0050	mg/L		25-FEB-20	R5008232
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.45	DLHC	0.25	mg/L		20-FEB-20	R4999564
Chloride in Water by IC							
Chloride (Cl)	198	DLHC	2.5	mg/L		20-FEB-20	R4999564
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1130		2.0	uS/cm		20-FEB-20	R4999442
Fluoride in Water by IC							
Fluoride (F)	0.23	DLHC	0.10	mg/L		20-FEB-20	R4999564
Ion Balance Calculation							
Ion Balance	93.2		-100	%		27-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.5			%		27-FEB-20	
Anion Sum	12.0			meq/L		27-FEB-20	
Cation Sum	11.2			meq/L		27-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.266	DLHC	0.025	mg/L		20-FEB-20	R4999564
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		20-FEB-20	R4999564
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		20-FEB-20	R4999174
Oxidation reduction potential by elect.							
ORP	382		-1000	mV		25-FEB-20	R5005687
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.652	DLHC	0.050	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	53.4	DLHC	1.5	mg/L		20-FEB-20	R4999564
Total Dissolved Solids							
Total Dissolved Solids	667	DLHC	20	mg/L		24-FEB-20	R5005172
Total Suspended Solids							
Total Suspended Solids	883	DLHC	2.0	mg/L		25-FEB-20	R5007766
Turbidity							
Turbidity	602		0.10	NTU		22-FEB-20	R5001247
pH							
pH	7.54		0.10	pH		20-FEB-20	R4999442

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
SULPHIDE-CFA-ED	Water	Sulphide	APHA 4500 -S E-Auto-Colorimetry
A continuous flow manifold adds HCl to the sample which converts sulphide to a gas, then the sulphide is separated from the flow using a gas dialysis membrane. A colorimetric reaction produces a methylene blue compound which is measured at 660 nm. This follows the Standard Methods procedure 4500 S-E.			
SULPHIDE>H2S-ED	Water	Sulphide as Hydrogen Sulphide	Calculation from Sulphide
Calculated by multiplying Sulphide as S by the molar ratio of H2S to S (34/32): Sulphide (as H2S) = 1.063 * Sulphide (as S)			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_WEEKLY_2020-02

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2419089

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0
 Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4999495							
WG3279418-5	LCS							
Acidity (as CaCO3)			104.1		%		85-115	20-FEB-20
WG3279418-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	20-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4999442							
WG3279358-8	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	20-FEB-20
WG3279358-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5000727							
WG3279809-2	LCS							
Beryllium (Be)-Dissolved			96.6		%		80-120	22-FEB-20
WG3279809-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-FEB-20
Batch	R5008327							
WG3282236-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	27-FEB-20
WG3282236-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5007887							
WG3281941-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	26-FEB-20
Batch	R5008327							
WG3281941-2	LCS							
Beryllium (Be)-Total			101.8		%		80-120	26-FEB-20
Batch	R5010446							
WG3281598-2	LCS							
Beryllium (Be)-Total			94.8		%		80-120	27-FEB-20
WG3281598-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-FEB-20
BIC-CL								
	Water							



Quality Control Report

Workorder: L2419089

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL	Water							
Batch	R4999442							
WG3279358-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	20-FEB-20
F-IC-N-CL	Water							
Batch	R4999564							
WG3279481-10 LCS								
Fluoride (F)			100.7		%		90-110	20-FEB-20
WG3279481-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-FEB-20
HG-D-CVAA-VA	Water							
Batch	R5002548							
WG3280869-6 LCS								
Mercury (Hg)-Dissolved			97.7		%		80-120	24-FEB-20
WG3280869-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-FEB-20
HG-T-CVAA-VA	Water							
Batch	R5004286							
WG3281079-2 LCS								
Mercury (Hg)-Total			100.6		%		80-120	25-FEB-20
WG3281079-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	25-FEB-20
HG-T-U-CVAF-VA	Water							
Batch	R5003786							
WG3280873-2 LCS								
Mercury (Hg)-Total			100.8		%		80-120	24-FEB-20
WG3280873-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-FEB-20
MET-D-CCMS-VA	Water							
Batch	R5000727							
WG3279809-2 LCS								
Aluminum (Al)-Dissolved			96.5		%		80-120	22-FEB-20
Antimony (Sb)-Dissolved			104.8		%		80-120	22-FEB-20
Arsenic (As)-Dissolved			97.2		%		80-120	22-FEB-20
Barium (Ba)-Dissolved			98.8		%		80-120	22-FEB-20
Bismuth (Bi)-Dissolved			96.8		%		80-120	22-FEB-20
Boron (B)-Dissolved			92.5		%		80-120	22-FEB-20
Cadmium (Cd)-Dissolved			97.1		%		80-120	22-FEB-20



Quality Control Report

Workorder: L2419089

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5000727							
WG3279809-2	LCS							
Calcium (Ca)-Dissolved			98.0		%		80-120	22-FEB-20
Chromium (Cr)-Dissolved			98.0		%		80-120	22-FEB-20
Cobalt (Co)-Dissolved			96.5		%		80-120	22-FEB-20
Copper (Cu)-Dissolved			97.3		%		80-120	22-FEB-20
Iron (Fe)-Dissolved			100.2		%		80-120	22-FEB-20
Lead (Pb)-Dissolved			98.4		%		80-120	22-FEB-20
Lithium (Li)-Dissolved			93.7		%		80-120	22-FEB-20
Magnesium (Mg)-Dissolved			95.4		%		80-120	22-FEB-20
Manganese (Mn)-Dissolved			98.3		%		80-120	22-FEB-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	22-FEB-20
Nickel (Ni)-Dissolved			97.4		%		80-120	22-FEB-20
Potassium (K)-Dissolved			102.0		%		80-120	22-FEB-20
Selenium (Se)-Dissolved			102.1		%		80-120	22-FEB-20
Silicon (Si)-Dissolved			100.7		%		60-140	22-FEB-20
Silver (Ag)-Dissolved			103.9		%		80-120	22-FEB-20
Sodium (Na)-Dissolved			99.9		%		80-120	22-FEB-20
Strontium (Sr)-Dissolved			105.5		%		80-120	22-FEB-20
Thallium (Tl)-Dissolved			98.1		%		80-120	22-FEB-20
Tin (Sn)-Dissolved			96.2		%		80-120	22-FEB-20
Titanium (Ti)-Dissolved			95.1		%		80-120	22-FEB-20
Uranium (U)-Dissolved			98.1		%		80-120	22-FEB-20
Vanadium (V)-Dissolved			98.3		%		80-120	22-FEB-20
Zinc (Zn)-Dissolved			96.4		%		80-120	22-FEB-20
WG3279809-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20



Quality Control Report

Workorder: L2419089

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5000727							
WG3279809-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-FEB-20
Batch	R5008327							
WG3282236-2	LCS							
Aluminum (Al)-Dissolved			92.2		%		80-120	27-FEB-20
Antimony (Sb)-Dissolved			102.2		%		80-120	27-FEB-20
Arsenic (As)-Dissolved			100.2		%		80-120	27-FEB-20
Barium (Ba)-Dissolved			102.8		%		80-120	27-FEB-20
Bismuth (Bi)-Dissolved			98.4		%		80-120	27-FEB-20
Boron (B)-Dissolved			97.8		%		80-120	27-FEB-20
Cadmium (Cd)-Dissolved			96.7		%		80-120	27-FEB-20
Calcium (Ca)-Dissolved			102.5		%		80-120	27-FEB-20
Chromium (Cr)-Dissolved			97.0		%		80-120	27-FEB-20
Cobalt (Co)-Dissolved			98.7		%		80-120	27-FEB-20
Copper (Cu)-Dissolved			95.6		%		80-120	27-FEB-20
Iron (Fe)-Dissolved			91.5		%		80-120	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5008327							
WG3282236-2	LCS							
Lead (Pb)-Dissolved			95.9		%		80-120	27-FEB-20
Lithium (Li)-Dissolved			96.9		%		80-120	27-FEB-20
Magnesium (Mg)-Dissolved			96.3		%		80-120	27-FEB-20
Manganese (Mn)-Dissolved			95.9		%		80-120	27-FEB-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	27-FEB-20
Nickel (Ni)-Dissolved			98.0		%		80-120	27-FEB-20
Potassium (K)-Dissolved			101.3		%		80-120	27-FEB-20
Selenium (Se)-Dissolved			98.0		%		80-120	27-FEB-20
Silicon (Si)-Dissolved			98.7		%		60-140	27-FEB-20
Silver (Ag)-Dissolved			99.0		%		80-120	27-FEB-20
Sodium (Na)-Dissolved			96.3		%		80-120	27-FEB-20
Strontium (Sr)-Dissolved			102.4		%		80-120	27-FEB-20
Thallium (Tl)-Dissolved			95.7		%		80-120	27-FEB-20
Tin (Sn)-Dissolved			97.5		%		80-120	27-FEB-20
Titanium (Ti)-Dissolved			95.7		%		80-120	27-FEB-20
Uranium (U)-Dissolved			95.2		%		80-120	27-FEB-20
Vanadium (V)-Dissolved			98.3		%		80-120	27-FEB-20
Zinc (Zn)-Dissolved			96.0		%		80-120	27-FEB-20
WG3282236-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5008327							
WG3282236-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R5007887							
WG3281941-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	26-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	26-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	26-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch R5007887								
WG3281941-1 MB								
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	26-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	26-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	26-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-FEB-20
Batch R5008327								
WG3281941-2 LCS								
Aluminum (Al)-Total			96.5		%		80-120	26-FEB-20
Antimony (Sb)-Total			101.2		%		80-120	26-FEB-20
Arsenic (As)-Total			97.3		%		80-120	26-FEB-20
Barium (Ba)-Total			102.4		%		80-120	26-FEB-20
Bismuth (Bi)-Total			98.2		%		80-120	26-FEB-20
Boron (B)-Total			98.6		%		80-120	26-FEB-20
Cadmium (Cd)-Total			96.0		%		80-120	26-FEB-20
Calcium (Ca)-Total			105.5		%		80-120	26-FEB-20
Chromium (Cr)-Total			98.4		%		80-120	26-FEB-20
Cobalt (Co)-Total			97.9		%		80-120	26-FEB-20
Copper (Cu)-Total			95.6		%		80-120	26-FEB-20
Iron (Fe)-Total			90.8		%		80-120	26-FEB-20
Lead (Pb)-Total			98.2		%		80-120	26-FEB-20
Lithium (Li)-Total			102.1		%		80-120	26-FEB-20
Magnesium (Mg)-Total			98.6		%		80-120	26-FEB-20
Manganese (Mn)-Total			97.8		%		80-120	26-FEB-20
Molybdenum (Mo)-Total			99.9		%		80-120	26-FEB-20
Nickel (Ni)-Total			97.1		%		80-120	26-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5008327							
WG3281941-2	LCS							
Potassium (K)-Total			101.1		%		80-120	26-FEB-20
Selenium (Se)-Total			96.3		%		80-120	26-FEB-20
Silicon (Si)-Total			102.2		%		80-120	26-FEB-20
Silver (Ag)-Total			95.5		%		80-120	26-FEB-20
Sodium (Na)-Total			98.4		%		80-120	26-FEB-20
Strontium (Sr)-Total			97.9		%		80-120	26-FEB-20
Thallium (Tl)-Total			98.9		%		80-120	26-FEB-20
Tin (Sn)-Total			97.6		%		80-120	26-FEB-20
Titanium (Ti)-Total			94.6		%		80-120	26-FEB-20
Uranium (U)-Total			98.3		%		80-120	26-FEB-20
Vanadium (V)-Total			98.3		%		80-120	26-FEB-20
Zinc (Zn)-Total			93.4		%		80-120	26-FEB-20
Batch	R5010446							
WG3281598-2	LCS							
Aluminum (Al)-Total			99.5		%		80-120	27-FEB-20
Antimony (Sb)-Total			104.4		%		80-120	27-FEB-20
Arsenic (As)-Total			102.3		%		80-120	27-FEB-20
Barium (Ba)-Total			99.3		%		80-120	27-FEB-20
Bismuth (Bi)-Total			94.6		%		80-120	27-FEB-20
Boron (B)-Total			93.7		%		80-120	27-FEB-20
Cadmium (Cd)-Total			94.4		%		80-120	27-FEB-20
Calcium (Ca)-Total			98.6		%		80-120	27-FEB-20
Chromium (Cr)-Total			99.7		%		80-120	27-FEB-20
Cobalt (Co)-Total			98.4		%		80-120	27-FEB-20
Copper (Cu)-Total			100.0		%		80-120	27-FEB-20
Iron (Fe)-Total			98.2		%		80-120	27-FEB-20
Lead (Pb)-Total			96.4		%		80-120	27-FEB-20
Lithium (Li)-Total			92.4		%		80-120	27-FEB-20
Magnesium (Mg)-Total			97.8		%		80-120	27-FEB-20
Manganese (Mn)-Total			99.6		%		80-120	27-FEB-20
Molybdenum (Mo)-Total			101.3		%		80-120	27-FEB-20
Nickel (Ni)-Total			98.9		%		80-120	27-FEB-20
Potassium (K)-Total			99.7		%		80-120	27-FEB-20
Selenium (Se)-Total			99.2		%		80-120	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5010446							
WG3281598-2	LCS							
Silicon (Si)-Total			101.9		%		80-120	27-FEB-20
Silver (Ag)-Total			102.2		%		80-120	27-FEB-20
Sodium (Na)-Total			102.3		%		80-120	27-FEB-20
Strontium (Sr)-Total			100.3		%		80-120	27-FEB-20
Thallium (Tl)-Total			95.4		%		80-120	27-FEB-20
Tin (Sn)-Total			98.9		%		80-120	27-FEB-20
Titanium (Ti)-Total			104.7		%		80-120	27-FEB-20
Uranium (U)-Total			97.3		%		80-120	27-FEB-20
Vanadium (V)-Total			99.9		%		80-120	27-FEB-20
Zinc (Zn)-Total			100.5		%		80-120	27-FEB-20
WG3281598-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	27-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5010446							
WG3281598-1	MB							
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-FEB-20
NH3-L-F-CL								
	Water							
Batch	R5008232							
WG3281666-6	LCS							
Ammonia as N			95.7		%		85-115	25-FEB-20
WG3281666-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Nitrite (as N)			99.3		%		90-110	20-FEB-20
WG3279481-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Nitrate (as N)			103.9		%		90-110	20-FEB-20
WG3279481-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-FEB-20
OH-CL								
	Water							
Batch	R4999442							
WG3279358-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	20-FEB-20
ORP-CL								
	Water							
Batch	R5005687							
WG3281603-1	CRM	CL-ORP						
ORP			226		mV		210-230	25-FEB-20
P-T-L-COL-CL								
	Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch R5005330								
WG3281135-2 LCS								
Phosphorus (P)-Total			101.6		%		80-120	25-FEB-20
WG3281135-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-FEB-20
PH-CL								
Water								
Batch R4999442								
WG3279358-8 LCS								
pH			7.02		pH		6.9-7.1	20-FEB-20
PO4-DO-L-COL-CL								
Water								
Batch R4999174								
WG3278904-7 DUP								
Orthophosphate-Dissolved (as P)			0.0035	L2419089-1	mg/L	0.0	20	20-FEB-20
WG3278904-6 LCS								
Orthophosphate-Dissolved (as P)			103.6		%		80-120	20-FEB-20
WG3278904-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-FEB-20
SO4-IC-N-CL								
Water								
Batch R4999564								
WG3279481-10 LCS								
Sulfate (SO4)			97.8		%		90-110	20-FEB-20
WG3279481-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-FEB-20
SOLIDS-TDS-CL								
Water								
Batch R5005172								
WG3280588-5 LCS								
Total Dissolved Solids			100.3		%		85-115	24-FEB-20
WG3280588-4 MB								
Total Dissolved Solids			<10		mg/L		10	24-FEB-20
SULPHIDE-CFA-ED								
Water								
Batch R4999125								
WG3278903-20 DUP								
Sulphide (as S)			0.0378	L2419089-1	mg/L	1.9	20	21-FEB-20
WG3278903-18 LCS								
Sulphide (as S)			107.3		%		75-125	21-FEB-20
WG3278903-17 MB								
Sulphide (as S)			<0.0015		mg/L		0.0015	21-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SULPHIDE-CFA-ED	Water							
Batch	R4999125							
WG3278903-19 MS		L2419089-1						
Sulphide (as S)			75.8		%		65-135	21-FEB-20
TKN-L-F-CL	Water							
Batch	R5000747							
WG3279918-2 LCS								
Total Kjeldahl Nitrogen			85.7		%		75-125	22-FEB-20
WG3279918-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-FEB-20
TSS-L-CL	Water							
Batch	R5007766							
WG3280950-6 DUP		L2419089-2						
Total Suspended Solids		883	866		mg/L	2.0	20	25-FEB-20
WG3280950-5 LCS								
Total Suspended Solids			98.9		%		85-115	25-FEB-20
WG3280950-4 MB								
Total Suspended Solids			<1.0		mg/L		1	25-FEB-20
TURBIDITY-CL	Water							
Batch	R5001247							
WG3280155-2 LCS								
Turbidity			95.0		%		85-115	22-FEB-20
WG3280155-1 MB								
Turbidity			<0.10		NTU		0.1	22-FEB-20

Quality Control Report

Workorder: L2419089

Report Date: 21-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2419089

Report Date: 21-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	19-FEB-20 10:45	25-FEB-20 14:00	0.25	147	hours	EHTR-FM
	2	19-FEB-20 13:25	25-FEB-20 14:00	0.25	144	hours	EHTR-FM
pH	1	19-FEB-20 10:45	20-FEB-20 15:00	0.25	28	hours	EHTR-FM
	2	19-FEB-20 13:25	20-FEB-20 15:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2419089 were received on 20-FEB-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	LCO_Weekly_2020-02-19	TURNAROUND TIME:		RUSH:	
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PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EID
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.com		
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		
	15km North Hwy 43							Email 4:	kirsten.campbell@teck.com		
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholass@teck.com		
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643		
Phone Number	250-425-3196			Phone Number	403 407 1794						

SAMPLE/DETAILS								ANALYSIS REQUESTED																	
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	NaOH/Zn Ac	H2SO4							
LC_LC7_WS_2020-02-18_N	LC_LC7	WS	N	2020/02/19	10:45	G	8	1	1	1	1	1	1	1		1									
LC_PIZP104_WG_Q1-2020_NP	LC_PIZP104	WG	N	2020/02/19	13:25	G	7	1	1	1	1	1	1	1		1									



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS PLEASE FORWARD MEASUREMENTS TO ADS BURNABY FOR ANALYSIS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/K.Campbell	19.Feb	<i>DK</i>	<i>2/20</i> <i>0830</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day. ASAP or Weekend - Contact ALS
Sampler's Name	K. Campbell/D. Tymstra		Mobile #	
Sampler's Signature			Date/Time	February 19, 2020

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TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 21-FEB-20
Report Date: 29-JAN-21 16:07 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2419616
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LCO_MSAW_2020-02-20
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2419616-1 to -7.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-1 LC_MSAW10_150_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:28							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	242		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	1.13		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	0.0027		0.0015	mg/L		25-FEB-20	R5003550
Sulphide (as H2S)	0.0029		0.0016	mg/L		26-FEB-20	
Total Kjeldahl Nitrogen	3.07		0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	157	DLM	5.0	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.0173		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Boron (B)-Dissolved	0.035		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	142		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	0.33		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	1.05		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.0834		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	113		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	0.0927		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.00169		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Nickel (Ni)-Dissolved	0.00121		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	4.14		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Selenium (Se)-Dissolved	13.3	DTSE	0.050	ug/L	26-FEB-20	26-FEB-20	R5008993
Silicon (Si)-Dissolved	0.393		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	16.4		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.182		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.00350		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	817		0.50	mg/L		27-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-1 LC_MSAW10_150_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:28							
Matrix: WG							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		25-FEB-20	R5004286
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0079		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00028		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00015		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0179		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	0.034		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.0073		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	142		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00013		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	0.43		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	0.00097		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	2.78		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	0.000118		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0772		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	114		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.114		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.00145		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.00158		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	4.23		0.050	mg/L		27-FEB-20	R5010446
Selenium (Se)-Total	6.02		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	0.45		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	16.4		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.186		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00300		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	7.0		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	199		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	2.78	DLHC	0.050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	31.5	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1350		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	0.14	DLHC	0.10	mg/L		21-FEB-20	R5002866

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-1 LC_MSAW10_150_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:28 Matrix: WG							
Ion Balance Calculation							
Ion Balance	95.3		-100	%		27-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.4			%		27-FEB-20	
Anion Sum	18.3			meq/L		27-FEB-20	
Cation Sum	17.4			meq/L		27-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.37	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0409	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect.							
ORP	348		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	635	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids							
Total Dissolved Solids	1120	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids							
Total Suspended Solids	7.7		1.0	mg/L		26-FEB-20	R5010187
Turbidity							
Turbidity	21.1		0.10	NTU		23-FEB-20	R5004687
pH							
pH	7.97		0.10	pH		21-FEB-20	R5002432
L2419616-2 LC_MSAW6_100_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	675		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	4.08		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	0.136		0.0015	mg/L		24-FEB-20	R5003550
Sulphide (as H2S)	0.145		0.0016	mg/L		25-FEB-20	
Total Kjeldahl Nitrogen	0.404		0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	6.35		0.50	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011049
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.0317		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-2 LC_MSAW6_100_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:10							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Boron (B)-Dissolved	0.031		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	228		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	0.24		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	29.0		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.0156		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	93.6		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	1.20		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.000879	DTC	0.000050	mg/L	28-FEB-20	28-FEB-20	R5011498
Nickel (Ni)-Dissolved	0.00104		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	3.37		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Selenium (Se)-Dissolved	0.131		0.050	ug/L	26-FEB-20	26-FEB-20	R5008993
Silicon (Si)-Dissolved	3.73		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	4.28		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.181		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.00217		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	955		0.50	mg/L		28-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		25-FEB-20	R5004286
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0077		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00025		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00010		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0341		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	0.032		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.0911		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	234		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00018		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	1.69		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	30.6		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	0.000064		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0147		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	93.3		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	1.23		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.000587		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.00424		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	3.34		0.050	mg/L		27-FEB-20	R5010446

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-2 LC_MSAW6_100_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:10							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Selenium (Se)-Total	0.074		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	3.65		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	4.21		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.186		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00226		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	0.0048		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	68.5		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	554		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	554		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	0.303		0.0050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	9.4	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1490		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	0.14	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation							
Cation - Anion Balance	-0.5			%		28-FEB-20	
Anion Sum	21.2			meq/L		28-FEB-20	
Cation Sum	21.0			meq/L		28-FEB-20	
Ion Balance Calculation							
Ion Balance	98.9		-100	%		28-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.229	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect.							
ORP	354		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	473	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids							
Total Dissolved Solids	1230	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids							
Total Suspended Solids	66.9		1.0	mg/L		26-FEB-20	R5010187
Turbidity							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-2 LC_MSAW6_100_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 10:10 Matrix: WG							
Turbidity Turbidity	304		0.10	NTU		23-FEB-20	R5004687
pH pH	7.31		0.10	pH		21-FEB-20	R5002432
L2419616-3 LC_MSAW6_150_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	372		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	1.70		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	<0.0015		0.0015	mg/L		25-FEB-20	R5003550
Sulphide (as H2S)	<0.0016		0.0016	mg/L		26-FEB-20	
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	1.47		0.50	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-FEB-20	28-FEB-20	R5011498
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011049
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011049
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-FEB-20	28-FEB-20	R5011498
Antimony (Sb)-Dissolved	0.00069		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498
Barium (Ba)-Dissolved	0.0136		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	28-FEB-20	R5011498
Boron (B)-Dissolved	0.037		0.010	mg/L	28-FEB-20	28-FEB-20	R5011498
Cadmium (Cd)-Dissolved	0.859		0.0050	ug/L	28-FEB-20	28-FEB-20	R5011498
Calcium (Ca)-Dissolved	307		0.050	mg/L	28-FEB-20	28-FEB-20	R5011498
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498
Cobalt (Co)-Dissolved	6.73		0.10	ug/L	28-FEB-20	28-FEB-20	R5011498
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	28-FEB-20	28-FEB-20	R5011498
Iron (Fe)-Dissolved	0.028		0.010	mg/L	28-FEB-20	28-FEB-20	R5011498
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	28-FEB-20	R5011498
Lithium (Li)-Dissolved	0.174		0.0010	mg/L	28-FEB-20	28-FEB-20	R5011498
Magnesium (Mg)-Dissolved	133		0.10	mg/L	28-FEB-20	28-FEB-20	R5011498
Manganese (Mn)-Dissolved	0.424		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498
Molybdenum (Mo)-Dissolved	0.00283		0.000050	mg/L	28-FEB-20	28-FEB-20	R5011498
Nickel (Ni)-Dissolved	0.0243		0.00050	mg/L	28-FEB-20	28-FEB-20	R5011498
Potassium (K)-Dissolved	4.52		0.050	mg/L	28-FEB-20	28-FEB-20	R5011498
Selenium (Se)-Dissolved	58.6		0.050	ug/L	28-FEB-20	28-FEB-20	R5011498
Silicon (Si)-Dissolved	2.46		0.050	mg/L	28-FEB-20	28-FEB-20	R5011498
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-FEB-20	28-FEB-20	R5011498
Sodium (Na)-Dissolved	21.4		0.050	mg/L	28-FEB-20	28-FEB-20	R5011498
Strontium (Sr)-Dissolved	0.337		0.00020	mg/L	28-FEB-20	28-FEB-20	R5011498
Thallium (Tl)-Dissolved	0.000045		0.000010	mg/L	28-FEB-20	28-FEB-20	R5011498
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	28-FEB-20	R5011498

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-3 LC_MSAW6_150_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:10							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-FEB-20	28-FEB-20	R5011498
Uranium (U)-Dissolved	0.0103		0.000010	mg/L	28-FEB-20	28-FEB-20	R5011498
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-FEB-20	28-FEB-20	R5011498
Zinc (Zn)-Dissolved	0.0173		0.0010	mg/L	28-FEB-20	28-FEB-20	R5011498
Hardness							
Hardness (as CaCO3)	1310		0.50	mg/L		28-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-FEB-20	R5011498
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		25-FEB-20	R5004286
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-FEB-20	R5011498
Antimony (Sb)-Total	0.00073		0.00010	mg/L		28-FEB-20	R5011498
Arsenic (As)-Total	0.00014		0.00010	mg/L		28-FEB-20	R5011498
Barium (Ba)-Total	0.0147		0.00010	mg/L		28-FEB-20	R5011498
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-FEB-20	R5011498
Boron (B)-Total	0.037		0.010	mg/L		28-FEB-20	R5011498
Cadmium (Cd)-Total	0.910		0.0050	ug/L		28-FEB-20	R5011498
Calcium (Ca)-Total	309		0.050	mg/L		28-FEB-20	R5011498
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-FEB-20	R5011498
Cobalt (Co)-Total	7.01		0.10	ug/L		28-FEB-20	R5011498
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-FEB-20	R5011498
Iron (Fe)-Total	0.134		0.010	mg/L		28-FEB-20	R5011498
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-FEB-20	R5011498
Lithium (Li)-Total	0.172		0.0010	mg/L		28-FEB-20	R5011498
Magnesium (Mg)-Total	131		0.10	mg/L		28-FEB-20	R5011498
Manganese (Mn)-Total	0.420		0.00010	mg/L		28-FEB-20	R5011498
Molybdenum (Mo)-Total	0.00281		0.000050	mg/L		28-FEB-20	R5011498
Nickel (Ni)-Total	0.0253		0.00050	mg/L		28-FEB-20	R5011498
Potassium (K)-Total	4.43		0.050	mg/L		28-FEB-20	R5011498
Selenium (Se)-Total	56.5		0.050	ug/L		28-FEB-20	R5011498
Silicon (Si)-Total	2.53		0.10	mg/L		28-FEB-20	R5011498
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-FEB-20	R5011498
Sodium (Na)-Total	21.5		0.050	mg/L		28-FEB-20	R5011498
Strontium (Sr)-Total	0.361		0.00020	mg/L		28-FEB-20	R5011498
Thallium (Tl)-Total	0.000048		0.000010	mg/L		28-FEB-20	R5011498
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-FEB-20	R5011498
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-FEB-20	R5011498
Uranium (U)-Total	0.0106		0.000010	mg/L		28-FEB-20	R5011498
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-FEB-20	R5011498
Zinc (Zn)-Total	0.0183		0.0030	mg/L		28-FEB-20	R5011498
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	30.1		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	305		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	305		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	0.114		0.0050	mg/L		26-FEB-20	R5010147

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-3 LC_MSAW6_150_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:10 Matrix: WG							
Bromide in Water by IC (Low Level) Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC Chloride (Cl)	47.3	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC) Conductivity (@ 25C)	2050		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC Fluoride (F)	0.20	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation Cation - Anion Balance	-0.1			%		28-FEB-20	
Anion Sum	27.4			meq/L		28-FEB-20	
Cation Sum	27.3			meq/L		28-FEB-20	
Ion Balance Calculation Ion Balance	99.8		-100	%		28-FEB-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	77.9	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0011		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect. ORP	353		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC Sulfate (SO4)	692	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids Total Dissolved Solids	1790	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids Total Suspended Solids	1.1		1.0	mg/L		26-FEB-20	R5010187
Turbidity Turbidity	1.79		0.10	NTU		23-FEB-20	R5004687
pH pH	7.73		0.10	pH		21-FEB-20	R5002432
L2419616-4 LC_MSAW6_190_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:20 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	355		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	1.39		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	<0.0015		0.0015	mg/L		25-FEB-20	R5003550
Sulphide (as H2S)	<0.0016		0.0016	mg/L		26-FEB-20	
Total Kjeldahl Nitrogen	0.851	TKNI	0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	16.4	DLM	5.0	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	25-FEB-20	R5004286

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-4 LC_MSAW6_190_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:20							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Aluminum (Al)-Dissolved	0.0053		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	0.00050		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.0243		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Boron (B)-Dissolved	0.033		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	0.451		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	264		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	5.11		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	0.00020		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	0.079		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.155		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	124		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	0.451		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.00207		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Nickel (Ni)-Dissolved	0.0195		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	4.79		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Selenium (Se)-Dissolved	51.7		0.050	ug/L	26-FEB-20	26-FEB-20	R5008993
Silicon (Si)-Dissolved	2.14		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	21.6		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.297		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	0.000037		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.00905		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	0.0084		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	1170		0.50	mg/L		27-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.032		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000078		0.0000050	mg/L		25-FEB-20	R5004286
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.253		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00088		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00050		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0607		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	0.034		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.683		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	268		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00055		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	7.46		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	0.00254		0.00050	mg/L		27-FEB-20	R5010446

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-4 LC_MSAW6_190_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	11.1		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	0.00113		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.145		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	124		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.556		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.00279		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.0264		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	4.67		0.050	mg/L		27-FEB-20	R5010446
Selenium (Se)-Total	49.0		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	2.57		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	0.000027		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	21.0		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.300		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	0.000056		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00931		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	0.00173		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	0.0201		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	18.3		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	291		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	291		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	0.184		0.0050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	43.6	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1910		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	0.18	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation							
Cation - Anion Balance	-2.5			%		27-FEB-20	
Anion Sum	25.7			meq/L		27-FEB-20	
Cation Sum	24.4			meq/L		27-FEB-20	
Ion Balance Calculation							
Ion Balance	95.2		-100	%		27-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	71.7	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect.							
ORP	427		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-4 LC_MSAW6_190_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 13:20 Matrix: WG							
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	649	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids							
Total Dissolved Solids	1670	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids							
Total Suspended Solids	92.3		1.0	mg/L		26-FEB-20	R5010187
Turbidity							
Turbidity	56.1		0.10	NTU		23-FEB-20	R5004687
pH							
pH	7.80		0.10	pH		21-FEB-20	R5002432
L2419616-5 LC_MSAW6_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	687		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	1.91		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	0.0167		0.0015	mg/L		25-FEB-20	R5003550
Sulphide (as H2S)	0.0177		0.0016	mg/L		26-FEB-20	
Total Kjeldahl Nitrogen	3.60		0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	2.17		0.50	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011049
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.0413		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Boron (B)-Dissolved	0.034		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	0.0233		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	270		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	4.00		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	10.5		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.0695		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	120		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	0.699		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.000987	DTC	0.000050	mg/L	28-FEB-20	28-FEB-20	R5011498
Nickel (Ni)-Dissolved	0.00422		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	4.70		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-5 LC_MSAW6_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Selenium (Se)-Dissolved	12.8	DTSE	0.050	ug/L	26-FEB-20	26-FEB-20	R5008993
Silicon (Si)-Dissolved	1.47		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	13.7		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.213		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.0310		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	1170		0.50	mg/L		28-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		26-FEB-20	R5006633
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00023		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0407		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	0.035		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.0177		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	272		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	4.04		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	11.0		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0677		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	121		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.681		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.000280		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.00409		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	4.50		0.050	mg/L		27-FEB-20	R5010446
Selenium (Se)-Total	8.54		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	1.49		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	13.3		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.218		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.0312		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	42.4		1.0	mg/L		21-FEB-20	R5002440

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-5 LC_MSAW6_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:50 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	563		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	563		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	4.05	DLHC	0.050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	33.8	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1770		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	0.11	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation							
Ion Balance	95.4		-100	%		28-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.3			%		28-FEB-20	
Anion Sum	26.1			meq/L		28-FEB-20	
Cation Sum	24.9			meq/L		28-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.210	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0058	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect.							
ORP	344		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	669	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids							
Total Dissolved Solids	1550	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids							
Total Suspended Solids	24.9		1.0	mg/L		26-FEB-20	R5010187
Turbidity							
Turbidity	123		0.10	NTU		23-FEB-20	R5004687
pH							
pH	7.78		0.10	pH		21-FEB-20	R5002432
L2419616-6 LC_NNCCULV_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	338		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	1.12		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Sulphide (as S)	<0.0015		0.0015	mg/L		25-FEB-20	R5003550
Sulphide (as H2S)	<0.0016		0.0016	mg/L		26-FEB-20	
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		26-FEB-20	R5007568

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-6 LC_NNCCULV_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:10							
Matrix: WG							
Total Organic Carbon	2.21		0.50	mg/L		27-FEB-20	R5011204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	0.00053		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.0524		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Boron (B)-Dissolved	0.022		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	0.173		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	282		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	0.20		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.0794		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	127		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	0.00068		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.00221		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Nickel (Ni)-Dissolved	0.0309		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	3.41		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Selenium (Se)-Dissolved	207		0.050	ug/L	26-FEB-20	26-FEB-20	R5008993
Silicon (Si)-Dissolved	2.85		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	9.40		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.286		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	0.000022		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.00721		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	0.0132		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	1230		0.50	mg/L		27-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		26-FEB-20	R5006633
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0253		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00055		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00021		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.0560		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-FEB-20	R5010446

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-6 LC_NNCCULV_WG_2020-02_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:10							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Boron (B)-Total	0.022		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.199		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	291		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00013		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	0.22		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	0.038		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	0.000055		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0749		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	132		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.00142		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.00226		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.0317		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	3.37		0.050	mg/L		27-FEB-20	R5010446
Selenium (Se)-Total	194		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	2.89		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	9.44		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.299		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	0.000022		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00719		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	0.00051		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	0.0139		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	7.1		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	277		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	277		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	0.0156		0.0050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	47.9	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1950		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation							
Ion Balance	94.6		-100	%		27-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		27-FEB-20	
Anion Sum	26.5			meq/L		27-FEB-20	
Cation Sum	25.1			meq/L		27-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	73.2	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-6 LC_NNCCULV_WG_2020-02_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 09:10 Matrix: WG							
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0038		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect. ORP	396		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total Phosphorus (P)-Total	0.0044		0.0020	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC Sulfate (SO4)	692	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids Total Dissolved Solids	1760	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids Total Suspended Solids	4.3		1.0	mg/L		26-FEB-20	R5010187
Turbidity Turbidity	4.22		0.10	NTU		23-FEB-20	R5004687
pH pH	8.11		0.10	pH		21-FEB-20	R5002432
L2419616-7 LC_PIZP1101_WG_Q1-2020_NP Sampled By: D.NICHOLAS on 20-FEB-20 @ 11:30 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	235		5.0	mg/L		21-FEB-20	R5002432
Carbonate (CO3)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Dissolved Organic Carbon	0.99		0.50	mg/L		27-FEB-20	R5011204
Hydroxide (OH)	<5.0		5.0	mg/L		21-FEB-20	R5002432
Total Kjeldahl Nitrogen	0.484		0.050	mg/L		26-FEB-20	R5007568
Total Organic Carbon	8.47		0.50	mg/L		27-FEB-20	R5011204
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	24-FEB-20	25-FEB-20	R5005854
EPH19-32	<0.25		0.25	mg/L	24-FEB-20	25-FEB-20	R5005854
Surrogate: 2-Bromobenzotrifluoride	91.3		60-140	%	24-FEB-20	25-FEB-20	R5005854
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		25-FEB-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	24-FEB-20	25-FEB-20	R5005854
Surrogate: 2-Bromobenzotrifluoride	91.3		60-140	%	24-FEB-20	25-FEB-20	R5005854
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-FEB-20	26-FEB-20	R5008993
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-FEB-20	25-FEB-20	R5004286
Dissolved Mercury Filtration Location	FIELD					24-FEB-20	R5003986
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-FEB-20	R5008117
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-FEB-20	26-FEB-20	R5008993
Antimony (Sb)-Dissolved	0.00014		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Arsenic (As)-Dissolved	0.00100		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Barium (Ba)-Dissolved	0.398		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-7 LC_PIZP1101_WG_Q1-2020_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 11:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Boron (B)-Dissolved	0.021		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-FEB-20	26-FEB-20	R5008993
Calcium (Ca)-Dissolved	26.6		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Cobalt (Co)-Dissolved	0.27		0.10	ug/L	26-FEB-20	26-FEB-20	R5008993
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Lithium (Li)-Dissolved	0.0094		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Magnesium (Mg)-Dissolved	13.3		0.10	mg/L	26-FEB-20	26-FEB-20	R5008993
Manganese (Mn)-Dissolved	0.266		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Molybdenum (Mo)-Dissolved	0.00926		0.000050	mg/L	26-FEB-20	26-FEB-20	R5008993
Nickel (Ni)-Dissolved	0.00055		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Potassium (K)-Dissolved	0.804		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-FEB-20	27-FEB-20	R5010606
Silicon (Si)-Dissolved	3.76		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Sodium (Na)-Dissolved	19.6		0.050	mg/L	26-FEB-20	26-FEB-20	R5008993
Strontium (Sr)-Dissolved	0.185		0.00020	mg/L	26-FEB-20	26-FEB-20	R5008993
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Tin (Sn)-Dissolved	0.00035		0.00010	mg/L	26-FEB-20	26-FEB-20	R5008993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-FEB-20	26-FEB-20	R5008993
Uranium (U)-Dissolved	0.00183		0.000010	mg/L	26-FEB-20	26-FEB-20	R5008993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-FEB-20	26-FEB-20	R5008993
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	26-FEB-20	26-FEB-20	R5008993
Hardness							
Hardness (as CaCO3)	121		0.50	mg/L		27-FEB-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.247		0.020	ug/L		27-FEB-20	R5010446
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000169		0.0000050	mg/L		26-FEB-20	R5006633
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	4.33		0.0030	mg/L		27-FEB-20	R5010446
Antimony (Sb)-Total	0.00059		0.00010	mg/L		27-FEB-20	R5010446
Arsenic (As)-Total	0.00290		0.00010	mg/L		27-FEB-20	R5010446
Barium (Ba)-Total	0.524		0.00010	mg/L		27-FEB-20	R5010446
Bismuth (Bi)-Total	0.000063		0.000050	mg/L		27-FEB-20	R5010446
Boron (B)-Total	0.030		0.010	mg/L		27-FEB-20	R5010446
Cadmium (Cd)-Total	0.535		0.0050	ug/L		27-FEB-20	R5010446
Calcium (Ca)-Total	46.9		0.050	mg/L		27-FEB-20	R5010446
Chromium (Cr)-Total	0.00690		0.00010	mg/L		27-FEB-20	R5010446
Cobalt (Co)-Total	2.40		0.10	ug/L		27-FEB-20	R5010446
Copper (Cu)-Total	0.0173		0.00050	mg/L		27-FEB-20	R5010446
Iron (Fe)-Total	5.09		0.010	mg/L		27-FEB-20	R5010446
Lead (Pb)-Total	0.00321		0.000050	mg/L		27-FEB-20	R5010446
Lithium (Li)-Total	0.0145		0.0010	mg/L		27-FEB-20	R5010446
Magnesium (Mg)-Total	17.8		0.10	mg/L		27-FEB-20	R5010446
Manganese (Mn)-Total	0.503		0.00010	mg/L		27-FEB-20	R5010446
Molybdenum (Mo)-Total	0.00928		0.000050	mg/L		27-FEB-20	R5010446
Nickel (Ni)-Total	0.00847		0.00050	mg/L		27-FEB-20	R5010446
Potassium (K)-Total	2.30		0.050	mg/L		27-FEB-20	R5010446

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2419616-7 LC_PIZP1101_WG_Q1-2020_NP							
Sampled By: D.NICHOLAS on 20-FEB-20 @ 11:30							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Selenium (Se)-Total	1.10		0.050	ug/L		27-FEB-20	R5010446
Silicon (Si)-Total	9.94		0.10	mg/L		27-FEB-20	R5010446
Silver (Ag)-Total	0.000224		0.000010	mg/L		27-FEB-20	R5010446
Sodium (Na)-Total	19.8		0.050	mg/L		27-FEB-20	R5010446
Strontium (Sr)-Total	0.224		0.00020	mg/L		27-FEB-20	R5010446
Thallium (Tl)-Total	0.000239		0.000010	mg/L		27-FEB-20	R5010446
Tin (Sn)-Total	0.00158		0.00010	mg/L		27-FEB-20	R5010446
Titanium (Ti)-Total	0.024		0.010	mg/L		27-FEB-20	R5010446
Uranium (U)-Total	0.00221		0.000010	mg/L		27-FEB-20	R5010446
Vanadium (V)-Total	0.0126		0.00050	mg/L		27-FEB-20	R5010446
Zinc (Zn)-Total	0.0474		0.0030	mg/L		27-FEB-20	R5010446
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.6		1.0	mg/L		21-FEB-20	R5002440
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	192		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-FEB-20	R5002432
Alkalinity, Total (as CaCO3)	192		1.0	mg/L		21-FEB-20	R5002432
Ammonia, Total (as N)							
Ammonia as N	0.0383		0.0050	mg/L		26-FEB-20	R5010147
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-FEB-20	R5002866
Chloride in Water by IC							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		21-FEB-20	R5002866
Electrical Conductivity (EC)							
Conductivity (@ 25C)	288		2.0	uS/cm		21-FEB-20	R5002432
Fluoride in Water by IC							
Fluoride (F)	2.08	DLHC	0.10	mg/L		21-FEB-20	R5002866
Ion Balance Calculation							
Cation - Anion Balance	-11.0			%		27-FEB-20	
Anion Sum	4.12			meq/L		27-FEB-20	
Cation Sum	3.31			meq/L		27-FEB-20	
Ion Balance Calculation							
Ion Balance	80.2	BL:INT	-100	%		28-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.289	DLHC	0.025	mg/L		21-FEB-20	R5002866
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-FEB-20	R5002866
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0068		0.0010	mg/L		21-FEB-20	R5000246
Oxidation redution potential by elect.							
ORP	299		-1000	mV		27-FEB-20	R5010750
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.308	DLHC	0.050	mg/L		25-FEB-20	R5005330
Sulfate in Water by IC							
Sulfate (SO4)	7.3	DLHC	1.5	mg/L		21-FEB-20	R5002866
Total Dissolved Solids							
Total Dissolved Solids	244	DLHC	20	mg/L		26-FEB-20	R5010186
Total Suspended Solids							
Total Suspended Solids	221		1.0	mg/L		26-FEB-20	R5010187
Turbidity							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32) The sum of EPH(C10-C19) and EPH(C19-C32)	Sum of EPH - Auto Calculated
F-IC-N-CL	Water	Fluoride in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
HARDNESS-CALC-VA	Water	Hardness Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	APHA 2340B
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	APHA 3030B/EPA 1631E (mod)
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	EPA 1631E (mod)
IONBALANCE-BC-CL	Water	Ion Balance Calculation Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero. Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as: $\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$	APHA 1030E
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	APHA 3030B/6020A (mod)
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	EPA 200.2/6020A (mod)
NH3-L-F-CL	Water	Ammonia, Total (as N) This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect. This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV. It is recommended that this analysis be conducted in the field.	ASTM D1498
P-T-L-COL-CL	Water	Phosphorus (P)-Total This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	APHA 4500-P PHOSPHORUS
PH-CL	Water	pH pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	APHA 4500 H-Electrode
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SULPHIDE-CFA-ED	Water	Sulphide	APHA 4500 -S E-Auto-Colorimetry
		A continuous flow manifold adds HCl to the sample which converts sulphide to a gas, then the sulphide is separated from the flow using a gas dialysis membrane. A colorimetric reaction produces a methylene blue compound which is measured at 660 nm. This follows the Standard Methods procedure 4500 S-E.	
SULPHIDE>H2S-ED	Water	Sulphide as Hydrogen Sulphide	Calculation from Sulphide
		Calculated by multiplying Sulphide as S by the molar ratio of H2S to S (34/32): Sulphide (as H2S) = 1.063 * Sulphide (as S)	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
		Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).	
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
		Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_MSAW_2020-02-20

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2419616

Report Date: 29-JAN-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5002440							
WG3280566-5	LCS							
Acidity (as CaCO3)			97.4		%		85-115	21-FEB-20
WG3280566-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	21-FEB-20
ALK-MAN-CL								
	Water							
Batch	R5002432							
WG3280526-5	LCS							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	21-FEB-20
WG3280526-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5008993							
WG3282244-3	DUP	L2419616-2						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-FEB-20
WG3282244-2	LCS							
Beryllium (Be)-Dissolved			93.5		%		80-120	26-FEB-20
WG3282244-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-FEB-20
WG3282244-4	MS	L2419616-1						
Beryllium (Be)-Dissolved			92.6		%		70-130	26-FEB-20
Batch	R5011498							
WG3283574-2	LCS							
Beryllium (Be)-Dissolved			102.7		%		80-120	28-FEB-20
WG3283574-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5010446							
WG3281473-2	LCS							
Beryllium (Be)-Total			93.8		%		80-120	27-FEB-20
WG3281473-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-FEB-20
BIC-CL								
	Water							
Batch	R5002432							
WG3280526-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-FEB-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2419616

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
	Water							
Batch	R5002866							
WG3280685-10	LCS							
Bromide (Br)			105.3		%		85-115	21-FEB-20
WG3280685-6	LCS							
Bromide (Br)			99.5		%		85-115	21-FEB-20
WG3280685-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-FEB-20
WG3280685-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5011204							
WG3283658-7	DUP	L2419616-6						
Dissolved Organic Carbon		1.12	1.14		mg/L	2.3	20	27-FEB-20
WG3283658-2	LCS							
Dissolved Organic Carbon			101.5		%		80-120	27-FEB-20
WG3283658-6	LCS							
Dissolved Organic Carbon			85.6		%		80-120	27-FEB-20
WG3283658-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-FEB-20
WG3283658-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-FEB-20
WG3283658-8	MS	L2419616-6						
Dissolved Organic Carbon			93.5		%		70-130	27-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5011204							
WG3283658-7	DUP	L2419616-6						
Total Organic Carbon		2.21	2.28		mg/L	2.9	20	27-FEB-20
WG3283658-2	LCS							
Total Organic Carbon			106.0		%		80-120	27-FEB-20
WG3283658-6	LCS							
Total Organic Carbon			87.2		%		80-120	27-FEB-20
WG3283658-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-FEB-20
WG3283658-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-FEB-20
WG3283658-8	MS	L2419616-6						
Total Organic Carbon			93.5		%		70-130	27-FEB-20
CL-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2419616

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5002866							
WG3280685-10	LCS							
Chloride (Cl)			103.9		%		90-110	21-FEB-20
WG3280685-6	LCS							
Chloride (Cl)			103.7		%		90-110	21-FEB-20
WG3280685-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-FEB-20
WG3280685-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-FEB-20
CO3-CL	Water							
Batch	R5002432							
WG3280526-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-FEB-20
EC-L-PCT-CL	Water							
Batch	R5002432							
WG3280526-5	LCS							
Conductivity (@ 25C)			96.9		%		90-110	21-FEB-20
WG3280526-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-FEB-20
F-IC-N-CL	Water							
Batch	R5002866							
WG3280685-10	LCS							
Fluoride (F)			108.3		%		90-110	21-FEB-20
WG3280685-6	LCS							
Fluoride (F)			109.6		%		90-110	21-FEB-20
WG3280685-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-FEB-20
WG3280685-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-FEB-20
HG-D-CVAA-VA	Water							
Batch	R5004286							
WG3280947-6	LCS							
Mercury (Hg)-Dissolved			103.0		%		80-120	25-FEB-20
WG3280947-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-FEB-20
HG-T-CVAA-VA	Water							



Quality Control Report

Workorder: L2419616

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA								
Water								
Batch	R5004286							
WG3281079-5	DUP	L2419616-3						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	25-FEB-20
WG3281079-2	LCS							
Mercury (Hg)-Total			100.6		%		80-120	25-FEB-20
WG3281079-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	25-FEB-20
WG3281079-6	MS	L2419616-4						
Mercury (Hg)-Total			95.9		%		70-130	25-FEB-20
Batch								
R5006633								
WG3281881-2	LCS							
Mercury (Hg)-Total			100.4		%		80-120	26-FEB-20
WG3281881-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	26-FEB-20
MET-D-CCMS-VA								
Water								
Batch								
R5008993								
WG3282244-2	LCS							
Aluminum (Al)-Dissolved			103.8		%		80-120	26-FEB-20
Antimony (Sb)-Dissolved			99.8		%		80-120	26-FEB-20
Arsenic (As)-Dissolved			100.5		%		80-120	26-FEB-20
Barium (Ba)-Dissolved			103.5		%		80-120	26-FEB-20
Bismuth (Bi)-Dissolved			100.1		%		80-120	26-FEB-20
Boron (B)-Dissolved			94.9		%		80-120	26-FEB-20
Cadmium (Cd)-Dissolved			96.0		%		80-120	26-FEB-20
Calcium (Ca)-Dissolved			104.7		%		80-120	26-FEB-20
Chromium (Cr)-Dissolved			99.4		%		80-120	26-FEB-20
Cobalt (Co)-Dissolved			99.3		%		80-120	26-FEB-20
Copper (Cu)-Dissolved			98.6		%		80-120	26-FEB-20
Iron (Fe)-Dissolved			103.4		%		80-120	26-FEB-20
Lead (Pb)-Dissolved			98.5		%		80-120	26-FEB-20
Lithium (Li)-Dissolved			93.5		%		80-120	26-FEB-20
Magnesium (Mg)-Dissolved			100.2		%		80-120	26-FEB-20
Manganese (Mn)-Dissolved			101.3		%		80-120	26-FEB-20
Molybdenum (Mo)-Dissolved			98.0		%		80-120	26-FEB-20
Nickel (Ni)-Dissolved			101.3		%		80-120	26-FEB-20
Potassium (K)-Dissolved			105.6		%		80-120	26-FEB-20
Selenium (Se)-Dissolved			97.9		%		80-120	26-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5008993							
WG3282244-2	LCS							
Silicon (Si)-Dissolved			102.6		%		60-140	26-FEB-20
Silver (Ag)-Dissolved			105.3		%		80-120	26-FEB-20
Sodium (Na)-Dissolved			104.3		%		80-120	26-FEB-20
Strontium (Sr)-Dissolved			97.4		%		80-120	26-FEB-20
Thallium (Tl)-Dissolved			97.9		%		80-120	26-FEB-20
Tin (Sn)-Dissolved			98.7		%		80-120	26-FEB-20
Titanium (Ti)-Dissolved			99.1		%		80-120	26-FEB-20
Uranium (U)-Dissolved			103.7		%		80-120	26-FEB-20
Vanadium (V)-Dissolved			101.6		%		80-120	26-FEB-20
Zinc (Zn)-Dissolved			105.3		%		80-120	26-FEB-20
WG3282244-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5008993							
WG3282244-1	MB	NP						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-FEB-20
WG3282244-4	MS	L2419616-1						
Aluminum (Al)-Dissolved			100.2		%		70-130	26-FEB-20
Antimony (Sb)-Dissolved			97.0		%		70-130	26-FEB-20
Arsenic (As)-Dissolved			98.8		%		70-130	26-FEB-20
Barium (Ba)-Dissolved			95.5		%		70-130	26-FEB-20
Bismuth (Bi)-Dissolved			91.1		%		70-130	26-FEB-20
Boron (B)-Dissolved			92.6		%		70-130	26-FEB-20
Cadmium (Cd)-Dissolved			94.6		%		70-130	26-FEB-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Chromium (Cr)-Dissolved			95.6		%		70-130	26-FEB-20
Cobalt (Co)-Dissolved			93.6		%		70-130	26-FEB-20
Copper (Cu)-Dissolved			89.9		%		70-130	26-FEB-20
Iron (Fe)-Dissolved			96.2		%		70-130	26-FEB-20
Lead (Pb)-Dissolved			93.5		%		70-130	26-FEB-20
Lithium (Li)-Dissolved			89.3		%		70-130	26-FEB-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Molybdenum (Mo)-Dissolved			96.5		%		70-130	26-FEB-20
Nickel (Ni)-Dissolved			91.2		%		70-130	26-FEB-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Selenium (Se)-Dissolved			97.7		%		70-130	26-FEB-20
Silicon (Si)-Dissolved			97.0		%		70-130	26-FEB-20
Silver (Ag)-Dissolved			97.4		%		70-130	26-FEB-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	26-FEB-20
Thallium (Tl)-Dissolved			94.0		%		70-130	26-FEB-20
Tin (Sn)-Dissolved			99.1		%		70-130	26-FEB-20



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MET-D-CCMS-VA								
	Water							
Batch	R5008993							
WG3282244-4 MS		L2419616-1						
Titanium (Ti)-Dissolved			101.0		%		70-130	26-FEB-20
Uranium (U)-Dissolved			99.2		%		70-130	26-FEB-20
Vanadium (V)-Dissolved			100.1		%		70-130	26-FEB-20
Zinc (Zn)-Dissolved			90.5		%		70-130	26-FEB-20
Batch	R5011498							
WG3283574-2 LCS								
Aluminum (Al)-Dissolved			100.5		%		80-120	28-FEB-20
Antimony (Sb)-Dissolved			101.6		%		80-120	28-FEB-20
Arsenic (As)-Dissolved			99.5		%		80-120	28-FEB-20
Barium (Ba)-Dissolved			98.6		%		80-120	28-FEB-20
Bismuth (Bi)-Dissolved			99.99		%		80-120	28-FEB-20
Boron (B)-Dissolved			99.9		%		80-120	28-FEB-20
Cadmium (Cd)-Dissolved			97.5		%		80-120	28-FEB-20
Calcium (Ca)-Dissolved			102.2		%		80-120	28-FEB-20
Chromium (Cr)-Dissolved			97.4		%		80-120	28-FEB-20
Cobalt (Co)-Dissolved			96.9		%		80-120	28-FEB-20
Copper (Cu)-Dissolved			95.2		%		80-120	28-FEB-20
Iron (Fe)-Dissolved			89.0		%		80-120	28-FEB-20
Lead (Pb)-Dissolved			96.5		%		80-120	28-FEB-20
Lithium (Li)-Dissolved			104.3		%		80-120	28-FEB-20
Magnesium (Mg)-Dissolved			98.5		%		80-120	28-FEB-20
Manganese (Mn)-Dissolved			99.7		%		80-120	28-FEB-20
Molybdenum (Mo)-Dissolved			108.0		%		80-120	28-FEB-20
Nickel (Ni)-Dissolved			99.2		%		80-120	28-FEB-20
Potassium (K)-Dissolved			95.9		%		80-120	28-FEB-20
Selenium (Se)-Dissolved			95.7		%		80-120	28-FEB-20
Silicon (Si)-Dissolved			104.2		%		60-140	28-FEB-20
Silver (Ag)-Dissolved			105.2		%		80-120	28-FEB-20
Sodium (Na)-Dissolved			98.3		%		80-120	28-FEB-20
Strontium (Sr)-Dissolved			105.7		%		80-120	28-FEB-20
Thallium (Tl)-Dissolved			97.1		%		80-120	28-FEB-20
Tin (Sn)-Dissolved			97.6		%		80-120	28-FEB-20
Titanium (Ti)-Dissolved			100.3		%		80-120	28-FEB-20
Uranium (U)-Dissolved			96.4		%		80-120	28-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5011498							
WG3283574-2	LCS							
Vanadium (V)-Dissolved			99.8		%		80-120	28-FEB-20
Zinc (Zn)-Dissolved			98.4		%		80-120	28-FEB-20
WG3283574-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-FEB-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5010446							
WG3281473-2	LCS							
Aluminum (Al)-Total			114.3		%		80-120	27-FEB-20
Antimony (Sb)-Total			108.1		%		80-120	27-FEB-20
Arsenic (As)-Total			106.7		%		80-120	27-FEB-20
Barium (Ba)-Total			107.0		%		80-120	27-FEB-20
Bismuth (Bi)-Total			103.5		%		80-120	27-FEB-20
Boron (B)-Total			92.0		%		80-120	27-FEB-20
Cadmium (Cd)-Total			100.2		%		80-120	27-FEB-20
Calcium (Ca)-Total			103.0		%		80-120	27-FEB-20
Chromium (Cr)-Total			104.7		%		80-120	27-FEB-20
Cobalt (Co)-Total			102.1		%		80-120	27-FEB-20
Copper (Cu)-Total			101.9		%		80-120	27-FEB-20
Iron (Fe)-Total			101.3		%		80-120	27-FEB-20
Lead (Pb)-Total			101.5		%		80-120	27-FEB-20
Lithium (Li)-Total			87.6		%		80-120	27-FEB-20
Magnesium (Mg)-Total			100.6		%		80-120	27-FEB-20
Manganese (Mn)-Total			104.1		%		80-120	27-FEB-20
Molybdenum (Mo)-Total			103.6		%		80-120	27-FEB-20
Nickel (Ni)-Total			100.8		%		80-120	27-FEB-20
Potassium (K)-Total			107.1		%		80-120	27-FEB-20
Selenium (Se)-Total			102.3		%		80-120	27-FEB-20
Silicon (Si)-Total			102.0		%		80-120	27-FEB-20
Silver (Ag)-Total			104.3		%		80-120	27-FEB-20
Sodium (Na)-Total			105.8		%		80-120	27-FEB-20
Strontium (Sr)-Total			101.5		%		80-120	27-FEB-20
Thallium (Tl)-Total			99.7		%		80-120	27-FEB-20
Tin (Sn)-Total			103.6		%		80-120	27-FEB-20
Titanium (Ti)-Total			108.4		%		80-120	27-FEB-20
Uranium (U)-Total			101.6		%		80-120	27-FEB-20
Vanadium (V)-Total			105.8		%		80-120	27-FEB-20
Zinc (Zn)-Total			107.3		%		80-120	27-FEB-20
WG3281473-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5010446							
WG3281473-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	27-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-FEB-20
NH3-L-F-CL		Water						
Batch	R5010147							
WG3282406-22	LCS							
Ammonia as N			93.3		%		85-115	26-FEB-20
WG3282406-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-FEB-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R5002866								
WG3280685-10	LCS							
Nitrite (as N)			100.5		%		90-110	21-FEB-20
WG3280685-6	LCS							
Nitrite (as N)			102.6		%		90-110	21-FEB-20
WG3280685-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-FEB-20
WG3280685-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-FEB-20
NO3-L-IC-N-CL								
Batch R5002866								
WG3280685-10	LCS							
Nitrate (as N)			106.1		%		90-110	21-FEB-20
WG3280685-6	LCS							
Nitrate (as N)			106.3		%		90-110	21-FEB-20
WG3280685-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-FEB-20
WG3280685-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-FEB-20
OH-CL								
Batch R5002432								
WG3280526-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-FEB-20
ORP-CL								
Batch R5010750								
WG3283238-3	CRM	CL-ORP						
ORP			228		mV		210-230	27-FEB-20
WG3283238-4	DUP	L2419616-1						
ORP		348	346	J	mV	2.4	15	27-FEB-20
P-T-L-COL-CL								
Batch R5005330								
WG3281135-10	LCS							
Phosphorus (P)-Total			104.6		%		80-120	25-FEB-20
WG3281135-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-FEB-20
PH-CL								
Batch R5005330								

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5002432							
WG3280526-5	LCS							
pH			7.05		pH		6.9-7.1	21-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R5000246							
WG3279680-4	LCS							
Orthophosphate-Dissolved (as P)			98.9		%		80-120	21-FEB-20
WG3279680-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-FEB-20
SO4-IC-N-CL	Water							
Batch	R5002866							
WG3280685-10	LCS							
Sulfate (SO4)			104.7		%		90-110	21-FEB-20
WG3280685-6	LCS							
Sulfate (SO4)			104.6		%		90-110	21-FEB-20
WG3280685-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-FEB-20
WG3280685-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R5010186							
WG3281916-5	LCS							
Total Dissolved Solids			103.0		%		85-115	26-FEB-20
WG3281916-4	MB							
Total Dissolved Solids			<10		mg/L		10	26-FEB-20
SULPHIDE-CFA-ED	Water							
Batch	R5003550							
WG3280881-16	DUP	L2419616-6						
Sulphide (as S)		<0.0015	<0.0015	RPD-NA	mg/L	N/A	20	25-FEB-20
WG3280881-14	LCS							
Sulphide (as S)			102.4		%		75-125	25-FEB-20
WG3280881-2	LCS							
Sulphide (as S)			114.1		%		75-125	24-FEB-20
WG3280881-1	MB							
Sulphide (as S)			<0.0015		mg/L		0.0015	24-FEB-20
WG3280881-13	MB							
Sulphide (as S)			<0.0015		mg/L		0.0015	25-FEB-20
WG3280881-15	MS	L2419616-6						

Quality Control Report

Workorder: L2419616

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SULPHIDE-CFA-ED								
Water								
Batch R5003550								
WG3280881-15 MS L2419616-6								
Sulphide (as S) 96.8 % 65-135 25-FEB-20								
TEH-BC-VA-CL								
Water								
Batch R5005854								
WG3281658-2 LCS								
EPH10-19 87.1 % 70-130 25-FEB-20								
EPH19-32 85.4 % 70-130 25-FEB-20								
WG3281658-1 MB								
EPH10-19 <0.25 mg/L 0.25 25-FEB-20								
EPH19-32 <0.25 mg/L 0.25 25-FEB-20								
Surrogate: 2-Bromobenzotrifluoride 76.2 % 60-140 25-FEB-20								
TEH-WATER-VA-CL								
Water								
Batch R5005854								
WG3281658-2 LCS								
TEH (C10-C30) 86.8 % 70-130 25-FEB-20								
WG3281658-1 MB								
TEH (C10-C30) <0.25 mg/L 0.25 25-FEB-20								
Surrogate: 2-Bromobenzotrifluoride 76.2 % 60-140 25-FEB-20								
TKN-L-F-CL								
Water								
Batch R5007568								
WG3282040-7 DUP L2419616-3								
Total Kjeldahl Nitrogen <0.050 <0.050 RPD-NA mg/L N/A 20 26-FEB-20								
WG3282040-10 LCS								
Total Kjeldahl Nitrogen 92.0 % 75-125 26-FEB-20								
WG3282040-2 LCS								
Total Kjeldahl Nitrogen 93.0 % 75-125 26-FEB-20								
WG3282040-6 LCS								
Total Kjeldahl Nitrogen 92.1 % 75-125 26-FEB-20								
WG3282040-1 MB								
Total Kjeldahl Nitrogen <0.050 mg/L 0.05 26-FEB-20								
WG3282040-5 MB								
Total Kjeldahl Nitrogen <0.050 mg/L 0.05 26-FEB-20								
WG3282040-9 MB								
Total Kjeldahl Nitrogen <0.050 mg/L 0.05 26-FEB-20								
WG3282040-14 MS L2419616-2								
Total Kjeldahl Nitrogen 99.4 % 70-130 27-FEB-20								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL								
	Water							
Batch	R5010187							
WG3281564-4	LCS							
Total Suspended Solids			105.6		%		85-115	26-FEB-20
WG3281564-3	MB							
Total Suspended Solids			<1.0		mg/L		1	26-FEB-20
TURBIDITY-CL								
	Water							
Batch	R5004687							
WG3280206-6	DUP	L2419616-4						
Turbidity		56.1	56.2		NTU	0.2	15	23-FEB-20
WG3280206-5	LCS							
Turbidity			103.5		%		85-115	23-FEB-20
WG3280206-4	MB							
Turbidity			<0.10		NTU		0.1	23-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Report Date: 29-JAN-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	20-FEB-20 10:28	27-FEB-20 12:00	0.25	169	hours	EHTR-FM
	2	20-FEB-20 10:10	27-FEB-20 12:00	0.25	170	hours	EHTR-FM
	3	20-FEB-20 13:10	27-FEB-20 12:00	0.25	167	hours	EHTR-FM
	4	20-FEB-20 13:20	27-FEB-20 12:00	0.25	167	hours	EHTR-FM
	5	20-FEB-20 09:50	27-FEB-20 12:00	0.25	170	hours	EHTR-FM
	6	20-FEB-20 09:10	27-FEB-20 12:00	0.25	171	hours	EHTR-FM
	7	20-FEB-20 11:30	27-FEB-20 12:00	0.25	168	hours	EHTR-FM
pH							
	1	20-FEB-20 10:28	21-FEB-20 15:00	0.25	29	hours	EHTR-FM
	2	20-FEB-20 10:10	21-FEB-20 15:00	0.25	29	hours	EHTR-FM
	3	20-FEB-20 13:10	21-FEB-20 15:00	0.25	26	hours	EHTR-FM
	4	20-FEB-20 13:20	21-FEB-20 15:00	0.25	26	hours	EHTR-FM
	5	20-FEB-20 09:50	21-FEB-20 15:00	0.25	29	hours	EHTR-FM
	6	20-FEB-20 09:10	21-FEB-20 15:00	0.25	30	hours	EHTR-FM
	7	20-FEB-20 11:30	21-FEB-20 15:00	0.25	28	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2419616 were received on 21-FEB-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

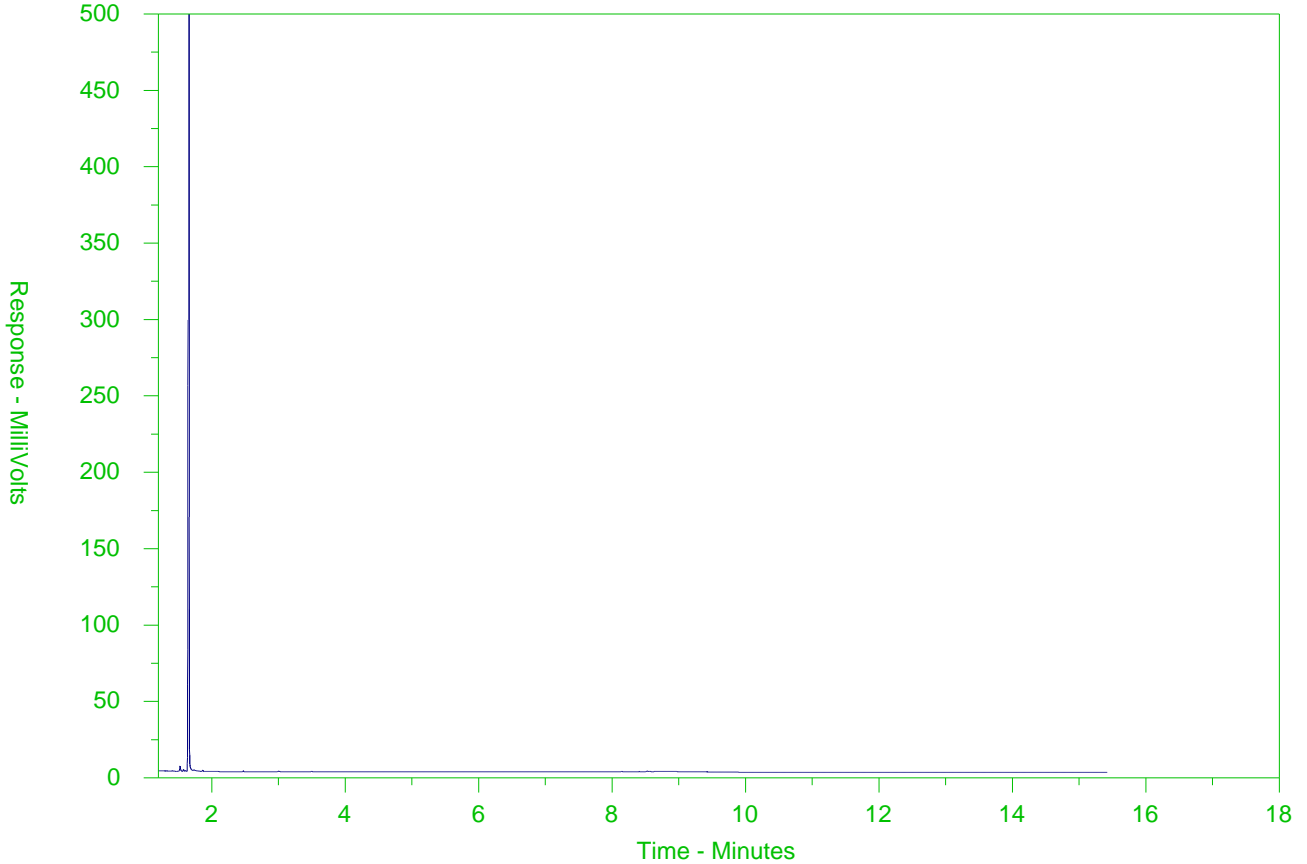
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2419616-7
 Client Sample ID: LC_PIZP1101_WG_Q1-2020_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: LCO MSAW 2020-02-20		TURNAROUND TIME:			RUSH:				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary		Report Format / Distribution		
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets		Excel	PDF	EDD
Email	Chris.Blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 1:	carla.froymanparker@teck.com	x
Address	Box 2003			Address	2559 29 Street NE		Email 2:	teckcoal@equisonline.com	x
	15km North Hwy 43						Email 3:	drake.tymstra@teck.com	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kirsten.campbell@teck.com
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 4:	dominique.nicholas@teck.com
Phone Number	250-425-3196			Phone Number	403 407 1794		PO number	VPO00680643	

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	Filtered - F	Field, L	Lab, P	Field & Lab, S	Sample	
LC_MSAW10_150_WG_2020-02_NP	LC_MSAW10_150	WG		2020/02/20	10:28	G	8	1	1	1	1	1	1	1	1	1						
LC_MSAW6_100_WG_2020-02_NP	LC_MSAW6_100	WG		2020/02/20	10:10	G	8	1	1	1	1	1	1	1	1	1						
LC_MSAW6_150_WG_2020-02_NP	LC_MSAW6_150	WG		2020/02/20	13:10	G	8	1	1	1	1	1	1	1	1	1						
LC_MSAW6_190_WG_2020-02_NP	LC_MSAW6_190	WG		2020/02/20	13:20	G	8	1	1	1	1	1	1	1	1	1						
LC_MSAW6_WG_2020-02_NP	LC_MSAW6	WG		2020/02/20	09:50	G	8	1	1	1	1	1	1	1	1	1						
LC_NNCCULV_WG_2020-02_NP	LC_NNCCULV	WG		2020/02/20	09:10	G	8	1	1	1	1	1	1	1	1	1						
LC_PIZP1101_WG_Q1-2020_NP	LC_PIZP1101	WG		2/20/2020	11:30	G	7	1	1	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
FORWARD TO: TECK FORWARD TO: TECK	D.Nicholas	20-Feb	<i>[Signature]</i>	2/21/2020

SERVICE REQUEST (rush subject to availability)		Sampler's Name	D.Nicholas	Mobile #	
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	February 20, 2020
	Emergency (1 Business Day) - 100% surcharge				
	For Emergency <1 Day, ASAP or Weekend - Contact ALS				



[Handwritten signature]



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 27-FEB-20
Report Date: 18-DEC-20 14:20 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2421760
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATIONS
C of C Numbers: LCO_DC_Q1_WG
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:53

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2421760-1 LC_PIZDC1307_WG_Q1_NP							
Sampled By: DN/DW on 26-FEB-20 @ 14:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	268		5.0	mg/L		28-FEB-20	R5012139
Carbonate (CO3)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Dissolved Organic Carbon	2.53		0.50	mg/L		02-MAR-20	R5013248
Hydroxide (OH)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Total Kjeldahl Nitrogen	0.285		0.050	mg/L		29-FEB-20	R5011718
Total Organic Carbon	2.5	DLM	2.5	mg/L		02-MAR-20	R5013248
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-FEB-20	29-FEB-20	R5012441
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011508
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAR-20	02-MAR-20	R5012397
Dissolved Mercury Filtration Location	FIELD					02-MAR-20	R5012475
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011508
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-FEB-20	29-FEB-20	R5012441
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Arsenic (As)-Dissolved	0.00138		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Barium (Ba)-Dissolved	1.46		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Boron (B)-Dissolved	0.023		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Cadmium (Cd)-Dissolved	<0.030	DLM	0.030	ug/L	28-FEB-20	29-FEB-20	R5012441
Calcium (Ca)-Dissolved	41.6		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	28-FEB-20	29-FEB-20	R5012441
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-FEB-20	29-FEB-20	R5012441
Iron (Fe)-Dissolved	0.444		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Lithium (Li)-Dissolved	0.0784		0.0010	mg/L	28-FEB-20	29-FEB-20	R5012441
Magnesium (Mg)-Dissolved	20.5		0.10	mg/L	28-FEB-20	29-FEB-20	R5012441
Manganese (Mn)-Dissolved	0.00911		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Molybdenum (Mo)-Dissolved	0.0314		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Nickel (Ni)-Dissolved	0.00094		0.00050	mg/L	28-FEB-20	29-FEB-20	R5012441
Potassium (K)-Dissolved	5.36		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	28-FEB-20	29-FEB-20	R5012441
Silicon (Si)-Dissolved	2.57		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-FEB-20	29-FEB-20	R5012441
Sodium (Na)-Dissolved	14.3		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Strontium (Sr)-Dissolved	0.130		0.00020	mg/L	28-FEB-20	29-FEB-20	R5012441
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	28-FEB-20	29-FEB-20	R5012441
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Uranium (U)-Dissolved	0.000029		0.000010	mg/L	28-FEB-20	02-MAR-20	R5013867
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-FEB-20	29-FEB-20	R5012441
Zinc (Zn)-Dissolved	0.0044		0.0010	mg/L	28-FEB-20	29-FEB-20	R5012441
Hardness							
Hardness (as CaCO3)	188		0.50	mg/L		03-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.050		0.020	ug/L		01-MAR-20	R5012210
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2421760-1 LC_PIZDC1307_WG_Q1_NP							
Sampled By: DN/DW on 26-FEB-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.365		0.0030	mg/L		01-MAR-20	R5012210
Antimony (Sb)-Total	0.00016		0.00010	mg/L		01-MAR-20	R5012210
Arsenic (As)-Total	0.00217		0.00010	mg/L		01-MAR-20	R5012210
Barium (Ba)-Total	1.51		0.00010	mg/L		01-MAR-20	R5012210
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-MAR-20	R5012210
Boron (B)-Total	0.025		0.010	mg/L		01-MAR-20	R5012210
Cadmium (Cd)-Total	0.179		0.0050	ug/L		01-MAR-20	R5012210
Calcium (Ca)-Total	38.1		0.050	mg/L		01-MAR-20	R5012210
Chromium (Cr)-Total	0.00179		0.00010	mg/L		01-MAR-20	R5012210
Cobalt (Co)-Total	0.29		0.10	ug/L		01-MAR-20	R5012210
Copper (Cu)-Total	<0.0040	DLB	0.0040	mg/L		01-MAR-20	R5012210
Iron (Fe)-Total	1.68		0.010	mg/L		01-MAR-20	R5012210
Lead (Pb)-Total	0.00108		0.000050	mg/L		01-MAR-20	R5012210
Lithium (Li)-Total	0.0742		0.0010	mg/L		01-MAR-20	R5012210
Magnesium (Mg)-Total	20.1		0.10	mg/L		01-MAR-20	R5012210
Manganese (Mn)-Total	0.0191		0.00010	mg/L		01-MAR-20	R5012210
Molybdenum (Mo)-Total	0.0327		0.000050	mg/L		01-MAR-20	R5012210
Nickel (Ni)-Total	0.00279		0.00050	mg/L		01-MAR-20	R5012210
Potassium (K)-Total	5.53		0.050	mg/L		01-MAR-20	R5012210
Selenium (Se)-Total	0.073		0.050	ug/L		01-MAR-20	R5012210
Silicon (Si)-Total	3.44		0.10	mg/L		01-MAR-20	R5012210
Silver (Ag)-Total	0.000060		0.000010	mg/L		01-MAR-20	R5012210
Sodium (Na)-Total	13.6		0.050	mg/L		01-MAR-20	R5012210
Strontium (Sr)-Total	0.141		0.00020	mg/L		01-MAR-20	R5012210
Thallium (Tl)-Total	0.000019		0.000010	mg/L		01-MAR-20	R5012210
Tin (Sn)-Total	0.00034		0.00010	mg/L		01-MAR-20	R5012210
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-MAR-20	R5012210
Uranium (U)-Total	0.000128		0.000010	mg/L		01-MAR-20	R5012210
Vanadium (V)-Total	0.00347		0.00050	mg/L		01-MAR-20	R5012210
Zinc (Zn)-Total	0.0208		0.0030	mg/L		01-MAR-20	R5012210
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.2		1.0	mg/L		27-FEB-20	R5011277
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	219		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Total (as CaCO3)	219		1.0	mg/L		28-FEB-20	R5012139
Ammonia, Total (as N)							
Ammonia as N	0.111		0.0050	mg/L		02-MAR-20	R5013870
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-FEB-20	R5011350
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		27-FEB-20	R5011350
Electrical Conductivity (EC)							
Conductivity (@ 25C)	374		2.0	uS/cm		28-FEB-20	R5012139
Fluoride in Water by IC							
Fluoride (F)	0.593		0.020	mg/L		27-FEB-20	R5011350
Ion Balance Calculation							
Cation - Anion Balance	1.6			%		03-MAR-20	
Anion Sum	4.41			meq/L		03-MAR-20	
Cation Sum	4.56			meq/L		03-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2421760-1 LC_PIZDC1307_WG_Q1_NP Sampled By: DN/DW on 26-FEB-20 @ 14:00 Matrix: WG							
Ion Balance Calculation							
Ion Balance	103		-100	%		03-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		27-FEB-20	R5011350
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-FEB-20	R5011350
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-FEB-20	R5011200
Oxidation redution potential by elect.							
ORP	291		-1000	mV		04-MAR-20	R5016186
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0605		0.0020	mg/L		02-MAR-20	R5012378
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		27-FEB-20	R5011350
Total Dissolved Solids							
Total Dissolved Solids	225	DLHC	20	mg/L		03-MAR-20	R5016286
Total Suspended Solids							
Total Suspended Solids	33.3		1.0	mg/L		03-MAR-20	R5016146
Turbidity							
Turbidity	55.0		0.10	NTU		28-FEB-20	R5011666
pH							
pH	8.23		0.10	pH		28-FEB-20	R5012139
L2421760-2 LC_PIZDC1308_WG_Q1_NP Sampled By: DN/DW on 26-FEB-20 @ 14:19 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	356		5.0	mg/L		28-FEB-20	R5012139
Carbonate (CO3)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Dissolved Organic Carbon	1.72		0.50	mg/L		02-MAR-20	R5013248
Hydroxide (OH)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Total Kjeldahl Nitrogen	0.126		0.050	mg/L		29-FEB-20	R5011718
Total Organic Carbon	2.14		0.50	mg/L		02-MAR-20	R5013248
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-FEB-20	29-FEB-20	R5012441
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011508
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAR-20	02-MAR-20	R5012397
Dissolved Mercury Filtration Location	FIELD					02-MAR-20	R5012475
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-FEB-20	R5011508
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-FEB-20	29-FEB-20	R5012441
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Arsenic (As)-Dissolved	0.00041		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Barium (Ba)-Dissolved	0.490		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Boron (B)-Dissolved	0.013		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	28-FEB-20	29-FEB-20	R5012441
Calcium (Ca)-Dissolved	70.8		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Cobalt (Co)-Dissolved	1.23		0.10	ug/L	28-FEB-20	29-FEB-20	R5012441
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	28-FEB-20	29-FEB-20	R5012441

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2421760-2 LC_PIZDC1308_WG_Q1_NP							
Sampled By: DN/DW on 26-FEB-20 @ 14:19							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	1.16		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Lithium (Li)-Dissolved	0.0241		0.0010	mg/L	28-FEB-20	29-FEB-20	R5012441
Magnesium (Mg)-Dissolved	23.4		0.10	mg/L	28-FEB-20	29-FEB-20	R5012441
Manganese (Mn)-Dissolved	0.0950		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Molybdenum (Mo)-Dissolved	0.00763		0.000050	mg/L	28-FEB-20	29-FEB-20	R5012441
Nickel (Ni)-Dissolved	0.00271		0.00050	mg/L	28-FEB-20	29-FEB-20	R5012441
Potassium (K)-Dissolved	3.09		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	28-FEB-20	29-FEB-20	R5012441
Silicon (Si)-Dissolved	3.82		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-FEB-20	29-FEB-20	R5012441
Sodium (Na)-Dissolved	6.07		0.050	mg/L	28-FEB-20	29-FEB-20	R5012441
Strontium (Sr)-Dissolved	0.109		0.00020	mg/L	28-FEB-20	29-FEB-20	R5012441
Thallium (Tl)-Dissolved	0.000031		0.000010	mg/L	28-FEB-20	29-FEB-20	R5012441
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-FEB-20	29-FEB-20	R5012441
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-FEB-20	29-FEB-20	R5012441
Uranium (U)-Dissolved	0.000688		0.000010	mg/L	28-FEB-20	29-FEB-20	R5012441
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	28-FEB-20	29-FEB-20	R5012441
Zinc (Zn)-Dissolved	0.0024		0.0010	mg/L	28-FEB-20	29-FEB-20	R5012441
Hardness							
Hardness (as CaCO3)	273		0.50	mg/L		02-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		01-MAR-20	R5012210
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0330		0.0030	mg/L		01-MAR-20	R5012210
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		01-MAR-20	R5012210
Arsenic (As)-Total	<0.00090	DLB	0.00090	mg/L		01-MAR-20	R5012210
Barium (Ba)-Total	0.523		0.00010	mg/L		01-MAR-20	R5012210
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-MAR-20	R5012210
Boron (B)-Total	0.014		0.010	mg/L		01-MAR-20	R5012210
Cadmium (Cd)-Total	0.223		0.0050	ug/L		01-MAR-20	R5012210
Calcium (Ca)-Total	67.3		0.050	mg/L		01-MAR-20	R5012210
Chromium (Cr)-Total	0.00014		0.00010	mg/L		01-MAR-20	R5012210
Cobalt (Co)-Total	1.25		0.10	ug/L		01-MAR-20	R5012210
Copper (Cu)-Total	<0.0010	DLB	0.0010	mg/L		01-MAR-20	R5012210
Iron (Fe)-Total	1.40		0.010	mg/L		01-MAR-20	R5012210
Lead (Pb)-Total	0.000233		0.000050	mg/L		01-MAR-20	R5012210
Lithium (Li)-Total	0.0222		0.0010	mg/L		01-MAR-20	R5012210
Magnesium (Mg)-Total	23.0		0.10	mg/L		01-MAR-20	R5012210
Manganese (Mn)-Total	0.0928		0.00010	mg/L		01-MAR-20	R5012210
Molybdenum (Mo)-Total	0.00803		0.000050	mg/L		01-MAR-20	R5012210
Nickel (Ni)-Total	0.00327		0.00050	mg/L		01-MAR-20	R5012210
Potassium (K)-Total	2.85		0.050	mg/L		01-MAR-20	R5012210
Selenium (Se)-Total	<0.050		0.050	ug/L		01-MAR-20	R5012210
Silicon (Si)-Total	4.31		0.10	mg/L		01-MAR-20	R5012210
Silver (Ag)-Total	<0.000010		0.000010	mg/L		01-MAR-20	R5012210
Sodium (Na)-Total	5.44		0.050	mg/L		01-MAR-20	R5012210
Strontium (Sr)-Total	0.115		0.00020	mg/L		01-MAR-20	R5012210
Thallium (Tl)-Total	0.000054		0.000010	mg/L		01-MAR-20	R5012210
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-MAR-20	R5012210
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-MAR-20	R5012210

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2421760-2 LC_PIZDC1308_WG_Q1_NP							
Sampled By: DN/DW on 26-FEB-20 @ 14:19							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.000747		0.000010	mg/L		01-MAR-20	R5012210
Vanadium (V)-Total	0.00083		0.00050	mg/L		01-MAR-20	R5012210
Zinc (Zn)-Total	0.0045		0.0030	mg/L		01-MAR-20	R5012210
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	13.2		1.0	mg/L		27-FEB-20	R5011277
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	292		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Total (as CaCO3)	292		1.0	mg/L		28-FEB-20	R5012139
Ammonia, Total (as N)							
Ammonia as N	0.0824		0.0050	mg/L		02-MAR-20	R5013870
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-FEB-20	R5011350
Chloride in Water by IC							
Chloride (Cl)	0.57		0.50	mg/L		27-FEB-20	R5011350
Electrical Conductivity (EC)							
Conductivity (@ 25C)	492		2.0	uS/cm		28-FEB-20	R5012139
Fluoride in Water by IC							
Fluoride (F)	0.274		0.020	mg/L		27-FEB-20	R5011350
Ion Balance Calculation							
Cation - Anion Balance	-0.5			%		02-MAR-20	
Anion Sum	5.93			meq/L		02-MAR-20	
Cation Sum	5.87			meq/L		02-MAR-20	
Ion Balance Calculation							
Ion Balance	99.0		-100	%		02-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		27-FEB-20	R5011350
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-FEB-20	R5011350
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-FEB-20	R5011200
Oxidation redution potential by elect.							
ORP	343		-1000	mV		04-MAR-20	R5016186
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0082		0.0020	mg/L		02-MAR-20	R5012378
Sulfate in Water by IC							
Sulfate (SO4)	2.90		0.30	mg/L		27-FEB-20	R5011350
Total Dissolved Solids							
Total Dissolved Solids	289	DLHC	20	mg/L		03-MAR-20	R5016286
Total Suspended Solids							
Total Suspended Solids	2.1		1.0	mg/L		03-MAR-20	R5016146
Turbidity							
Turbidity	15.1		0.10	NTU		28-FEB-20	R5011666
pH							
pH	7.96		0.10	pH		28-FEB-20	R5012139

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_DC_Q1_WG

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2421760

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5011277							
WG3283840-5	LCS							
Acidity (as CaCO3)			104.4		%		85-115	27-FEB-20
WG3283840-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	27-FEB-20
ALK-MAN-CL								
	Water							
Batch	R5012139							
WG3284823-5	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	28-FEB-20
WG3284823-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5012441							
WG3284107-2	LCS							
Beryllium (Be)-Dissolved			100.1		%		80-120	29-FEB-20
WG3284107-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5012210							
WG3284256-2	LCS							
Beryllium (Be)-Total			93.3		%		80-120	01-MAR-20
WG3284256-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-MAR-20
BIC-CL								
	Water							
Batch	R5012139							
WG3284823-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R5011350							
WG3283912-6	LCS							
Bromide (Br)			102.7		%		85-115	27-FEB-20
WG3283912-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5013248							
WG3285583-2	LCS							
Dissolved Organic Carbon			97.6		%		80-120	02-MAR-20
WG3285583-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5013248							
WG3285583-2	LCS							
Total Organic Carbon			100.2		%		80-120	02-MAR-20
WG3285583-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-MAR-20
CL-IC-N-CL	Water							
Batch	R5011350							
WG3283912-6	LCS							
Chloride (Cl)			101.0		%		90-110	27-FEB-20
WG3283912-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	27-FEB-20
CO3-CL	Water							
Batch	R5012139							
WG3284823-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	28-FEB-20
EC-L-PCT-CL	Water							
Batch	R5012139							
WG3284823-5	LCS							
Conductivity (@ 25C)			100.3		%		90-110	28-FEB-20
WG3284823-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-20
F-IC-N-CL	Water							
Batch	R5011350							
WG3283912-6	LCS							
Fluoride (F)			108.9		%		90-110	27-FEB-20
WG3283912-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	27-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5012397							
WG3285225-2	LCS							
Mercury (Hg)-Dissolved			93.2		%		80-120	02-MAR-20
WG3285225-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-MAR-20
MET-D-CCMS-VA								
	Water							
Batch	R5012441							
WG3284107-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	29-FEB-20
Antimony (Sb)-Dissolved			98.2		%		80-120	29-FEB-20
Arsenic (As)-Dissolved			99.6		%		80-120	29-FEB-20
Barium (Ba)-Dissolved			100.1		%		80-120	29-FEB-20
Bismuth (Bi)-Dissolved			102.5		%		80-120	29-FEB-20
Boron (B)-Dissolved			91.8		%		80-120	29-FEB-20
Cadmium (Cd)-Dissolved			99.2		%		80-120	29-FEB-20
Calcium (Ca)-Dissolved			100.3		%		80-120	29-FEB-20
Chromium (Cr)-Dissolved			101.3		%		80-120	29-FEB-20
Cobalt (Co)-Dissolved			96.4		%		80-120	29-FEB-20
Copper (Cu)-Dissolved			95.6		%		80-120	29-FEB-20
Iron (Fe)-Dissolved			98.6		%		80-120	29-FEB-20
Lead (Pb)-Dissolved			101.6		%		80-120	29-FEB-20
Lithium (Li)-Dissolved			102.3		%		80-120	29-FEB-20
Magnesium (Mg)-Dissolved			98.3		%		80-120	29-FEB-20
Manganese (Mn)-Dissolved			100.6		%		80-120	29-FEB-20
Molybdenum (Mo)-Dissolved			98.2		%		80-120	29-FEB-20
Nickel (Ni)-Dissolved			96.0		%		80-120	29-FEB-20
Potassium (K)-Dissolved			102.9		%		80-120	29-FEB-20
Selenium (Se)-Dissolved			96.9		%		80-120	29-FEB-20
Silicon (Si)-Dissolved			97.1		%		60-140	29-FEB-20
Silver (Ag)-Dissolved			98.8		%		80-120	29-FEB-20
Sodium (Na)-Dissolved			101.5		%		80-120	29-FEB-20
Strontium (Sr)-Dissolved			95.3		%		80-120	29-FEB-20
Thallium (Tl)-Dissolved			101.9		%		80-120	29-FEB-20
Tin (Sn)-Dissolved			98.6		%		80-120	29-FEB-20
Titanium (Ti)-Dissolved			99.8		%		80-120	29-FEB-20
Uranium (U)-Dissolved			97.5		%		80-120	29-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5012441							
WG3284107-2	LCS							
Vanadium (V)-Dissolved			99.4		%		80-120	29-FEB-20
Zinc (Zn)-Dissolved			101.0		%		80-120	29-FEB-20
WG3284107-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-FEB-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5012210							
WG3284256-2	LCS							
Aluminum (Al)-Total			95.9		%		80-120	01-MAR-20
Antimony (Sb)-Total			104.5		%		80-120	01-MAR-20
Arsenic (As)-Total			98.9		%		80-120	01-MAR-20
Barium (Ba)-Total			108.3		%		80-120	01-MAR-20
Bismuth (Bi)-Total			93.2		%		80-120	01-MAR-20
Boron (B)-Total			94.3		%		80-120	01-MAR-20
Cadmium (Cd)-Total			100.1		%		80-120	01-MAR-20
Calcium (Ca)-Total			96.5		%		80-120	01-MAR-20
Chromium (Cr)-Total			94.0		%		80-120	01-MAR-20
Cobalt (Co)-Total			96.1		%		80-120	01-MAR-20
Copper (Cu)-Total			97.1		%		80-120	01-MAR-20
Iron (Fe)-Total			94.6		%		80-120	01-MAR-20
Lead (Pb)-Total			92.8		%		80-120	01-MAR-20
Lithium (Li)-Total			95.2		%		80-120	01-MAR-20
Magnesium (Mg)-Total			95.3		%		80-120	01-MAR-20
Manganese (Mn)-Total			96.3		%		80-120	01-MAR-20
Molybdenum (Mo)-Total			103.3		%		80-120	01-MAR-20
Nickel (Ni)-Total			97.3		%		80-120	01-MAR-20
Potassium (K)-Total			98.6		%		80-120	01-MAR-20
Selenium (Se)-Total			98.1		%		80-120	01-MAR-20
Silicon (Si)-Total			98.6		%		80-120	01-MAR-20
Silver (Ag)-Total			98.4		%		80-120	01-MAR-20
Sodium (Na)-Total			104.1		%		80-120	01-MAR-20
Strontium (Sr)-Total			102.0		%		80-120	01-MAR-20
Thallium (Tl)-Total			93.6		%		80-120	01-MAR-20
Tin (Sn)-Total			98.9		%		80-120	01-MAR-20
Titanium (Ti)-Total			95.5		%		80-120	01-MAR-20
Uranium (U)-Total			92.6		%		80-120	01-MAR-20
Vanadium (V)-Total			98.7		%		80-120	01-MAR-20
Zinc (Zn)-Total			100.8		%		80-120	01-MAR-20
WG3284256-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5012210							
WG3284256-1	MB							
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	01-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	01-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	01-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	01-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	01-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5013870							
WG3285100-3	DUP	L2421760-2						
Ammonia as N		0.0824	0.0828		mg/L	0.5	20	02-MAR-20
WG3285100-2	LCS							
Ammonia as N			96.7		%		85-115	02-MAR-20
WG3285100-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-MAR-20
WG3285100-4	MS	L2421760-2						
Ammonia as N			96.8		%		75-125	02-MAR-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5011350							
WG3283912-6	LCS							
Nitrite (as N)			99.5		%		90-110	27-FEB-20
WG3283912-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-FEB-20
NO3-L-IC-N-CL	Water							
Batch	R5011350							
WG3283912-6	LCS							
Nitrate (as N)			102.4		%		90-110	27-FEB-20
WG3283912-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-FEB-20
OH-CL	Water							
Batch	R5012139							
WG3284823-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	28-FEB-20
ORP-CL	Water							
Batch	R5016186							
WG3286563-3	CRM	CL-ORP						
ORP			228		mV		210-230	04-MAR-20
P-T-L-COL-CL	Water							
Batch	R5012378							
WG3285009-18	LCS							
Phosphorus (P)-Total			100.1		%		80-120	02-MAR-20
WG3285009-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-MAR-20
PH-CL	Water							
Batch	R5012139							
WG3284823-5	LCS							
pH			7.06		pH		6.9-7.1	28-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R5011200							
WG3283310-6	LCS							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	27-FEB-20
WG3283310-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5011350							
WG3283912-6	LCS							
Sulfate (SO4)			100.4		%		90-110	27-FEB-20
WG3283912-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R5016286							
WG3285402-14	LCS							
Total Dissolved Solids			102.9		%		85-115	03-MAR-20
WG3285402-13	MB							
Total Dissolved Solids			<10		mg/L		10	03-MAR-20
TKN-L-F-CL	Water							
Batch	R5011718							
WG3284263-2	LCS							
Total Kjeldahl Nitrogen			91.1		%		75-125	29-FEB-20
WG3284263-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-FEB-20
TSS-L-CL	Water							
Batch	R5016146							
WG3285388-4	LCS							
Total Suspended Solids			98.1		%		85-115	03-MAR-20
WG3285388-3	MB							
Total Suspended Solids			<1.0		mg/L		1	03-MAR-20
TURBIDITY-CL	Water							
Batch	R5011666							
WG3284082-2	LCS							
Turbidity			105.5		%		85-115	28-FEB-20
WG3284082-1	MB							
Turbidity			<0.10		NTU		0.1	28-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	26-FEB-20 14:00	04-MAR-20 09:15	0.25	163	hours	EHTR-FM
	2	26-FEB-20 14:19	04-MAR-20 09:15	0.25	163	hours	EHTR-FM
pH	1	26-FEB-20 14:00	28-FEB-20 15:00	0.25	49	hours	EHTR-FM
	2	26-FEB-20 14:19	28-FEB-20 15:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2421760 were received on 27-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **LCO_DC_Q1_WG_2020-02-26** TURNAROUND TIME: **—** RUSH: **—**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.com	x		
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003 15km North Hwy 43			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kirsten.campbell@teck.com	x	x	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 4:	dominique.nicholas@teck.com	x	x	
Phone Number	250-425-3196			Phone Number	403 407 1794			PO number	VPO00680643			

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC							
LC_PIZDC1307_WG_Q1_NP	LC_PIZDC1307	WG	N	2/26/2020	14:00	G	6		1	1		1	1	1		1							
LC_PIZDC1308_WG_Q1_NP	LC_PIZDC1308	WG	N	02/26/2020	14:19	G	6		1	1		1	1	1		1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORWARD METALS SAMPLES TO ALS BURNABY FOR ANALYSIS	D.Nicholas/D.Williams	26-Feb	<i>[Signature]</i>	2/27/2020

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/>	D.Nicholas/D.Williams		February 26, 2020
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



L2421760-COFC

6



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 28-FEB-20
Report Date: 18-DEC-20 14:22 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2422258
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATIONS
C of C Numbers: LCO_DC_Q1_WG_2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:32

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2422258-1 LC_PIZDC1306_WG_Q1_NP							
Sampled By: DN/DW on 27-FEB-20 @ 11:45							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	325		5.0	mg/L		28-FEB-20	R5012139
Carbonate (CO3)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Dissolved Organic Carbon	1.90		0.50	mg/L		03-MAR-20	R5016272
Hydroxide (OH)	<5.0		5.0	mg/L		28-FEB-20	R5012139
Total Kjeldahl Nitrogen	0.086		0.050	mg/L		29-FEB-20	R5011718
Total Organic Carbon	1.91		0.50	mg/L		03-MAR-20	R5016272
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-MAR-20	02-MAR-20	R5012438
Dissolved Metals Filtration Location	FIELD					02-MAR-20	R5012243
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-MAR-20	03-MAR-20	R5012633
Dissolved Mercury Filtration Location	FIELD					03-MAR-20	R5012491
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-MAR-20	R5012243
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-MAR-20	02-MAR-20	R5012438
Antimony (Sb)-Dissolved	0.00021		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Barium (Ba)-Dissolved	0.158		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAR-20	02-MAR-20	R5012438
Boron (B)-Dissolved	0.010		0.010	mg/L	02-MAR-20	02-MAR-20	R5012438
Cadmium (Cd)-Dissolved	0.123		0.0050	ug/L	02-MAR-20	02-MAR-20	R5012438
Calcium (Ca)-Dissolved	62.4		0.050	mg/L	02-MAR-20	02-MAR-20	R5012438
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-MAR-20	02-MAR-20	R5012438
Copper (Cu)-Dissolved	0.00061		0.00020	mg/L	02-MAR-20	02-MAR-20	R5012438
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAR-20	02-MAR-20	R5012438
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAR-20	02-MAR-20	R5012438
Lithium (Li)-Dissolved	0.0141		0.0010	mg/L	02-MAR-20	02-MAR-20	R5012438
Magnesium (Mg)-Dissolved	22.5		0.10	mg/L	02-MAR-20	02-MAR-20	R5012438
Manganese (Mn)-Dissolved	0.00015		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Molybdenum (Mo)-Dissolved	0.00213		0.000050	mg/L	02-MAR-20	02-MAR-20	R5012438
Nickel (Ni)-Dissolved	0.00106		0.00050	mg/L	02-MAR-20	02-MAR-20	R5012438
Potassium (K)-Dissolved	2.10		0.050	mg/L	02-MAR-20	02-MAR-20	R5012438
Selenium (Se)-Dissolved	2.35		0.050	ug/L	02-MAR-20	02-MAR-20	R5012438
Silicon (Si)-Dissolved	2.88		0.050	mg/L	02-MAR-20	02-MAR-20	R5012438
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAR-20	02-MAR-20	R5012438
Sodium (Na)-Dissolved	1.24		0.050	mg/L	02-MAR-20	02-MAR-20	R5012438
Strontium (Sr)-Dissolved	0.0680		0.00020	mg/L	02-MAR-20	02-MAR-20	R5012438
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-MAR-20	02-MAR-20	R5012438
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAR-20	02-MAR-20	R5012438
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-MAR-20	02-MAR-20	R5012438
Uranium (U)-Dissolved	0.000897		0.000010	mg/L	02-MAR-20	02-MAR-20	R5012438
Vanadium (V)-Dissolved	0.00054		0.00050	mg/L	02-MAR-20	02-MAR-20	R5012438
Zinc (Zn)-Dissolved	0.0040		0.0010	mg/L	02-MAR-20	02-MAR-20	R5012438
Hardness							
Hardness (as CaCO3)	249		0.50	mg/L		03-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-MAR-20	R5012438
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2422258-1 LC_PIZDC1306_WG_Q1_NP							
Sampled By: DN/DW on 27-FEB-20 @ 11:45							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.131		0.0030	mg/L		02-MAR-20	R5012438
Antimony (Sb)-Total	0.00022		0.00010	mg/L		02-MAR-20	R5012438
Arsenic (As)-Total	0.00012		0.00010	mg/L		02-MAR-20	R5012438
Barium (Ba)-Total	0.151		0.00010	mg/L		02-MAR-20	R5012438
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-MAR-20	R5012438
Boron (B)-Total	0.011		0.010	mg/L		02-MAR-20	R5012438
Cadmium (Cd)-Total	0.135		0.0050	ug/L		02-MAR-20	R5012438
Calcium (Ca)-Total	64.5		0.050	mg/L		02-MAR-20	R5012438
Chromium (Cr)-Total	0.00087		0.00010	mg/L		02-MAR-20	R5012438
Cobalt (Co)-Total	0.14		0.10	ug/L		02-MAR-20	R5012438
Copper (Cu)-Total	0.00128		0.00050	mg/L		02-MAR-20	R5012438
Iron (Fe)-Total	0.070		0.010	mg/L		03-MAR-20	R5014407
Lead (Pb)-Total	0.000166		0.000050	mg/L		02-MAR-20	R5012438
Lithium (Li)-Total	0.0162		0.0010	mg/L		02-MAR-20	R5012438
Magnesium (Mg)-Total	23.3		0.10	mg/L		02-MAR-20	R5012438
Manganese (Mn)-Total	0.00308		0.00010	mg/L		02-MAR-20	R5012438
Molybdenum (Mo)-Total	0.00219		0.000050	mg/L		02-MAR-20	R5012438
Nickel (Ni)-Total	0.00186		0.00050	mg/L		02-MAR-20	R5012438
Potassium (K)-Total	2.06		0.050	mg/L		02-MAR-20	R5012438
Selenium (Se)-Total	2.25		0.050	ug/L		02-MAR-20	R5012438
Silicon (Si)-Total	3.20		0.10	mg/L		02-MAR-20	R5012438
Silver (Ag)-Total	<0.000010		0.000010	mg/L		02-MAR-20	R5012438
Sodium (Na)-Total	1.23		0.050	mg/L		02-MAR-20	R5012438
Strontium (Sr)-Total	0.0685		0.00020	mg/L		02-MAR-20	R5012438
Thallium (Tl)-Total	0.000017		0.000010	mg/L		02-MAR-20	R5012438
Tin (Sn)-Total	<0.00010		0.00010	mg/L		02-MAR-20	R5012438
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-MAR-20	R5012438
Uranium (U)-Total	0.000945		0.000010	mg/L		02-MAR-20	R5012438
Vanadium (V)-Total	0.00127		0.00050	mg/L		02-MAR-20	R5012438
Zinc (Zn)-Total	0.0045		0.0030	mg/L		02-MAR-20	R5012438
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	12.1		1.0	mg/L		28-FEB-20	R5012065
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	267		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-FEB-20	R5012139
Alkalinity, Total (as CaCO3)	267		1.0	mg/L		28-FEB-20	R5012139
Ammonia, Total (as N)							
Ammonia as N	0.0081		0.0050	mg/L		02-MAR-20	R5013870
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		28-FEB-20	R5012214
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		28-FEB-20	R5012214
Electrical Conductivity (EC)							
Conductivity (@ 25C)	461		2.0	uS/cm		28-FEB-20	R5012139
Fluoride in Water by IC							
Fluoride (F)	0.191		0.020	mg/L		28-FEB-20	R5012214
Ion Balance Calculation							
Ion Balance	92.9		-100	%		03-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.7			%		03-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2422258-1 LC_PIZDC1306_WG_Q1_NP							
Sampled By: DN/DW on 27-FEB-20 @ 11:45							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	5.46			meq/L		03-MAR-20	
Cation Sum	5.07			meq/L		03-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0917		0.0050	mg/L		28-FEB-20	R5012214
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-FEB-20	R5012214
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0039		0.0010	mg/L		28-FEB-20	R5011486
Oxidation redution potential by elect.							
ORP	418		-1000	mV		05-MAR-20	R5017821
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0057		0.0020	mg/L		02-MAR-20	R5012378
Sulfate in Water by IC							
Sulfate (SO4)	5.59		0.30	mg/L		28-FEB-20	R5012214
Total Dissolved Solids							
Total Dissolved Solids	296	DLHC	20	mg/L		04-MAR-20	R5017743
Total Suspended Solids							
Total Suspended Solids	5.4		1.0	mg/L		04-MAR-20	R5017747
Turbidity							
Turbidity	3.01		0.10	NTU		28-FEB-20	R5011666
pH							
pH	8.20		0.10	pH		28-FEB-20	R5012139

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LCO_DC_Q1_WG_2020

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2422258

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5012065							
WG3284769-5	LCS							
Acidity (as CaCO3)			97.3		%		85-115	28-FEB-20
WG3284769-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	28-FEB-20
ALK-MAN-CL								
	Water							
Batch	R5012139							
WG3284823-14	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	28-FEB-20
WG3284823-13	MB							
Alkalinity, Total (as CaCO3)			2.6	MB-LOR	mg/L		1	28-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5012438							
WG3284948-2	LCS							
Beryllium (Be)-Dissolved			105.5		%		80-120	02-MAR-20
WG3284948-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5012438							
WG3284837-2	LCS							
Beryllium (Be)-Total			109.9		%		80-120	02-MAR-20
WG3284837-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	02-MAR-20
BIC-CL								
	Water							
Batch	R5012139							
WG3284823-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R5012214							
WG3284922-6	LCS							
Bromide (Br)			97.5		%		85-115	28-FEB-20
WG3284922-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5016272							
WG3286573-2 LCS								
Dissolved Organic Carbon			102.5		%		80-120	03-MAR-20
WG3286573-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5016272							
WG3286573-2 LCS								
Total Organic Carbon			105.3		%		80-120	03-MAR-20
WG3286573-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	03-MAR-20
CL-IC-N-CL	Water							
Batch	R5012214							
WG3284922-6 LCS								
Chloride (Cl)			100.1		%		90-110	28-FEB-20
WG3284922-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	28-FEB-20
CO3-CL	Water							
Batch	R5012139							
WG3284823-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	28-FEB-20
EC-L-PCT-CL	Water							
Batch	R5012139							
WG3284823-14 LCS								
Conductivity (@ 25C)			98.4		%		90-110	28-FEB-20
WG3284823-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-20
F-IC-N-CL	Water							
Batch	R5012214							
WG3284922-6 LCS								
Fluoride (F)			101.3		%		90-110	28-FEB-20
WG3284922-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	28-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5012633							
WG3285250-2	LCS							
Mercury (Hg)-Dissolved			96.0		%		80-120	03-MAR-20
WG3285250-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-MAR-20
MET-D-CCMS-VA								
	Water							
Batch	R5012438							
WG3284948-2	LCS							
Aluminum (Al)-Dissolved			103.4		%		80-120	02-MAR-20
Antimony (Sb)-Dissolved			96.9		%		80-120	02-MAR-20
Arsenic (As)-Dissolved			93.7		%		80-120	02-MAR-20
Barium (Ba)-Dissolved			95.7		%		80-120	02-MAR-20
Bismuth (Bi)-Dissolved			96.6		%		80-120	02-MAR-20
Boron (B)-Dissolved			105.3		%		80-120	02-MAR-20
Cadmium (Cd)-Dissolved			96.1		%		80-120	02-MAR-20
Calcium (Ca)-Dissolved			100.1		%		80-120	02-MAR-20
Chromium (Cr)-Dissolved			96.0		%		80-120	02-MAR-20
Cobalt (Co)-Dissolved			93.4		%		80-120	02-MAR-20
Copper (Cu)-Dissolved			91.8		%		80-120	02-MAR-20
Iron (Fe)-Dissolved			98.0		%		80-120	02-MAR-20
Lead (Pb)-Dissolved			96.0		%		80-120	02-MAR-20
Lithium (Li)-Dissolved			103.6		%		80-120	02-MAR-20
Magnesium (Mg)-Dissolved			97.6		%		80-120	02-MAR-20
Manganese (Mn)-Dissolved			96.6		%		80-120	02-MAR-20
Molybdenum (Mo)-Dissolved			101.8		%		80-120	02-MAR-20
Nickel (Ni)-Dissolved			93.3		%		80-120	02-MAR-20
Potassium (K)-Dissolved			104.6		%		80-120	02-MAR-20
Selenium (Se)-Dissolved			97.1		%		80-120	02-MAR-20
Silicon (Si)-Dissolved			102.2		%		60-140	02-MAR-20
Silver (Ag)-Dissolved			98.0		%		80-120	02-MAR-20
Sodium (Na)-Dissolved			103.8		%		80-120	02-MAR-20
Strontium (Sr)-Dissolved			100.7		%		80-120	02-MAR-20
Thallium (Tl)-Dissolved			96.8		%		80-120	02-MAR-20
Tin (Sn)-Dissolved			91.8		%		80-120	02-MAR-20
Titanium (Ti)-Dissolved			96.2		%		80-120	02-MAR-20
Uranium (U)-Dissolved			97.8		%		80-120	02-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5012438							
WG3284948-2	LCS							
Vanadium (V)-Dissolved			97.0		%		80-120	02-MAR-20
Zinc (Zn)-Dissolved			97.9		%		80-120	02-MAR-20
WG3284948-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-MAR-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5012438							
WG3284837-2	LCS							
Aluminum (Al)-Total			103.9		%		80-120	02-MAR-20
Antimony (Sb)-Total			105.9		%		80-120	02-MAR-20
Arsenic (As)-Total			98.7		%		80-120	02-MAR-20
Barium (Ba)-Total			97.1		%		80-120	02-MAR-20
Bismuth (Bi)-Total			98.8		%		80-120	02-MAR-20
Boron (B)-Total			109.1		%		80-120	02-MAR-20
Cadmium (Cd)-Total			100.6		%		80-120	02-MAR-20
Calcium (Ca)-Total			102.8		%		80-120	02-MAR-20
Chromium (Cr)-Total			100.3		%		80-120	02-MAR-20
Cobalt (Co)-Total			99.4		%		80-120	02-MAR-20
Copper (Cu)-Total			99.7		%		80-120	02-MAR-20
Lead (Pb)-Total			99.5		%		80-120	02-MAR-20
Lithium (Li)-Total			110.5		%		80-120	02-MAR-20
Magnesium (Mg)-Total			102.3		%		80-120	02-MAR-20
Manganese (Mn)-Total			100.5		%		80-120	02-MAR-20
Molybdenum (Mo)-Total			105.4		%		80-120	02-MAR-20
Nickel (Ni)-Total			99.7		%		80-120	02-MAR-20
Potassium (K)-Total			103.4		%		80-120	02-MAR-20
Selenium (Se)-Total			98.5		%		80-120	02-MAR-20
Silicon (Si)-Total			101.7		%		80-120	02-MAR-20
Silver (Ag)-Total			104.0		%		80-120	02-MAR-20
Sodium (Na)-Total			107.3		%		80-120	02-MAR-20
Strontium (Sr)-Total			102.6		%		80-120	02-MAR-20
Thallium (Tl)-Total			99.3		%		80-120	02-MAR-20
Tin (Sn)-Total			99.2		%		80-120	02-MAR-20
Titanium (Ti)-Total			100.4		%		80-120	02-MAR-20
Uranium (U)-Total			102.1		%		80-120	02-MAR-20
Vanadium (V)-Total			99.2		%		80-120	02-MAR-20
Zinc (Zn)-Total			103.0		%		80-120	02-MAR-20
WG3284837-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	02-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5012438							
WG3284837-1	MB							
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	02-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	02-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-MAR-20
Manganese (Mn)-Total			0.00010	B	mg/L		0.0001	02-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	02-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	02-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	02-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	02-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	02-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	02-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	02-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-MAR-20
Batch	R5014407							
WG3285701-2	LCS							
Aluminum (Al)-Total			104.5		%		80-120	03-MAR-20
Antimony (Sb)-Total			114.5		%		80-120	03-MAR-20
Arsenic (As)-Total			100.3		%		80-120	03-MAR-20
Barium (Ba)-Total			103.6		%		80-120	03-MAR-20
Bismuth (Bi)-Total			96.4		%		80-120	03-MAR-20
Boron (B)-Total			93.4		%		80-120	03-MAR-20
Cadmium (Cd)-Total			103.2		%		80-120	03-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5014407							
WG3285701-2 LCS								
Calcium (Ca)-Total			96.5		%		80-120	03-MAR-20
Chromium (Cr)-Total			105.8		%		80-120	03-MAR-20
Cobalt (Co)-Total			103.5		%		80-120	03-MAR-20
Copper (Cu)-Total			102.7		%		80-120	03-MAR-20
Iron (Fe)-Total			97.7		%		80-120	03-MAR-20
Lead (Pb)-Total			98.6		%		80-120	03-MAR-20
Lithium (Li)-Total			94.1		%		80-120	03-MAR-20
Magnesium (Mg)-Total			106.6		%		80-120	03-MAR-20
Manganese (Mn)-Total			106.1		%		80-120	03-MAR-20
Molybdenum (Mo)-Total			101.9		%		80-120	03-MAR-20
Nickel (Ni)-Total			103.8		%		80-120	03-MAR-20
Potassium (K)-Total			96.7		%		80-120	03-MAR-20
Selenium (Se)-Total			105.3		%		80-120	03-MAR-20
Silicon (Si)-Total			102.4		%		80-120	03-MAR-20
Silver (Ag)-Total			105.9		%		80-120	03-MAR-20
Sodium (Na)-Total			110.5		%		80-120	03-MAR-20
Strontium (Sr)-Total			116.9		%		80-120	03-MAR-20
Thallium (Tl)-Total			106.0		%		80-120	03-MAR-20
Tin (Sn)-Total			104.0		%		80-120	03-MAR-20
Titanium (Ti)-Total			98.8		%		80-120	03-MAR-20
Uranium (U)-Total			99.96		%		80-120	03-MAR-20
Vanadium (V)-Total			103.6		%		80-120	03-MAR-20
Zinc (Zn)-Total			103.8		%		80-120	03-MAR-20
WG3285701-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	03-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5014407							
WG3285701-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	03-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	03-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	03-MAR-20
Silver (Ag)-Total			0.000017	B	mg/L		0.00001	03-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	03-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-MAR-20
NH3-L-F-CL		Water						
Batch	R5013870							
WG3285100-10	LCS							
Ammonia as N			104.0		%		85-115	02-MAR-20
WG3285100-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-MAR-20
NO2-L-IC-N-CL		Water						
Batch	R5012214							
WG3284922-6	LCS							
Nitrite (as N)			98.1		%		90-110	28-FEB-20
WG3284922-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-FEB-20
NO3-L-IC-N-CL		Water						



Quality Control Report

Workorder: L2422258

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5012214							
WG3284922-6	LCS							
Nitrate (as N)			103.4		%		90-110	28-FEB-20
WG3284922-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-FEB-20
OH-CL	Water							
Batch	R5012139							
WG3284823-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	28-FEB-20
ORP-CL	Water							
Batch	R5017821							
WG3287281-1	CRM	CL-ORP						
ORP			228		mV		210-230	05-MAR-20
P-T-L-COL-CL	Water							
Batch	R5012378							
WG3285009-26	LCS							
Phosphorus (P)-Total			103.6		%		80-120	02-MAR-20
WG3285009-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-MAR-20
PH-CL	Water							
Batch	R5012139							
WG3284823-14	LCS							
pH			7.07		pH		6.9-7.1	28-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R5011486							
WG3283942-4	LCS							
Orthophosphate-Dissolved (as P)			104.4		%		80-120	28-FEB-20
WG3283942-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-FEB-20
SO4-IC-N-CL	Water							
Batch	R5012214							
WG3284922-6	LCS							
Sulfate (SO4)			99.3		%		90-110	28-FEB-20
WG3284922-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-FEB-20



Quality Control Report

Workorder: L2422258

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R5017743							
WG3286323-2	LCS							
Total Dissolved Solids			100.8		%		85-115	04-MAR-20
WG3286323-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-MAR-20
TKN-L-F-CL								
Water								
Batch	R5011718							
WG3284263-10	LCS							
Total Kjeldahl Nitrogen			90.5		%		75-125	29-FEB-20
WG3284263-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-FEB-20
TSS-L-CL								
Water								
Batch	R5017747							
WG3286324-2	LCS							
Total Suspended Solids			88.2		%		85-115	04-MAR-20
WG3286324-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-20
TURBIDITY-CL								
Water								
Batch	R5011666							
WG3284082-8	LCS							
Turbidity			104.5		%		85-115	28-FEB-20
WG3284082-7	MB							
Turbidity			<0.10		NTU		0.1	28-FEB-20

Quality Control Report

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Report Date: 18-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Quality Control Report

Workorder: L2422258

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	27-FEB-20 11:45	05-MAR-20 08:30	0.25	165	hours	EHTR-FM
pH	1	27-FEB-20 11:45	28-FEB-20 15:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2422258 were received on 28-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **LCO_DC_Q1_WG_2020-02-27** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.com	x	
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	kirsten.campbell@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholas@teck.com	x	x
Postal Code	V0B 2G0		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643	
Phone Number	250-425-3196			Phone Number	403 407 1794						

SAMPLE DETAILS



L2422258-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
LC_PIZDC1306_WG_Q1_NP	LC_PIZDC1306	WG	N	2/27/2020	11:45	G	6

ANALYSIS REQUESTED

ANALYSIS	Filtered - P Field, L Lab, FL Field & Lab, N None									
	N	Y	Y	N	Y	N	N	N	N	N
ALS_Package-BOD		NONE	NONE	NONE	NONE	HNO3	NONE	NaOH/7n Ac	H2SO4	
ALS_Package-DOC										
HG-D-CVAF-VA										
HG-T-U-CVAF-VA										
TECKCOAL-MET-D-VA										
TECKCOAL-MET-T-VA										
TECKCOAL-ROUTINE-VA										
ALS_Package-Sulfide-T										
ALS_Package-TKN/TOC										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE FORWARD ALL THESE SAMPLES TO ALS BURNABY FOR ANALYSIS	D.Nicholas/D.Williams	27-Feb	<i>[Signature]</i>	2/28/20

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	D.Nicholas/D.Williams	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		February 27, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 11-MAR-20
Report Date: 18-DEC-20 14:23 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2426682
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC7 HSP Mar 10
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:55

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-1 LC_PIZDC1404S_Q1_WG_2020_NP							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:05							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	242		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Organic Carbon	2.46		0.50	mg/L		14-MAR-20	R5026424
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-MAR-20	13-MAR-20	R5025586
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-MAR-20	13-MAR-20	R5025586
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Arsenic (As)-Dissolved	0.00137		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Barium (Ba)-Dissolved	0.254		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Boron (B)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	13-MAR-20	13-MAR-20	R5025586
Calcium (Ca)-Dissolved	58.2		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cobalt (Co)-Dissolved	0.29		0.10	ug/L	13-MAR-20	13-MAR-20	R5025586
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Iron (Fe)-Dissolved	0.541		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Lithium (Li)-Dissolved	0.0058		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Magnesium (Mg)-Dissolved	19.5		0.10	mg/L	13-MAR-20	13-MAR-20	R5025586
Manganese (Mn)-Dissolved	0.0242		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Molybdenum (Mo)-Dissolved	0.00334		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Nickel (Ni)-Dissolved	0.00117		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Potassium (K)-Dissolved	1.66		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Selenium (Se)-Dissolved	0.058		0.050	ug/L	13-MAR-20	13-MAR-20	R5025586
Silicon (Si)-Dissolved	3.57		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Sodium (Na)-Dissolved	1.26		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Strontium (Sr)-Dissolved	0.0503		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Uranium (U)-Dissolved	0.000616		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Hardness							
Hardness (as CaCO3)	225		0.50	mg/L		14-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5026054
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0863		0.0030	mg/L		13-MAR-20	R5026054
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5026054

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-1 LC_PIZDC1404S_Q1_WG_2020_NP							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:05							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00168		0.00010	mg/L		13-MAR-20	R5026054
Barium (Ba)-Total	0.217		0.00010	mg/L		13-MAR-20	R5026054
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5026054
Boron (B)-Total	<0.010		0.010	mg/L		13-MAR-20	R5026054
Cadmium (Cd)-Total	0.0132		0.0050	ug/L		13-MAR-20	R5026054
Calcium (Ca)-Total	45.9		0.050	mg/L		13-MAR-20	R5026054
Chromium (Cr)-Total	0.00016		0.00010	mg/L		13-MAR-20	R5026054
Cobalt (Co)-Total	0.37		0.10	ug/L		13-MAR-20	R5026054
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5026054
Iron (Fe)-Total	1.08		0.010	mg/L		13-MAR-20	R5026054
Lead (Pb)-Total	0.000164		0.000050	mg/L		13-MAR-20	R5026054
Lithium (Li)-Total	0.0051		0.0010	mg/L		13-MAR-20	R5026054
Magnesium (Mg)-Total	16.7		0.10	mg/L		13-MAR-20	R5026054
Manganese (Mn)-Total	0.0297		0.00010	mg/L		13-MAR-20	R5026054
Molybdenum (Mo)-Total	0.00311		0.000050	mg/L		13-MAR-20	R5026054
Nickel (Ni)-Total	0.00141		0.00050	mg/L		13-MAR-20	R5026054
Potassium (K)-Total	1.45		0.050	mg/L		13-MAR-20	R5026054
Selenium (Se)-Total	<0.050		0.050	ug/L		13-MAR-20	R5026054
Silicon (Si)-Total	3.61		0.10	mg/L		13-MAR-20	R5026054
Silver (Ag)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5026054
Sodium (Na)-Total	1.18		0.050	mg/L		13-MAR-20	R5026054
Strontium (Sr)-Total	0.0421		0.00020	mg/L		13-MAR-20	R5026054
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5026054
Tin (Sn)-Total	0.00015		0.00010	mg/L		13-MAR-20	R5026054
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5026054
Uranium (U)-Total	0.000628		0.000010	mg/L		13-MAR-20	R5026054
Vanadium (V)-Total	0.00051		0.00050	mg/L		13-MAR-20	R5026054
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		13-MAR-20	R5026054
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.6		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	198		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	198		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.0194		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	346		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.104		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Cation - Anion Balance	6.6			%		14-MAR-20	
Anion Sum	4.06			meq/L		14-MAR-20	
Cation Sum	4.63			meq/L		14-MAR-20	
Ion Balance Calculation							
Ion Balance	114		-100	%		14-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-1 LC_PIZDC1404S_Q1_WG_2020_NP Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:05 Matrix: WG							
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0053		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	331		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0098		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	4.55		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	197		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	3.7		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	9.77		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.25		0.10	pH		11-MAR-20	R5021914
L2426682-2 LC_HSP_WS_2020-03-10_N Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 12:30 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	320		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Dissolved Organic Carbon	0.90		0.50	mg/L		14-MAR-20	R5026424
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	0.623		0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-MAR-20	R5028371
Total Organic Carbon	0.89		0.50	mg/L		14-MAR-20	R5026424
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-MAR-20	13-MAR-20	R5025586
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-MAR-20	13-MAR-20	R5025586
Antimony (Sb)-Dissolved	0.00066		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Arsenic (As)-Dissolved	0.00023		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Barium (Ba)-Dissolved	0.0544		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Boron (B)-Dissolved	0.057		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cadmium (Cd)-Dissolved	0.121		0.0050	ug/L	13-MAR-20	13-MAR-20	R5025586
Calcium (Ca)-Dissolved	116		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cobalt (Co)-Dissolved	3.26		0.10	ug/L	13-MAR-20	13-MAR-20	R5025586
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-2 LC_HSP_WS_2020-03-10_N							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 12:30							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Lithium (Li)-Dissolved	0.129		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Magnesium (Mg)-Dissolved	59.4		0.10	mg/L	13-MAR-20	13-MAR-20	R5025586
Manganese (Mn)-Dissolved	0.0571		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Molybdenum (Mo)-Dissolved	0.00320		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Nickel (Ni)-Dissolved	0.0273		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Potassium (K)-Dissolved	3.71		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Selenium (Se)-Dissolved	9.33		0.050	ug/L	13-MAR-20	13-MAR-20	R5025586
Silicon (Si)-Dissolved	1.88		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Sodium (Na)-Dissolved	24.8		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Strontium (Sr)-Dissolved	0.249		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Thallium (Tl)-Dissolved	0.000037		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Uranium (U)-Dissolved	0.00287		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Zinc (Zn)-Dissolved	0.0080		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Hardness							
Hardness (as CaCO3)	534		0.50	mg/L		14-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5026054
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0116		0.0030	mg/L		13-MAR-20	R5026054
Antimony (Sb)-Total	0.00067		0.00010	mg/L		13-MAR-20	R5026054
Arsenic (As)-Total	0.00022		0.00010	mg/L		13-MAR-20	R5026054
Barium (Ba)-Total	0.0513		0.00010	mg/L		13-MAR-20	R5026054
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5026054
Boron (B)-Total	0.060		0.010	mg/L		13-MAR-20	R5026054
Cadmium (Cd)-Total	0.122		0.0050	ug/L		13-MAR-20	R5026054
Calcium (Ca)-Total	98.5		0.050	mg/L		13-MAR-20	R5026054
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5026054
Cobalt (Co)-Total	3.25		0.10	ug/L		13-MAR-20	R5026054
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5026054
Iron (Fe)-Total	0.037		0.010	mg/L		13-MAR-20	R5026054
Lead (Pb)-Total	0.000124		0.000050	mg/L		13-MAR-20	R5026054
Lithium (Li)-Total	0.114		0.0010	mg/L		13-MAR-20	R5026054
Magnesium (Mg)-Total	53.1		0.10	mg/L		13-MAR-20	R5026054
Manganese (Mn)-Total	0.0590		0.00010	mg/L		13-MAR-20	R5026054
Molybdenum (Mo)-Total	0.00292		0.000050	mg/L		13-MAR-20	R5026054
Nickel (Ni)-Total	0.0260		0.00050	mg/L		13-MAR-20	R5026054
Potassium (K)-Total	3.49		0.050	mg/L		13-MAR-20	R5026054
Selenium (Se)-Total	8.71		0.050	ug/L		13-MAR-20	R5026054
Silicon (Si)-Total	1.91		0.10	mg/L		13-MAR-20	R5026054
Silver (Ag)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5026054
Sodium (Na)-Total	22.3		0.050	mg/L		13-MAR-20	R5026054
Strontium (Sr)-Total	0.199		0.00020	mg/L		13-MAR-20	R5026054
Thallium (Tl)-Total	0.000037		0.000010	mg/L		13-MAR-20	R5026054
Tin (Sn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5026054
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5026054
Uranium (U)-Total	0.00298		0.000010	mg/L		13-MAR-20	R5026054

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-2 LC_HSP_WS_2020-03-10_N							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 12:30							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Vanadium (V)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5026054
Zinc (Zn)-Total	0.0081		0.0030	mg/L		13-MAR-20	R5026054
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.8		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	263		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	263		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.416		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	0.80		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	908		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.221		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Cation - Anion Balance	3.8			%		14-MAR-20	
Anion Sum	11.0			meq/L		14-MAR-20	
Cation Sum	11.8			meq/L		14-MAR-20	
Ion Balance Calculation							
Ion Balance	108		-100	%		14-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.27		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0432		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	327		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0021		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	268		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	646		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	0.58		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.22		0.10	pH		11-MAR-20	R5021914
L2426682-3 LC_LC7_WS_2020-03-10_N							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:30							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	198		5.0	mg/L		11-MAR-20	R5021914
Carbonate (CO3)	<5.0		5.0	mg/L		11-MAR-20	R5021914

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-3 LC_LC7_WS_2020-03-10_N							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:30							
Matrix: WS							
Dissolved Organic Carbon	0.55		0.50	mg/L		14-MAR-20	R5026424
Hydroxide (OH)	<5.0		5.0	mg/L		11-MAR-20	R5021914
Total Kjeldahl Nitrogen	0.270	TKNI	0.050	mg/L		13-MAR-20	R5024547
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		17-MAR-20	R5028371
Total Organic Carbon	1.46		0.50	mg/L		14-MAR-20	R5026424
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-MAR-20	13-MAR-20	R5025586
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	12-MAR-20	12-MAR-20	R5021578
Dissolved Mercury Filtration Location	FIELD					12-MAR-20	R5023540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-MAR-20	R5024926
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-MAR-20	13-MAR-20	R5025586
Antimony (Sb)-Dissolved	0.00034		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Barium (Ba)-Dissolved	0.119		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Boron (B)-Dissolved	0.013		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cadmium (Cd)-Dissolved	0.0399		0.0050	ug/L	13-MAR-20	13-MAR-20	R5025586
Calcium (Ca)-Dissolved	72.3		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	13-MAR-20	13-MAR-20	R5025586
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Lithium (Li)-Dissolved	0.0186		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Magnesium (Mg)-Dissolved	23.5		0.10	mg/L	13-MAR-20	13-MAR-20	R5025586
Manganese (Mn)-Dissolved	0.00160		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Molybdenum (Mo)-Dissolved	0.00142		0.000050	mg/L	13-MAR-20	13-MAR-20	R5025586
Nickel (Ni)-Dissolved	0.00519		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Potassium (K)-Dissolved	0.980		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Selenium (Se)-Dissolved	6.20		0.050	ug/L	13-MAR-20	13-MAR-20	R5025586
Silicon (Si)-Dissolved	1.83		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Sodium (Na)-Dissolved	3.13		0.050	mg/L	13-MAR-20	13-MAR-20	R5025586
Strontium (Sr)-Dissolved	0.174		0.00020	mg/L	13-MAR-20	13-MAR-20	R5025586
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-MAR-20	13-MAR-20	R5025586
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-MAR-20	13-MAR-20	R5025586
Uranium (U)-Dissolved	0.00175		0.000010	mg/L	13-MAR-20	13-MAR-20	R5025586
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-MAR-20	13-MAR-20	R5025586
Zinc (Zn)-Dissolved	0.0038		0.0010	mg/L	13-MAR-20	13-MAR-20	R5025586
Hardness							
Hardness (as CaCO3)	277		0.50	mg/L		14-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		13-MAR-20	R5026054
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0063		0.0030	mg/L		13-MAR-20	R5026054
Antimony (Sb)-Total	0.00034		0.00010	mg/L		13-MAR-20	R5026054

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-3 LC_LC7_WS_2020-03-10_N							
Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:30							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00012		0.00010	mg/L		13-MAR-20	R5026054
Barium (Ba)-Total	0.107		0.00010	mg/L		13-MAR-20	R5026054
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5026054
Boron (B)-Total	0.013		0.010	mg/L		13-MAR-20	R5026054
Cadmium (Cd)-Total	0.0732		0.0050	ug/L		13-MAR-20	R5026054
Calcium (Ca)-Total	59.3		0.050	mg/L		13-MAR-20	R5026054
Chromium (Cr)-Total	0.00024		0.00010	mg/L		13-MAR-20	R5026054
Cobalt (Co)-Total	0.20		0.10	ug/L		13-MAR-20	R5026054
Copper (Cu)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5026054
Iron (Fe)-Total	<0.010		0.010	mg/L		13-MAR-20	R5026054
Lead (Pb)-Total	<0.000050		0.000050	mg/L		13-MAR-20	R5026054
Lithium (Li)-Total	0.0168		0.0010	mg/L		13-MAR-20	R5026054
Magnesium (Mg)-Total	21.2		0.10	mg/L		13-MAR-20	R5026054
Manganese (Mn)-Total	0.00181		0.00010	mg/L		13-MAR-20	R5026054
Molybdenum (Mo)-Total	0.00139		0.000050	mg/L		13-MAR-20	R5026054
Nickel (Ni)-Total	0.00502		0.00050	mg/L		13-MAR-20	R5026054
Potassium (K)-Total	0.937		0.050	mg/L		13-MAR-20	R5026054
Selenium (Se)-Total	6.05		0.050	ug/L		13-MAR-20	R5026054
Silicon (Si)-Total	1.81		0.10	mg/L		13-MAR-20	R5026054
Silver (Ag)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5026054
Sodium (Na)-Total	2.80		0.050	mg/L		13-MAR-20	R5026054
Strontium (Sr)-Total	0.146		0.00020	mg/L		13-MAR-20	R5026054
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		13-MAR-20	R5026054
Tin (Sn)-Total	<0.00010		0.00010	mg/L		13-MAR-20	R5026054
Titanium (Ti)-Total	<0.010		0.010	mg/L		13-MAR-20	R5026054
Uranium (U)-Total	0.00186		0.000010	mg/L		13-MAR-20	R5026054
Vanadium (V)-Total	<0.00050		0.00050	mg/L		13-MAR-20	R5026054
Zinc (Zn)-Total	0.0055		0.0030	mg/L		13-MAR-20	R5026054
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021949
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	162		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Carbonate (as CaCO3)	4.8		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-MAR-20	R5021914
Alkalinity, Total (as CaCO3)	167		1.0	mg/L		11-MAR-20	R5021914
Ammonia, Total (as N)							
Ammonia as N	0.0283		0.0050	mg/L		12-MAR-20	R5022969
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-MAR-20	R5022608
Chloride in Water by IC							
Chloride (Cl)	1.24		0.50	mg/L		11-MAR-20	R5022608
Electrical Conductivity (EC)							
Conductivity (@ 25C)	468		2.0	uS/cm		11-MAR-20	R5021914
Fluoride in Water by IC							
Fluoride (F)	0.179		0.020	mg/L		11-MAR-20	R5022608
Ion Balance Calculation							
Cation - Anion Balance	3.5			%		14-MAR-20	
Anion Sum	5.32			meq/L		14-MAR-20	
Cation Sum	5.70			meq/L		14-MAR-20	
Ion Balance Calculation							
Ion Balance	107		-100	%		14-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2426682-3 LC_LC7_WS_2020-03-10_N Sampled By: D.Nicholas/D.William on 10-MAR-20 @ 13:30 Matrix: WS							
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.81		0.0050	mg/L		11-MAR-20	R5022608
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0073		0.0010	mg/L		11-MAR-20	R5022608
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		11-MAR-20	R5021363
Oxidation redution potential by elect.							
ORP	316		-1000	mV		14-MAR-20	R5026330
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0026		0.0020	mg/L		12-MAR-20	R5022229
Sulfate in Water by IC							
Sulfate (SO4)	83.5		0.30	mg/L		11-MAR-20	R5022608
Total Dissolved Solids							
Total Dissolved Solids	288		20	mg/L		16-MAR-20	R5028349
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		16-MAR-20	R5028317
Turbidity							
Turbidity	0.50		0.10	NTU		11-MAR-20	R5021396
pH							
pH	8.37		0.10	pH		11-MAR-20	R5021914

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC7 HSP Mar 10

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5021949							
WG3291212-5	LCS							
Acidity (as CaCO3)			97.1		%		85-115	11-MAR-20
WG3291212-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	11-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5021914							
WG3291145-8	LCS							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	11-MAR-20
WG3291145-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-2	LCS							
Beryllium (Be)-Dissolved			90.6		%		80-120	13-MAR-20
WG3292145-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5026054							
WG3291843-2	LCS							
Beryllium (Be)-Total			100.0		%		80-120	13-MAR-20
WG3291843-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-MAR-20
BIC-CL								
	Water							
Batch	R5021914							
WG3291145-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5022608							
WG3291305-2	LCS							
Bromide (Br)			102.4		%		85-115	11-MAR-20
WG3291305-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-MAR-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5026424							
WG3292725-10 LCS								
Dissolved Organic Carbon			101.5		%		80-120	14-MAR-20
WG3292725-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5026424							
WG3292725-10 LCS								
Total Organic Carbon			96.7		%		80-120	14-MAR-20
WG3292725-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	14-MAR-20
CL-IC-N-CL	Water							
Batch	R5022608							
WG3291305-2 LCS								
Chloride (Cl)			103.1		%		90-110	11-MAR-20
WG3291305-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	11-MAR-20
CO3-CL	Water							
Batch	R5021914							
WG3291145-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	11-MAR-20
EC-L-PCT-CL	Water							
Batch	R5021914							
WG3291145-8 LCS								
Conductivity (@ 25C)			101.1		%		90-110	11-MAR-20
WG3291145-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-MAR-20
F-IC-N-CL	Water							
Batch	R5022608							
WG3291305-2 LCS								
Fluoride (F)			100.9		%		90-110	11-MAR-20
WG3291305-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-MAR-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5021578							
WG3291644-7	DUP	L2426682-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	12-MAR-20
WG3291644-6	LCS							
Mercury (Hg)-Dissolved			97.4		%		80-120	12-MAR-20
WG3291644-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	12-MAR-20
WG3291644-8	MS	L2426682-2						
Mercury (Hg)-Dissolved			102.7		%		70-130	12-MAR-20
HG-T-U-CVAF-VA								
Water								
Batch	R5028371							
WG3293907-2	LCS							
Mercury (Hg)-Total			87.8		%		80-120	17-MAR-20
WG3293907-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-MAR-20
MET-D-CCMS-VA								
Water								
Batch	R5025586							
WG3292145-2	LCS							
Aluminum (Al)-Dissolved			93.4		%		80-120	13-MAR-20
Antimony (Sb)-Dissolved			96.6		%		80-120	13-MAR-20
Arsenic (As)-Dissolved			94.6		%		80-120	13-MAR-20
Barium (Ba)-Dissolved			103.5		%		80-120	13-MAR-20
Bismuth (Bi)-Dissolved			103.8		%		80-120	13-MAR-20
Boron (B)-Dissolved			90.8		%		80-120	13-MAR-20
Cadmium (Cd)-Dissolved			98.7		%		80-120	13-MAR-20
Calcium (Ca)-Dissolved			101.2		%		80-120	13-MAR-20
Chromium (Cr)-Dissolved			94.1		%		80-120	13-MAR-20
Cobalt (Co)-Dissolved			95.4		%		80-120	13-MAR-20
Copper (Cu)-Dissolved			93.1		%		80-120	13-MAR-20
Iron (Fe)-Dissolved			81.1		%		80-120	13-MAR-20
Lead (Pb)-Dissolved			92.6		%		80-120	13-MAR-20
Lithium (Li)-Dissolved			96.0		%		80-120	13-MAR-20
Magnesium (Mg)-Dissolved			92.4		%		80-120	13-MAR-20
Manganese (Mn)-Dissolved			95.8		%		80-120	13-MAR-20
Molybdenum (Mo)-Dissolved			100.7		%		80-120	13-MAR-20
Nickel (Ni)-Dissolved			97.3		%		80-120	13-MAR-20
Potassium (K)-Dissolved			97.6		%		80-120	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-2	LCS							
Selenium (Se)-Dissolved			94.9		%		80-120	13-MAR-20
Silicon (Si)-Dissolved			97.3		%		60-140	13-MAR-20
Silver (Ag)-Dissolved			99.9		%		80-120	13-MAR-20
Sodium (Na)-Dissolved			100.1		%		80-120	13-MAR-20
Strontium (Sr)-Dissolved			106.9		%		80-120	13-MAR-20
Thallium (Tl)-Dissolved			92.7		%		80-120	13-MAR-20
Tin (Sn)-Dissolved			98.6		%		80-120	13-MAR-20
Titanium (Ti)-Dissolved			93.5		%		80-120	13-MAR-20
Uranium (U)-Dissolved			91.8		%		80-120	13-MAR-20
Vanadium (V)-Dissolved			94.8		%		80-120	13-MAR-20
Zinc (Zn)-Dissolved			92.6		%		80-120	13-MAR-20
WG3292145-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5025586							
WG3292145-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5026054							
WG3291843-2	LCS							
Aluminum (Al)-Total			108.6		%		80-120	13-MAR-20
Antimony (Sb)-Total			100.9		%		80-120	13-MAR-20
Arsenic (As)-Total			97.8		%		80-120	13-MAR-20
Barium (Ba)-Total			98.9		%		80-120	13-MAR-20
Bismuth (Bi)-Total			102.8		%		80-120	13-MAR-20
Boron (B)-Total			102.4		%		80-120	13-MAR-20
Cadmium (Cd)-Total			97.6		%		80-120	13-MAR-20
Calcium (Ca)-Total			99.5		%		80-120	13-MAR-20
Chromium (Cr)-Total			100.5		%		80-120	13-MAR-20
Cobalt (Co)-Total			97.4		%		80-120	13-MAR-20
Copper (Cu)-Total			94.4		%		80-120	13-MAR-20
Iron (Fe)-Total			102.1		%		80-120	13-MAR-20
Lead (Pb)-Total			101.2		%		80-120	13-MAR-20
Lithium (Li)-Total			99.3		%		80-120	13-MAR-20
Magnesium (Mg)-Total			100.6		%		80-120	13-MAR-20
Manganese (Mn)-Total			101.3		%		80-120	13-MAR-20
Molybdenum (Mo)-Total			98.6		%		80-120	13-MAR-20
Nickel (Ni)-Total			95.4		%		80-120	13-MAR-20
Potassium (K)-Total			100.4		%		80-120	13-MAR-20
Selenium (Se)-Total			102.8		%		80-120	13-MAR-20
Silicon (Si)-Total			102.4		%		80-120	13-MAR-20
Silver (Ag)-Total			97.7		%		80-120	13-MAR-20
Sodium (Na)-Total			102.7		%		80-120	13-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5026054							
WG3291843-2	LCS							
Strontium (Sr)-Total			98.1		%		80-120	13-MAR-20
Thallium (Tl)-Total			101.3		%		80-120	13-MAR-20
Tin (Sn)-Total			96.8		%		80-120	13-MAR-20
Titanium (Ti)-Total			96.0		%		80-120	13-MAR-20
Uranium (U)-Total			97.5		%		80-120	13-MAR-20
Vanadium (V)-Total			99.4		%		80-120	13-MAR-20
Zinc (Zn)-Total			98.0		%		80-120	13-MAR-20
WG3291843-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	13-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-MAR-20



Quality Control Report

Workorder: L2426682

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5026054							
WG3291843-1	MB							
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5022969							
WG3291320-11	DUP	L2426682-3						
Ammonia as N		0.0283	0.0300		mg/L	5.8	20	12-MAR-20
WG3291320-10	LCS							
Ammonia as N			109.7		%		85-115	12-MAR-20
WG3291320-6	LCS							
Ammonia as N			103.0		%		85-115	12-MAR-20
WG3291320-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-20
WG3291320-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-20
WG3291320-12	MS	L2426682-3						
Ammonia as N			112.7		%		75-125	12-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5022608							
WG3291305-2	LCS							
Nitrite (as N)			102.3		%		90-110	11-MAR-20
WG3291305-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-MAR-20
NO3-L-IC-N-CL								
	Water							
Batch	R5022608							
WG3291305-2	LCS							
Nitrate (as N)			104.2		%		90-110	11-MAR-20
WG3291305-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-MAR-20
OH-CL								
	Water							
Batch	R5021914							
WG3291145-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-MAR-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5026330							
WG3292649-3	CRM	CL-ORP						
ORP			219		mV		210-230	14-MAR-20
P-T-L-COL-CL	Water							
Batch	R5022229							
WG3291268-10	LCS							
Phosphorus (P)-Total			98.7		%		80-120	12-MAR-20
WG3291268-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAR-20
PH-CL	Water							
Batch	R5021914							
WG3291145-8	LCS							
pH			6.98		pH		6.9-7.1	11-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5021363							
WG3290519-6	LCS							
Orthophosphate-Dissolved (as P)			103.3		%		80-120	11-MAR-20
WG3290519-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-MAR-20
SO4-IC-N-CL	Water							
Batch	R5022608							
WG3291305-2	LCS							
Sulfate (SO4)			105.6		%		90-110	11-MAR-20
WG3291305-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5028349							
WG3292932-5	LCS							
Total Dissolved Solids			102.7		%		85-115	16-MAR-20
WG3292932-4	MB							
Total Dissolved Solids			<10		mg/L		10	16-MAR-20
TKN-L-F-CL	Water							
Batch	R5024547							
WG3291858-2	LCS							
Total Kjeldahl Nitrogen			83.2		%		75-125	13-MAR-20
WG3291858-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5024547							
WG3291858-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAR-20
TSS-L-CL	Water							
Batch	R5028317							
WG3292931-4 LCS								
Total Suspended Solids			106.7		%		85-115	16-MAR-20
WG3292931-3 MB								
Total Suspended Solids			<1.0		mg/L		1	16-MAR-20
TURBIDITY-CL	Water							
Batch	R5021396							
WG3290689-5 LCS								
Turbidity			105.5		%		85-115	11-MAR-20
WG3290689-4 MB								
Turbidity			<0.10		NTU		0.1	11-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	10-MAR-20 13:05	14-MAR-20 14:00	0.25	97	hours	EHTR-FM
	2	10-MAR-20 12:30	14-MAR-20 14:00	0.25	97	hours	EHTR-FM
	3	10-MAR-20 13:30	14-MAR-20 14:00	0.25	96	hours	EHTR-FM
pH	1	10-MAR-20 13:05	11-MAR-20 13:00	0.25	24	hours	EHTR-FM
	2	10-MAR-20 12:30	11-MAR-20 13:00	0.25	24	hours	EHTR-FM
	3	10-MAR-20 13:30	11-MAR-20 13:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2426682 were received on 11-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: LC7,HSP_2020-03-10		TURNAROUND TIME:				RUSH:			
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Line Creek Operation				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Chris Blurton				Lab Contact Lyudmyla Shvets			Excel PDF EDD		
Email Chris.Blurton@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com			Email 1: carla.froymanparker@teck.com		
Address Box 2003				Address 2559 29 Street NE			Email 2: teckcoal@equisonline.com		
15km North Hwy 43							Email 3: drake.tymstra@teck.com		
City Sparwood		Province BC		City Calgary		Province AB		Email 4: dominique.nicholas@teck.com	
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada		PO number VPO00680643	
Phone Number 250-425-3196				Phone Number 403 407 1794					

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PREP	N	N	Y	Y	Y	N	N	N	N	N	N	N
								ANALYSIS	HG-T-U-CVAF-VA	ALS Package-BOD	ALS Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-IKN/IOC	ALS Package-Bromate	ALS Package-Sulfide-T	NaOH/Zn Ac	
LC_PIZDC1404S_Q1_WG_2020_NP	LC_PIZDC1404S	WG		3/10/2020	13:05	G	5													
LC_HSP_WS_2020-03-10_N	LC_HSP	WS		2020/03/10	12:30	G	7		1		1	1	1	1	1	1				
LC_LC7_WS_2020-03-10_N	LC_LC7	WS		2020/03/10	13:30	G	7		1		1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
D. NICHOLAS AND FIELD ALS SAMPLES TO NG'S TURNAROUND FOR ANALYSIS		D.Nicholas/D.Williams		10-Mar		[Signature]		3/11 850	

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	D.Nicholas/D.Williams	Mobile #	
Sampler's Signature		Date/Time	3/10/2020 [Signature]



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 19-MAR-20
Report Date: 28-JAN-21 16:47 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2429942
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC weekly 2020-03-18
Legal Site Desc:

Comments: 11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-1 LC_FRB_WS_2020-03-16_NP							
Sampled By: KC/DT on 18-MAR-20 @ 08:55							
Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	244		5.0	mg/L		20-MAR-20	R5033685
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Dissolved Organic Carbon	0.79		0.50	mg/L		23-MAR-20	R5035086
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Sulphide (as S)	<0.0015		0.0015	mg/L		25-MAR-20	R5039126
Sulphide (as H2S)	<0.0016		0.0016	mg/L		26-MAR-20	
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		24-MAR-20	R5033631
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		24-MAR-20	R5036227
Total Organic Carbon	0.77		0.50	mg/L		23-MAR-20	R5035086
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-MAR-20	21-MAR-20	R5034430
Dissolved Metals Filtration Location	FIELD					21-MAR-20	R5033511
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-MAR-20	23-MAR-20	R5034968
Dissolved Mercury Filtration Location	FIELD					23-MAR-20	R5033992
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-MAR-20	R5033511
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-MAR-20	21-MAR-20	R5034430
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Barium (Ba)-Dissolved	0.117		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Boron (B)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430
Cadmium (Cd)-Dissolved	0.0162		0.0050	ug/L	21-MAR-20	21-MAR-20	R5034430
Calcium (Ca)-Dissolved	111		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-MAR-20	21-MAR-20	R5034430
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	21-MAR-20	21-MAR-20	R5034430
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Lithium (Li)-Dissolved	0.0204		0.0010	mg/L	21-MAR-20	21-MAR-20	R5034430
Magnesium (Mg)-Dissolved	47.9		0.10	mg/L	21-MAR-20	21-MAR-20	R5034430
Manganese (Mn)-Dissolved	0.00081		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Molybdenum (Mo)-Dissolved	0.000707		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-MAR-20	21-MAR-20	R5034430
Potassium (K)-Dissolved	1.12		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Selenium (Se)-Dissolved	61.0		0.050	ug/L	21-MAR-20	21-MAR-20	R5034430
Silicon (Si)-Dissolved	2.24		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Sodium (Na)-Dissolved	2.19		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Strontium (Sr)-Dissolved	0.173		0.00020	mg/L	21-MAR-20	21-MAR-20	R5034430
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430
Uranium (U)-Dissolved	0.00217		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-MAR-20	21-MAR-20	R5034430
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	21-MAR-20	21-MAR-20	R5034430
Hardness							
Hardness (as CaCO3)	475		0.50	mg/L		23-MAR-20	
Total Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-1 LC_FRB_WS_2020-03-16_NP							
Sampled By: KC/DT on 18-MAR-20 @ 08:55							
Matrix: WS							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-MAR-20	R5034809
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0036		0.0030	mg/L		23-MAR-20	R5034809
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Arsenic (As)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Barium (Ba)-Total	0.119		0.00010	mg/L		23-MAR-20	R5034809
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Boron (B)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Cadmium (Cd)-Total	0.0214		0.0050	ug/L		23-MAR-20	R5034809
Calcium (Ca)-Total	109		0.050	mg/L		23-MAR-20	R5034809
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-MAR-20	R5034809
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Iron (Fe)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Lead (Pb)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Lithium (Li)-Total	0.0188		0.0010	mg/L		23-MAR-20	R5034809
Magnesium (Mg)-Total	47.0		0.10	mg/L		23-MAR-20	R5034809
Manganese (Mn)-Total	0.00103		0.00010	mg/L		23-MAR-20	R5034809
Molybdenum (Mo)-Total	0.000669		0.000050	mg/L		23-MAR-20	R5034809
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Potassium (K)-Total	1.14		0.050	mg/L		23-MAR-20	R5034809
Selenium (Se)-Total	57.5		0.050	ug/L		23-MAR-20	R5034809
Silicon (Si)-Total	2.22		0.10	mg/L		23-MAR-20	R5034809
Silver (Ag)-Total	<0.000010		0.000010	mg/L		23-MAR-20	R5034809
Sodium (Na)-Total	2.24		0.050	mg/L		23-MAR-20	R5034809
Strontium (Sr)-Total	0.156		0.00020	mg/L		23-MAR-20	R5034809
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		23-MAR-20	R5034809
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Uranium (U)-Total	0.00220		0.000010	mg/L		23-MAR-20	R5034809
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-MAR-20	R5034809
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		20-MAR-20	R5033557
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	200		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Total (as CaCO3)	200		1.0	mg/L		20-MAR-20	R5033685
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		20-MAR-20	R5033279
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-MAR-20	R5033641
Chloride in Water by IC							
Chloride (Cl)	1.70		0.50	mg/L		19-MAR-20	R5033641
Electrical Conductivity (EC)							
Conductivity (@ 25C)	809		2.0	uS/cm		20-MAR-20	R5033685
Fluoride in Water by IC							
Fluoride (F)	0.144		0.020	mg/L		19-MAR-20	R5033641
Ion Balance Calculation							
Ion Balance	103		-100	%		23-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-1 LC_FRB_WS_2020-03-16_NP Sampled By: KC/DT on 18-MAR-20 @ 08:55 Matrix: WS							
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		23-MAR-20	
Anion Sum	9.30			meq/L		23-MAR-20	
Cation Sum	9.61			meq/L		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	13.4		0.0050	mg/L		19-MAR-20	R5033641
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0025		0.0010	mg/L		19-MAR-20	R5033641
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		19-MAR-20	R5032901
Oxidation redution potential by elect.							
ORP	308		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-MAR-20	R5036209
Sulfate in Water by IC							
Sulfate (SO4)	206		0.30	mg/L		19-MAR-20	R5033641
Total Dissolved Solids							
Total Dissolved Solids	630	DLHC	20	mg/L		25-MAR-20	R5041109
Total Suspended Solids							
Total Suspended Solids	2.0		1.0	mg/L		25-MAR-20	R5040927
Turbidity							
Turbidity	0.22		0.10	NTU		20-MAR-20	R5033570
pH							
pH	8.10		0.10	pH		20-MAR-20	R5033685
L2429942-2 LC_FRSDC_WS_2020-03-16_N Sampled By: KC/DT on 18-MAR-20 @ 08:10 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	251		5.0	mg/L		20-MAR-20	R5033685
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Dissolved Organic Carbon	0.59		0.50	mg/L		23-MAR-20	R5035086
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Sulphide (as S)	<0.0015		0.0015	mg/L		25-MAR-20	R5039126
Sulphide (as H2S)	<0.0016		0.0016	mg/L		26-MAR-20	
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		24-MAR-20	R5033631
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		24-MAR-20	R5036227
Total Organic Carbon	0.65		0.50	mg/L		23-MAR-20	R5035086
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-MAR-20	21-MAR-20	R5034430
Dissolved Metals Filtration Location	FIELD					21-MAR-20	R5033511
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	23-MAR-20	R5034968
Dissolved Mercury Filtration Location	FIELD					23-MAR-20	R5033992
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-MAR-20	R5033511
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-MAR-20	21-MAR-20	R5034430
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Barium (Ba)-Dissolved	0.117		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Boron (B)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-2 LC_FRSDSDC_WS_2020-03-16_N							
Sampled By: KC/DT on 18-MAR-20 @ 08:10							
Matrix: WS							
Dissolved Metals in Water by CRC ICPMS							
Cadmium (Cd)-Dissolved	0.0202		0.0050	ug/L	21-MAR-20	21-MAR-20	R5034430
Calcium (Ca)-Dissolved	111		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-MAR-20	21-MAR-20	R5034430
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	21-MAR-20	21-MAR-20	R5034430
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Lithium (Li)-Dissolved	0.0205		0.0010	mg/L	21-MAR-20	21-MAR-20	R5034430
Magnesium (Mg)-Dissolved	47.0		0.10	mg/L	21-MAR-20	21-MAR-20	R5034430
Manganese (Mn)-Dissolved	0.00084		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Molybdenum (Mo)-Dissolved	0.000644		0.000050	mg/L	21-MAR-20	21-MAR-20	R5034430
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-MAR-20	21-MAR-20	R5034430
Potassium (K)-Dissolved	1.13		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Selenium (Se)-Dissolved	58.0		0.050	ug/L	21-MAR-20	21-MAR-20	R5034430
Silicon (Si)-Dissolved	2.15		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Sodium (Na)-Dissolved	2.18		0.050	mg/L	21-MAR-20	21-MAR-20	R5034430
Strontium (Sr)-Dissolved	0.167		0.00020	mg/L	21-MAR-20	21-MAR-20	R5034430
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-MAR-20	21-MAR-20	R5034430
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-MAR-20	21-MAR-20	R5034430
Uranium (U)-Dissolved	0.00218		0.000010	mg/L	21-MAR-20	21-MAR-20	R5034430
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-MAR-20	21-MAR-20	R5034430
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	21-MAR-20	21-MAR-20	R5034430
Hardness							
Hardness (as CaCO3)	471		0.50	mg/L		23-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-MAR-20	R5034809
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0033		0.0030	mg/L		23-MAR-20	R5034809
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Arsenic (As)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Barium (Ba)-Total	0.115		0.00010	mg/L		23-MAR-20	R5034809
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Boron (B)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Cadmium (Cd)-Total	0.0218		0.0050	ug/L		23-MAR-20	R5034809
Calcium (Ca)-Total	111		0.050	mg/L		23-MAR-20	R5034809
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-MAR-20	R5034809
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Iron (Fe)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Lead (Pb)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Lithium (Li)-Total	0.0189		0.0010	mg/L		23-MAR-20	R5034809
Magnesium (Mg)-Total	47.4		0.10	mg/L		23-MAR-20	R5034809
Manganese (Mn)-Total	0.00106		0.00010	mg/L		23-MAR-20	R5034809
Molybdenum (Mo)-Total	0.000653		0.000050	mg/L		23-MAR-20	R5034809
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Potassium (K)-Total	1.13		0.050	mg/L		23-MAR-20	R5034809
Selenium (Se)-Total	57.6		0.050	ug/L		23-MAR-20	R5034809
Silicon (Si)-Total	2.19		0.10	mg/L		23-MAR-20	R5034809
Silver (Ag)-Total	<0.000010		0.000010	mg/L		23-MAR-20	R5034809

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-2 LC_FRSDSDC_WS_2020-03-16_N							
Sampled By: KC/DT on 18-MAR-20 @ 08:10							
Matrix: WS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	2.19		0.050	mg/L		23-MAR-20	R5034809
Strontium (Sr)-Total	0.157		0.00020	mg/L		23-MAR-20	R5034809
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		23-MAR-20	R5034809
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-MAR-20	R5034809
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Uranium (U)-Total	0.00219		0.000010	mg/L		23-MAR-20	R5034809
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-MAR-20	R5034809
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-MAR-20	R5034809
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		20-MAR-20	R5033557
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	206		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Total (as CaCO3)	206		1.0	mg/L		20-MAR-20	R5033685
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		20-MAR-20	R5033279
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-MAR-20	R5033641
Chloride in Water by IC							
Chloride (Cl)	1.59		0.50	mg/L		19-MAR-20	R5033641
Electrical Conductivity (EC)							
Conductivity (@ 25C)	826		2.0	uS/cm		20-MAR-20	R5033685
Fluoride in Water by IC							
Fluoride (F)	0.151		0.020	mg/L		19-MAR-20	R5033641
Ion Balance Calculation							
Ion Balance	99.2		-100	%		23-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.4			%		23-MAR-20	
Anion Sum	9.61			meq/L		23-MAR-20	
Cation Sum	9.54			meq/L		23-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	13.8		0.0050	mg/L		19-MAR-20	R5033641
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0028		0.0010	mg/L		19-MAR-20	R5033641
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		19-MAR-20	R5032901
Oxidation redution potential by elect.							
ORP	277		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-MAR-20	R5036209
Sulfate in Water by IC							
Sulfate (SO4)	214		0.30	mg/L		19-MAR-20	R5033641
Total Dissolved Solids							
Total Dissolved Solids	652	DLHC	20	mg/L		25-MAR-20	R5041109
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		25-MAR-20	R5040927
Turbidity							
Turbidity	0.17		0.10	NTU		20-MAR-20	R5033570
pH							
pH	8.13		0.10	pH		20-MAR-20	R5033685

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-2 LC_FRDSDC_WS_2020-03-16_N Sampled By: KC/DT on 18-MAR-20 @ 08:10 Matrix: WS							
L2429942-3 LC_PIZDC0901_WG_Q1-2020_NP Sampled By: KC/DT on 18-MAR-20 @ 12:05 Matrix: WS							
Miscellaneous Parameters							
Bicarbonate (HCO3)	461		5.0	mg/L		20-MAR-20	R5033685
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Dissolved Organic Carbon	4.37		0.50	mg/L		23-MAR-20	R5035086
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAR-20	R5033685
Total Kjeldahl Nitrogen	0.124		0.050	mg/L		24-MAR-20	R5033631
Total Organic Carbon	4.53		0.50	mg/L		23-MAR-20	R5035086
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-MAR-20	24-MAR-20	R5036853
Dissolved Metals Filtration Location	FIELD					23-MAR-20	R5034688
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	23-MAR-20	R5034968
Dissolved Mercury Filtration Location	FIELD					23-MAR-20	R5033992
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					23-MAR-20	R5034688
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-MAR-20	24-MAR-20	R5036853
Antimony (Sb)-Dissolved	0.00043		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Barium (Ba)-Dissolved	0.246		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Boron (B)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Cadmium (Cd)-Dissolved	0.301		0.0050	ug/L	23-MAR-20	24-MAR-20	R5036853
Calcium (Ca)-Dissolved	97.4		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	23-MAR-20	24-MAR-20	R5036853
Copper (Cu)-Dissolved	0.00085		0.00020	mg/L	23-MAR-20	24-MAR-20	R5036853
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Lithium (Li)-Dissolved	0.0035		0.0010	mg/L	23-MAR-20	24-MAR-20	R5036853
Magnesium (Mg)-Dissolved	26.6		0.10	mg/L	23-MAR-20	24-MAR-20	R5036853
Manganese (Mn)-Dissolved	0.0155		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Molybdenum (Mo)-Dissolved	0.000935		0.000050	mg/L	23-MAR-20	24-MAR-20	R5036853
Nickel (Ni)-Dissolved	0.00161		0.00050	mg/L	23-MAR-20	24-MAR-20	R5036853
Potassium (K)-Dissolved	1.44		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Selenium (Se)-Dissolved	0.492		0.050	ug/L	23-MAR-20	24-MAR-20	R5036853
Silicon (Si)-Dissolved	5.10		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Sodium (Na)-Dissolved	3.54		0.050	mg/L	23-MAR-20	24-MAR-20	R5036853
Strontium (Sr)-Dissolved	0.235		0.00020	mg/L	23-MAR-20	24-MAR-20	R5036853
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	23-MAR-20	24-MAR-20	R5036853
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-MAR-20	24-MAR-20	R5036853
Uranium (U)-Dissolved	0.00386		0.000010	mg/L	23-MAR-20	24-MAR-20	R5036853
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-MAR-20	24-MAR-20	R5036853
Zinc (Zn)-Dissolved	0.0028		0.0010	mg/L	23-MAR-20	24-MAR-20	R5036853
Hardness							
Hardness (as CaCO3)	353		0.50	mg/L		24-MAR-20	
Total Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-3 LC_PIZDC0901_WG_Q1-2020_NP							
Sampled By: KC/DT on 18-MAR-20 @ 12:05							
Matrix: WS							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-MAR-20	R5034809
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.163		0.0030	mg/L		23-MAR-20	R5034809
Antimony (Sb)-Total	0.00059		0.00010	mg/L		23-MAR-20	R5034809
Arsenic (As)-Total	0.00050		0.00010	mg/L		23-MAR-20	R5034809
Barium (Ba)-Total	0.275		0.00010	mg/L		23-MAR-20	R5034809
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-MAR-20	R5034809
Boron (B)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Cadmium (Cd)-Total	1.57		0.0050	ug/L		23-MAR-20	R5034809
Calcium (Ca)-Total	98.2		0.050	mg/L		23-MAR-20	R5034809
Chromium (Cr)-Total	0.00037		0.00010	mg/L		23-MAR-20	R5034809
Cobalt (Co)-Total	4.61		0.10	ug/L		23-MAR-20	R5034809
Copper (Cu)-Total	0.00147		0.00050	mg/L		23-MAR-20	R5034809
Iron (Fe)-Total	0.370		0.010	mg/L		23-MAR-20	R5034809
Lead (Pb)-Total	0.000479		0.000050	mg/L		23-MAR-20	R5034809
Lithium (Li)-Total	0.0034		0.0010	mg/L		23-MAR-20	R5034809
Magnesium (Mg)-Total	28.4		0.10	mg/L		23-MAR-20	R5034809
Manganese (Mn)-Total	0.688		0.00010	mg/L		23-MAR-20	R5034809
Molybdenum (Mo)-Total	0.00112		0.000050	mg/L		23-MAR-20	R5034809
Nickel (Ni)-Total	0.00831		0.00050	mg/L		23-MAR-20	R5034809
Potassium (K)-Total	1.53		0.050	mg/L		23-MAR-20	R5034809
Selenium (Se)-Total	0.618		0.050	ug/L		23-MAR-20	R5034809
Silicon (Si)-Total	5.55		0.10	mg/L		23-MAR-20	R5034809
Silver (Ag)-Total	0.000012		0.000010	mg/L		23-MAR-20	R5034809
Sodium (Na)-Total	3.56		0.050	mg/L		23-MAR-20	R5034809
Strontium (Sr)-Total	0.226		0.00020	mg/L		23-MAR-20	R5034809
Thallium (Tl)-Total	0.000028		0.000010	mg/L		23-MAR-20	R5034809
Tin (Sn)-Total	0.00012		0.00010	mg/L		23-MAR-20	R5034809
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-MAR-20	R5034809
Uranium (U)-Total	0.00420		0.000010	mg/L		23-MAR-20	R5034809
Vanadium (V)-Total	0.00182		0.00050	mg/L		23-MAR-20	R5034809
Zinc (Zn)-Total	0.0087		0.0030	mg/L		23-MAR-20	R5034809
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	20.4		1.0	mg/L		20-MAR-20	R5033557
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	378		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAR-20	R5033685
Alkalinity, Total (as CaCO3)	378		1.0	mg/L		20-MAR-20	R5033685
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		20-MAR-20	R5033279
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-MAR-20	R5033641
Chloride in Water by IC							
Chloride (Cl)	0.57		0.50	mg/L		19-MAR-20	R5033641
Electrical Conductivity (EC)							
Conductivity (@ 25C)	633		2.0	uS/cm		20-MAR-20	R5033685
Fluoride in Water by IC							
Fluoride (F)	0.116		0.020	mg/L		19-MAR-20	R5033641
Ion Balance Calculation							
Cation - Anion Balance	-4.2			%		24-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2429942-3 LC_PIZDC0901_WG_Q1-2020_NP Sampled By: KC/DT on 18-MAR-20 @ 12:05 Matrix: WS							
Ion Balance Calculation							
Anion Sum	7.87			meq/L		24-MAR-20	
Cation Sum	7.24			meq/L		24-MAR-20	
Ion Balance Calculation							
Ion Balance	92.0		-100	%		24-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0175		0.0050	mg/L		19-MAR-20	R5033641
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		19-MAR-20	R5033641
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0151		0.0010	mg/L		19-MAR-20	R5032901
Oxidation redution potential by elect.							
ORP	296		-1000	mV		24-MAR-20	R5036213
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0294		0.0020	mg/L		24-MAR-20	R5036209
Sulfate in Water by IC							
Sulfate (SO4)	14.0		0.30	mg/L		19-MAR-20	R5033641
Total Dissolved Solids							
Total Dissolved Solids	401	DLHC	20	mg/L		25-MAR-20	R5041109
Total Suspended Solids							
Total Suspended Solids	14.6		1.0	mg/L		25-MAR-20	R5040927
Turbidity							
Turbidity	15.5		0.10	NTU		20-MAR-20	R5033570
pH							
pH	7.73		0.10	pH		20-MAR-20	R5033685
L2429942-4 LC_LCC_WS_2020-03-18_NP Sampled By: KC/DT on 18-MAR-20 @ 13:50 Matrix: WS							
Miscellaneous Parameters							
Total Suspended Solids	2.8		1.0	mg/L		25-MAR-20	R5040927
Turbidity	2.93		0.10	NTU		20-MAR-20	R5033570
L2429942-5 LC_LC4_WS_2020-03-18_N Sampled By: KC/DT on 18-MAR-20 @ 16:00 Matrix: WS							
Miscellaneous Parameters							
Total Suspended Solids	2.1		1.0	mg/L		25-MAR-20	R5040927
Turbidity	1.72		0.10	NTU		20-MAR-20	R5033570

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
SULPHIDE-CFA-ED	Water	Sulphide	APHA 4500 -S E-Auto-Colorimetry
A continuous flow manifold adds HCl to the sample which converts sulphide to a gas, then the sulphide is separated from the flow using a gas dialysis membrane. A colorimetric reaction produces a methylene blue compound which is measured at 660 nm. This follows the Standard Methods procedure 4500 S-E.			
SULPHIDE>H2S-ED	Water	Sulphide as Hydrogen Sulphide	Calculation from Sulphide
Calculated by multiplying Sulphide as S by the molar ratio of H2S to S (34/32): Sulphide (as H2S) = 1.063 * Sulphide (as S)			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC weekly 2020-03-18

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2429942

Report Date: 28-JAN-21

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Client: TECK COAL LIMITED (LINE CREEK)

Box 2003 15km North Hwy 43

Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5033557							
WG3296558-5	LCS							
Acidity (as CaCO3)			103.5		%		85-115	20-MAR-20
WG3296558-4	MB							
Acidity (as CaCO3)			1.0		mg/L		2	20-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5033685							
WG3296702-5	LCS							
Alkalinity, Total (as CaCO3)			102.8		%		85-115	20-MAR-20
WG3296702-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5034430							
WG3296524-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	21-MAR-20
WG3296524-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-MAR-20
Batch	R5036853							
WG3297340-2	LCS							
Beryllium (Be)-Dissolved			94.4		%		80-120	24-MAR-20
WG3297340-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-3	DUP	L2429942-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-MAR-20
WG3296626-2	LCS							
Beryllium (Be)-Total			97.5		%		80-120	23-MAR-20
WG3296626-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-MAR-20
WG3296626-4	MS	L2429942-2						
Beryllium (Be)-Total			92.7		%		70-130	23-MAR-20
BIC-CL								
	Water							
Batch	R5033685							
WG3296702-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	20-MAR-20
BR-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL	Water							
Batch	R5033641							
WG3296657-6	LCS							
Bromide (Br)			102.6		%		85-115	19-MAR-20
WG3296657-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	19-MAR-20
CL-IC-N-CL	Water							
Batch	R5033641							
WG3296657-6	LCS							
Chloride (Cl)			103.2		%		90-110	19-MAR-20
WG3296657-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	19-MAR-20
CO3-CL	Water							
Batch	R5033685							
WG3296702-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	20-MAR-20
EC-L-PCT-CL	Water							
Batch	R5033685							
WG3296702-5	LCS							
Conductivity (@ 25C)			95.0		%		90-110	20-MAR-20
WG3296702-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAR-20
F-IC-N-CL	Water							
Batch	R5033641							
WG3296657-6	LCS							
Fluoride (F)			101.3		%		90-110	19-MAR-20
WG3296657-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	19-MAR-20
HG-D-CVAA-VA	Water							
Batch	R5034968							
WG3297086-2	LCS							
Mercury (Hg)-Dissolved			96.9		%		80-120	23-MAR-20
WG3297086-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-MAR-20
HG-T-U-CVAF-VA	Water							



Quality Control Report

Workorder: L2429942

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA		Water						
Batch	R5036227							
WG3298068-2	LCS							
Mercury (Hg)-Total			94.0		%		80-120	24-MAR-20
WG3298068-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	24-MAR-20
MET-D-CCMS-VA		Water						
Batch	R5034430							
WG3296524-2	LCS							
Aluminum (Al)-Dissolved			99.5		%		80-120	21-MAR-20
Antimony (Sb)-Dissolved			100.1		%		80-120	21-MAR-20
Arsenic (As)-Dissolved			104.0		%		80-120	21-MAR-20
Barium (Ba)-Dissolved			102.2		%		80-120	21-MAR-20
Bismuth (Bi)-Dissolved			117.2		%		80-120	21-MAR-20
Boron (B)-Dissolved			99.1		%		80-120	21-MAR-20
Cadmium (Cd)-Dissolved			105.3		%		80-120	21-MAR-20
Calcium (Ca)-Dissolved			102.4		%		80-120	21-MAR-20
Chromium (Cr)-Dissolved			104.9		%		80-120	21-MAR-20
Cobalt (Co)-Dissolved			106.2		%		80-120	21-MAR-20
Copper (Cu)-Dissolved			104.2		%		80-120	21-MAR-20
Iron (Fe)-Dissolved			94.3		%		80-120	21-MAR-20
Lead (Pb)-Dissolved			103.5		%		80-120	21-MAR-20
Lithium (Li)-Dissolved			104.6		%		80-120	21-MAR-20
Magnesium (Mg)-Dissolved			104.7		%		80-120	21-MAR-20
Manganese (Mn)-Dissolved			102.9		%		80-120	21-MAR-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	21-MAR-20
Nickel (Ni)-Dissolved			101.8		%		80-120	21-MAR-20
Potassium (K)-Dissolved			104.3		%		80-120	21-MAR-20
Selenium (Se)-Dissolved			101.9		%		80-120	21-MAR-20
Silicon (Si)-Dissolved			109.1		%		60-140	21-MAR-20
Silver (Ag)-Dissolved			109.1		%		80-120	21-MAR-20
Sodium (Na)-Dissolved			108.7		%		80-120	21-MAR-20
Strontium (Sr)-Dissolved			106.5		%		80-120	21-MAR-20
Thallium (Tl)-Dissolved			108.7		%		80-120	21-MAR-20
Tin (Sn)-Dissolved			104.4		%		80-120	21-MAR-20
Titanium (Ti)-Dissolved			100.8		%		80-120	21-MAR-20
Uranium (U)-Dissolved			108.3		%		80-120	21-MAR-20



Quality Control Report

Workorder: L2429942

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5034430							
WG3296524-2	LCS							
Vanadium (V)-Dissolved			106.4		%		80-120	21-MAR-20
Zinc (Zn)-Dissolved			106.8		%		80-120	21-MAR-20
WG3296524-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5036853							
WG3297340-2	LCS							
Aluminum (Al)-Dissolved			94.7		%		80-120	24-MAR-20
Antimony (Sb)-Dissolved			98.3		%		80-120	24-MAR-20
Arsenic (As)-Dissolved			92.1		%		80-120	24-MAR-20
Barium (Ba)-Dissolved			95.2		%		80-120	24-MAR-20
Bismuth (Bi)-Dissolved			98.0		%		80-120	24-MAR-20
Boron (B)-Dissolved			96.0		%		80-120	24-MAR-20
Cadmium (Cd)-Dissolved			95.5		%		80-120	24-MAR-20
Calcium (Ca)-Dissolved			95.1		%		80-120	24-MAR-20
Chromium (Cr)-Dissolved			93.1		%		80-120	24-MAR-20
Cobalt (Co)-Dissolved			92.8		%		80-120	24-MAR-20
Copper (Cu)-Dissolved			93.3		%		80-120	24-MAR-20
Iron (Fe)-Dissolved			98.4		%		80-120	24-MAR-20
Lead (Pb)-Dissolved			97.9		%		80-120	24-MAR-20
Lithium (Li)-Dissolved			95.3		%		80-120	24-MAR-20
Magnesium (Mg)-Dissolved			93.1		%		80-120	24-MAR-20
Manganese (Mn)-Dissolved			96.0		%		80-120	24-MAR-20
Molybdenum (Mo)-Dissolved			97.9		%		80-120	24-MAR-20
Nickel (Ni)-Dissolved			92.8		%		80-120	24-MAR-20
Potassium (K)-Dissolved			93.6		%		80-120	24-MAR-20
Selenium (Se)-Dissolved			97.6		%		80-120	24-MAR-20
Silicon (Si)-Dissolved			102.3		%		60-140	24-MAR-20
Silver (Ag)-Dissolved			96.5		%		80-120	24-MAR-20
Sodium (Na)-Dissolved			100.3		%		80-120	24-MAR-20
Strontium (Sr)-Dissolved			99.7		%		80-120	24-MAR-20
Thallium (Tl)-Dissolved			94.9		%		80-120	24-MAR-20
Tin (Sn)-Dissolved			97.8		%		80-120	24-MAR-20
Titanium (Ti)-Dissolved			92.0		%		80-120	24-MAR-20
Uranium (U)-Dissolved			95.1		%		80-120	24-MAR-20
Vanadium (V)-Dissolved			95.2		%		80-120	24-MAR-20
Zinc (Zn)-Dissolved			93.1		%		80-120	24-MAR-20
WG3297340-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5036853							
WG3297340-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-3	DUP	L2429942-1						
Aluminum (Al)-Total		0.0036	0.0033		mg/L	9.2	20	23-MAR-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-MAR-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-MAR-20
Barium (Ba)-Total		0.119	0.117		mg/L	2.0	20	23-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-3	DUP	L2429942-1						
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-MAR-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-MAR-20
Cadmium (Cd)-Total		0.0000214	0.0000209		mg/L	2.6	20	23-MAR-20
Calcium (Ca)-Total		109	107		mg/L	2.1	20	23-MAR-20
Chromium (Cr)-Total		<0.00010	0.00012	RPD-NA	mg/L	N/A	20	23-MAR-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-MAR-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-MAR-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-MAR-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-MAR-20
Lithium (Li)-Total		0.0188	0.0185		mg/L	1.3	20	23-MAR-20
Magnesium (Mg)-Total		47.0	46.6		mg/L	1.0	20	23-MAR-20
Manganese (Mn)-Total		0.00103	0.00099		mg/L	3.5	20	23-MAR-20
Molybdenum (Mo)-Total		0.000669	0.000648		mg/L	3.1	20	23-MAR-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-MAR-20
Potassium (K)-Total		1.14	1.13		mg/L	0.2	20	23-MAR-20
Selenium (Se)-Total		0.0575	0.0582		mg/L	1.2	20	23-MAR-20
Silicon (Si)-Total		2.22	2.21		mg/L	0.6	20	23-MAR-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-MAR-20
Sodium (Na)-Total		2.24	2.19		mg/L	2.3	20	23-MAR-20
Strontium (Sr)-Total		0.156	0.153		mg/L	1.6	20	23-MAR-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-MAR-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-MAR-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-MAR-20
Uranium (U)-Total		0.00220	0.00225		mg/L	2.1	20	23-MAR-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-MAR-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-MAR-20
WG3296626-2	LCS							
Aluminum (Al)-Total			100.9		%		80-120	23-MAR-20
Antimony (Sb)-Total			105.5		%		80-120	23-MAR-20
Arsenic (As)-Total			102.4		%		80-120	23-MAR-20
Barium (Ba)-Total			105.8		%		80-120	23-MAR-20
Bismuth (Bi)-Total			103.0		%		80-120	23-MAR-20
Boron (B)-Total			98.9		%		80-120	23-MAR-20
Cadmium (Cd)-Total			104.0		%		80-120	23-MAR-20



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MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-2	LCS							
Calcium (Ca)-Total			102.3		%		80-120	23-MAR-20
Chromium (Cr)-Total			101.0		%		80-120	23-MAR-20
Cobalt (Co)-Total			101.7		%		80-120	23-MAR-20
Copper (Cu)-Total			100.7		%		80-120	23-MAR-20
Iron (Fe)-Total			108.2		%		80-120	23-MAR-20
Lead (Pb)-Total			104.0		%		80-120	23-MAR-20
Lithium (Li)-Total			96.0		%		80-120	23-MAR-20
Magnesium (Mg)-Total			101.0		%		80-120	23-MAR-20
Manganese (Mn)-Total			104.7		%		80-120	23-MAR-20
Molybdenum (Mo)-Total			103.2		%		80-120	23-MAR-20
Nickel (Ni)-Total			101.4		%		80-120	23-MAR-20
Potassium (K)-Total			104.0		%		80-120	23-MAR-20
Selenium (Se)-Total			102.1		%		80-120	23-MAR-20
Silicon (Si)-Total			101.3		%		80-120	23-MAR-20
Silver (Ag)-Total			97.7		%		80-120	23-MAR-20
Sodium (Na)-Total			102.8		%		80-120	23-MAR-20
Strontium (Sr)-Total			107.8		%		80-120	23-MAR-20
Thallium (Tl)-Total			102.4		%		80-120	23-MAR-20
Tin (Sn)-Total			102.2		%		80-120	23-MAR-20
Titanium (Ti)-Total			98.9		%		80-120	23-MAR-20
Uranium (U)-Total			107.9		%		80-120	23-MAR-20
Vanadium (V)-Total			104.2		%		80-120	23-MAR-20
Zinc (Zn)-Total			102.2		%		80-120	23-MAR-20
WG3296626-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	23-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	23-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	23-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	23-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	23-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-MAR-20
WG3296626-4	MS	L2429942-2						
Aluminum (Al)-Total			96.2		%		70-130	23-MAR-20
Antimony (Sb)-Total			98.7		%		70-130	23-MAR-20
Arsenic (As)-Total			96.4		%		70-130	23-MAR-20
Barium (Ba)-Total			N/A	MS-B	%		-	23-MAR-20
Bismuth (Bi)-Total			89.9		%		70-130	23-MAR-20
Boron (B)-Total			99.3		%		70-130	23-MAR-20
Cadmium (Cd)-Total			98.8		%		70-130	23-MAR-20
Calcium (Ca)-Total			N/A	MS-B	%		-	23-MAR-20
Chromium (Cr)-Total			93.4		%		70-130	23-MAR-20
Cobalt (Co)-Total			92.3		%		70-130	23-MAR-20
Copper (Cu)-Total			90.3		%		70-130	23-MAR-20
Iron (Fe)-Total			96.5		%		70-130	23-MAR-20
Lead (Pb)-Total			91.3		%		70-130	23-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5034809							
WG3296626-4	MS	L2429942-2						
Lithium (Li)-Total			92.6		%		70-130	23-MAR-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	23-MAR-20
Manganese (Mn)-Total			95.0		%		70-130	23-MAR-20
Molybdenum (Mo)-Total			100.6		%		70-130	23-MAR-20
Nickel (Ni)-Total			91.9		%		70-130	23-MAR-20
Potassium (K)-Total			99.4		%		70-130	23-MAR-20
Selenium (Se)-Total			N/A	MS-B	%		-	23-MAR-20
Silicon (Si)-Total			93.4		%		70-130	23-MAR-20
Silver (Ag)-Total			94.2		%		70-130	23-MAR-20
Sodium (Na)-Total			N/A	MS-B	%		-	23-MAR-20
Strontium (Sr)-Total			N/A	MS-B	%		-	23-MAR-20
Thallium (Tl)-Total			92.5		%		70-130	23-MAR-20
Tin (Sn)-Total			98.9		%		70-130	23-MAR-20
Titanium (Ti)-Total			97.1		%		70-130	23-MAR-20
Uranium (U)-Total			100.9		%		70-130	23-MAR-20
Vanadium (V)-Total			99.4		%		70-130	23-MAR-20
Zinc (Zn)-Total			90.8		%		70-130	23-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5033279							
WG3295964-15	DUP	L2429942-3						
Ammonia as N			<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295964-14	LCS							
Ammonia as N			100.3		%		85-115	20-MAR-20
WG3295964-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-20
WG3295964-16	MS	L2429942-3						
Ammonia as N			106.4		%		75-125	20-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5033641							
WG3296657-6	LCS							
Nitrite (as N)			104.9		%		90-110	19-MAR-20
WG3296657-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	19-MAR-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5033641							
WG3296657-6	LCS							
Nitrate (as N)			104.6		%		90-110	19-MAR-20
WG3296657-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	19-MAR-20
OH-CL	Water							
Batch	R5033685							
WG3296702-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	20-MAR-20
ORP-CL	Water							
Batch	R5036213							
WG3298083-5	CRM	CL-ORP						
ORP			227		mV		210-230	24-MAR-20
P-T-L-COL-CL	Water							
Batch	R5036209							
WG3297847-10	LCS							
Phosphorus (P)-Total			105.8		%		80-120	24-MAR-20
WG3297847-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-MAR-20
PH-CL	Water							
Batch	R5033685							
WG3296702-5	LCS							
pH			7.02		pH		6.9-7.1	20-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5032901							
WG3295652-11	LCS							
Orthophosphate-Dissolved (as P)			106.7		%		80-120	19-MAR-20
WG3295652-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-MAR-20
SO4-IC-N-CL	Water							
Batch	R5033641							
WG3296657-6	LCS							
Sulfate (SO4)			104.1		%		90-110	19-MAR-20
WG3296657-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-20

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SOLIDS-TDS-CL								
Batch R5041109								
WG3298483-5	LCS							
Total Dissolved Solids			102.9		%		85-115	25-MAR-20
WG3298483-4	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAR-20
SULPHIDE-CFA-ED								
Batch R5039126								
WG3298919-2	LCS							
Sulphide (as S)			97.7		%		75-125	25-MAR-20
WG3298919-1	MB							
Sulphide (as S)			<0.0015		mg/L		0.0015	25-MAR-20
TKN-L-F-CL								
Batch R5033631								
WG3296619-15	DUP	L2429942-2						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-MAR-20
WG3296619-10	LCS							
Total Kjeldahl Nitrogen			94.6		%		75-125	21-MAR-20
WG3296619-14	LCS							
Total Kjeldahl Nitrogen			91.8		%		75-125	21-MAR-20
WG3296619-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-MAR-20
WG3296619-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-MAR-20
WG3296619-16	MS	L2429942-2						
Total Kjeldahl Nitrogen			73.6		%		70-130	24-MAR-20
TSS-L-CL								
Batch R5040927								
WG3298476-4	LCS							
Total Suspended Solids			94.8		%		85-115	25-MAR-20
WG3298476-3	MB							
Total Suspended Solids			<1.0		mg/L		1	25-MAR-20
TURBIDITY-CL								
Batch R5033570								
WG3296381-9	DUP	L2429942-4						
Turbidity		2.93	3.06		NTU	4.3	15	20-MAR-20
WG3296381-5	LCS							
Turbidity			104.0		%		85-115	20-MAR-20
WG3296381-8	LCS							



Quality Control Report

Workorder: L2429942

Report Date: 28-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5033570							
WG3296381-8	LCS							
Turbidity			103.5		%		85-115	20-MAR-20
WG3296381-4	MB							
Turbidity			<0.10		NTU		0.1	20-MAR-20
WG3296381-7	MB							
Turbidity			<0.10		NTU		0.1	20-MAR-20

Quality Control Report

Workorder: L2429942

Report Date: 28-JAN-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2429942

Report Date: 28-JAN-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	18-MAR-20 08:55	24-MAR-20 09:45	0.25	145	hours	EHTR-FM
	2	18-MAR-20 08:10	24-MAR-20 09:45	0.25	146	hours	EHTR-FM
	3	18-MAR-20 12:05	24-MAR-20 09:45	0.25	142	hours	EHTR-FM
pH	1	18-MAR-20 08:55	20-MAR-20 09:00	0.25	48	hours	EHTR-FM
	2	18-MAR-20 08:10	20-MAR-20 09:00	0.25	49	hours	EHTR-FM
	3	18-MAR-20 12:05	20-MAR-20 09:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2429942 were received on 19-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: DC weekly 2020-03-18		TURNAROUND TIME:		RUSH:					
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO			
Facility Name / Job#: Line Creek Operation		Lab Name: ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager: Chris Blurton		Lab Contact: Lyudmyla Shvets		Email 1: carla.froymanparker@teck.com		x	x	x	
Email: Chris.Blurton@teck.com		Email: Lyudmyla.Shvets@ALSGlobal.com		Email 2: teckcoal@equisonline.com		x	x	x	
Address: Box 2003		Address: 2559 29 Street NE		Email 3: drake.tymstra@teck.com		x	x	x	
15km North Hwy 43				Email 4: kirsten.campbell@teck.com		x	x	x	
City: Sparwood	Province: BC	City: Calgary	Province: AB	Email 4: dominique.nicholas@teck.com		x	x	x	
Postal Code: V0B 2G0	Country: Canada	Postal Code: T1Y 7B5	Country: Canada	PO number: VPO00680643					
Phone Number: 250-425-3196		Phone Number: 403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Y	Y	N	Y	N	N	N	N	NONE				
								ALS_Package-DOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-Sulfide-T	ALS_Package-TKN/TOC	TSS/Turb				
LC_FRB_WS_2020-03-16_NP	LC_FRB	WS		2020/03/18	08:55	G	8	1	1	1	1	1	1	1	1					
LC_FRSDC_WS_2020-03-16_N	LC_FRSDC	WS		2020/03/18	08:10	G	8	1	1	1	1	1	1	1	1					
LC_PIZDC0901_WG_Q1-2020_NP	LC_PIZDC0901	WG		3/18/2020	12:05	G	6	1	1		1	1	1		1					
LC_LCC_WS_2020-03-18_NP	LC_LCC	WS		3/18/2020	13:50	G	1									1				
LC_LC4_WS_2020-03-18_N	LC_LC4	WS		3/18/2020	16:00	G	1									1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION D.Tymstra/K.Campbell	DATE/TIME 0-Jan	ACCEPTED BY/AFFILIATION DK	DATE/TIME 3/19 08:50
---	--	---------------------------	--------------------------------------	--------------------------------

SERVICE REQUEST (rush subject to availability)	SAMPLER'S NAME	MOBILE #
Regular (default) <input checked="" type="checkbox"/>	K. Campbell/D. Tymstra	
Priority (2-3 business days) - 50% surcharge	SAMPLER'S SIGNATURE	DATE/TIME
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

10⁰⁰



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 26-MAR-20
Report Date: 18-DEC-20 14:24 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2431925
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC GW 20200325
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:38

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-1 LC_PIZDC1404D_WG_Q1-2020_NP							
Sampled By: KC/DT on 25-MAR-20 @ 11:20							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	489		5.0	mg/L		27-MAR-20	R5042994
Carbonate (CO3)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Dissolved Organic Carbon	8.40		0.50	mg/L		27-MAR-20	R5043598
Hydroxide (OH)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Total Kjeldahl Nitrogen	2.31		0.050	mg/L		28-MAR-20	R5043618
Total Organic Carbon	16.6		0.50	mg/L		27-MAR-20	R5043598
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-MAR-20	31-MAR-20	R5047888
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047358
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-MAR-20	31-MAR-20	R5047831
Dissolved Mercury Filtration Location	FIELD					31-MAR-20	R5047448
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047358
Aluminum (Al)-Dissolved	0.0283		0.0030	mg/L	31-MAR-20	31-MAR-20	R5047888
Antimony (Sb)-Dissolved	0.00107		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Arsenic (As)-Dissolved	0.00067		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Barium (Ba)-Dissolved	3.38		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Boron (B)-Dissolved	0.023		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cadmium (Cd)-Dissolved	<0.015	DLM	0.015	ug/L	31-MAR-20	31-MAR-20	R5047888
Calcium (Ca)-Dissolved	52.6		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cobalt (Co)-Dissolved	1.65		0.10	ug/L	31-MAR-20	31-MAR-20	R5047888
Copper (Cu)-Dissolved	0.00163		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Iron (Fe)-Dissolved	0.044		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Lead (Pb)-Dissolved	0.000068		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Lithium (Li)-Dissolved	0.472		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Magnesium (Mg)-Dissolved	34.3		0.10	mg/L	31-MAR-20	31-MAR-20	R5047888
Manganese (Mn)-Dissolved	0.0355		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Molybdenum (Mo)-Dissolved	0.0176		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Nickel (Ni)-Dissolved	0.00373		0.00050	mg/L	31-MAR-20	31-MAR-20	R5047888
Potassium (K)-Dissolved	23.9		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Selenium (Se)-Dissolved	0.056		0.050	ug/L	31-MAR-20	31-MAR-20	R5047888
Silicon (Si)-Dissolved	2.52		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Sodium (Na)-Dissolved	32.1		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Strontium (Sr)-Dissolved	0.210		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Tin (Sn)-Dissolved	0.00036		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Uranium (U)-Dissolved	0.000176		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Zinc (Zn)-Dissolved	0.0289		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Hardness							
Hardness (as CaCO3)	272		0.50	mg/L		31-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-MAR-20	R5047882
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-1 LC_PIZDC1404D_WG_Q1-2020_NP							
Sampled By: KC/DT on 25-MAR-20 @ 11:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.196		0.0030	mg/L		31-MAR-20	R5047882
Antimony (Sb)-Total	0.00221		0.00010	mg/L		31-MAR-20	R5047882
Arsenic (As)-Total	0.00086		0.00010	mg/L		31-MAR-20	R5047882
Barium (Ba)-Total	3.90		0.00010	mg/L		31-MAR-20	R5047882
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Boron (B)-Total	0.026		0.010	mg/L		31-MAR-20	R5047882
Cadmium (Cd)-Total	0.0364		0.0050	ug/L		31-MAR-20	R5047882
Calcium (Ca)-Total	56.0		0.050	mg/L		31-MAR-20	R5047882
Chromium (Cr)-Total	0.00078		0.00010	mg/L		31-MAR-20	R5047882
Cobalt (Co)-Total	1.97		0.10	ug/L		31-MAR-20	R5047882
Copper (Cu)-Total	0.00593		0.00050	mg/L		31-MAR-20	R5047882
Iron (Fe)-Total	0.359		0.010	mg/L		31-MAR-20	R5047882
Lead (Pb)-Total	0.000693		0.000050	mg/L		31-MAR-20	R5047882
Lithium (Li)-Total	0.557		0.0010	mg/L		31-MAR-20	R5047882
Magnesium (Mg)-Total	34.7		0.10	mg/L		31-MAR-20	R5047882
Manganese (Mn)-Total	0.0453		0.00010	mg/L		31-MAR-20	R5047882
Molybdenum (Mo)-Total	0.0191		0.000050	mg/L		31-MAR-20	R5047882
Nickel (Ni)-Total	0.00444		0.00050	mg/L		31-MAR-20	R5047882
Potassium (K)-Total	27.0		0.050	mg/L		31-MAR-20	R5047882
Selenium (Se)-Total	0.058		0.050	ug/L		31-MAR-20	R5047882
Silicon (Si)-Total	2.99		0.10	mg/L		31-MAR-20	R5047882
Silver (Ag)-Total	0.000011		0.000010	mg/L		31-MAR-20	R5047882
Sodium (Na)-Total	34.3		0.050	mg/L		31-MAR-20	R5047882
Strontium (Sr)-Total	0.229		0.00020	mg/L		31-MAR-20	R5047882
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Tin (Sn)-Total	0.00058		0.00010	mg/L		31-MAR-20	R5047882
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Uranium (U)-Total	0.000191		0.000010	mg/L		31-MAR-20	R5047882
Vanadium (V)-Total	0.00067		0.00050	mg/L		31-MAR-20	R5047882
Zinc (Zn)-Total	0.0531		0.0030	mg/L		31-MAR-20	R5047882
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.9		1.0	mg/L		27-MAR-20	R5042766
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	401		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Total (as CaCO3)	401		1.0	mg/L		27-MAR-20	R5042994
Ammonia, Total (as N)							
Ammonia as N	2.38	DLHC	0.050	mg/L		27-MAR-20	R5042406
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.080		0.050	mg/L		27-MAR-20	R5043558
Chloride in Water by IC							
Chloride (Cl)	1.23		0.50	mg/L		27-MAR-20	R5043558
Electrical Conductivity (EC)							
Conductivity (@ 25C)	666		2.0	uS/cm		27-MAR-20	R5042994
Fluoride in Water by IC							
Fluoride (F)	0.162		0.020	mg/L		27-MAR-20	R5043558
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		31-MAR-20	
Anion Sum	8.07			meq/L		31-MAR-20	
Cation Sum	7.63			meq/L		31-MAR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-1 LC_PIZDC1404D_WG_Q1-2020_NP Sampled By: KC/DT on 25-MAR-20 @ 11:20 Matrix: WG							
Ion Balance Calculation							
Ion Balance	94.5		-100	%		31-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0245		0.0050	mg/L		27-MAR-20	R5043558
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0062		0.0010	mg/L		27-MAR-20	R5043558
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0058		0.0010	mg/L		26-MAR-20	R5041231
Oxidation redution potential by elect.							
ORP	472		-1000	mV		26-MAR-20	R5041648
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0254		0.0020	mg/L		27-MAR-20	R5042175
Sulfate in Water by IC							
Sulfate (SO4)	0.46		0.30	mg/L		27-MAR-20	R5043558
Total Dissolved Solids							
Total Dissolved Solids	417	DLHC	20	mg/L		26-MAR-20	R5042868
Total Suspended Solids							
Total Suspended Solids	18.9		1.0	mg/L		26-MAR-20	R5043006
Turbidity							
Turbidity	33.8		0.10	NTU		27-MAR-20	R5043453
pH							
pH	8.15		0.10	pH		27-MAR-20	R5042994
L2431925-2 WG_Q1-2020_RD1 Sampled By: KC/DT on 25-MAR-20 @ 11:25 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Carbonate (CO3)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Hydroxide (OH)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		28-MAR-20	R5043618
Total Organic Carbon	<0.50		0.50	mg/L		27-MAR-20	R5043598
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-MAR-20	R5047882
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		31-MAR-20	R5047831
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		31-MAR-20	R5047882
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Arsenic (As)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Barium (Ba)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047955
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Boron (B)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		31-MAR-20	R5047882
Calcium (Ca)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Cobalt (Co)-Total	<0.10		0.10	ug/L		31-MAR-20	R5047882
Copper (Cu)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Iron (Fe)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Lead (Pb)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Lithium (Li)-Total	<0.0010		0.0010	mg/L		31-MAR-20	R5047882
Magnesium (Mg)-Total	<0.10		0.10	mg/L		31-MAR-20	R5047882

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-2							
WG_Q1-2020_RD1							
Sampled By: KC/DT on 25-MAR-20 @ 11:25							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Potassium (K)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Selenium (Se)-Total	<0.050		0.050	ug/L		31-MAR-20	R5047882
Silicon (Si)-Total	<0.10		0.10	mg/L		31-MAR-20	R5047882
Silver (Ag)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Sodium (Na)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		31-MAR-20	R5047882
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Uranium (U)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Vanadium (V)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		31-MAR-20	R5047882
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-MAR-20	R5042766
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Ammonia, Total (as N)							
Ammonia as N	0.0434	RRV	0.0050	mg/L		27-MAR-20	R5042406
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-MAR-20	R5043558
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		27-MAR-20	R5043558
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					26-MAR-20	R5041247
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		26-MAR-20	R5041278
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		26-MAR-20	R5041278
Potassium (K)-Dissolved	<0.050		0.050	mg/L		26-MAR-20	R5041278
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		26-MAR-20	R5041278
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-MAR-20	R5042994
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		27-MAR-20	R5043558
Ion Balance Calculation							
Ion Balance	0.0		-100	%		31-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		31-MAR-20	
Anion Sum	<0.10			meq/L		31-MAR-20	
Cation Sum	<0.10			meq/L		31-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		27-MAR-20	R5043558
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-MAR-20	R5043558
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-MAR-20	R5041231
Oxidation redution potential by elect.							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-2 WG_Q1-2020_RD1 Sampled By: KC/DT on 25-MAR-20 @ 11:25 Matrix: WG							
Oxidation redution potential by elect.							
ORP	500		-1000	mV		26-MAR-20	R5041648
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-MAR-20	R5042175
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		27-MAR-20	R5043558
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		26-MAR-20	R5042868
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-MAR-20	R5043006
Turbidity							
Turbidity	<0.10		0.10	NTU		27-MAR-20	R5043453
pH							
pH	4.68		0.10	pH		27-MAR-20	R5042994
L2431925-3 WG_Q1-2020_MT1 Sampled By: KC/DT on 25-MAR-20 @ 11:20 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Carbonate (CO3)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-MAR-20	R5043598
Hydroxide (OH)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Total Kjeldahl Nitrogen	0.055		0.050	mg/L		28-MAR-20	R5043618
Total Organic Carbon	<0.50		0.50	mg/L		27-MAR-20	R5043598
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-MAR-20	31-MAR-20	R5047888
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047358
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-MAR-20	31-MAR-20	R5047831
Dissolved Mercury Filtration Location	FIELD					31-MAR-20	R5047448
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047906
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-MAR-20	31-MAR-20	R5047888
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Boron (B)-Dissolved	<0.010		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-MAR-20	31-MAR-20	R5047888
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-MAR-20	31-MAR-20	R5047888
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	31-MAR-20	31-MAR-20	R5047888
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	31-MAR-20	31-MAR-20	R5047888
Potassium (K)-Dissolved	<0.050		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-3 WG_Q1-2020_MT1							
Sampled By: KC/DT on 25-MAR-20 @ 11:20							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-MAR-20	31-MAR-20	R5047888
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Tin (Sn)-Dissolved	0.00012	RRV	0.00010	mg/L	31-MAR-20	31-MAR-20	R5047955
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-MAR-20	31-MAR-20	R5047888
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		31-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-MAR-20	R5047882
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		31-MAR-20	R5047831
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		31-MAR-20	R5047882
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Arsenic (As)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Barium (Ba)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Boron (B)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		31-MAR-20	R5047882
Calcium (Ca)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Cobalt (Co)-Total	<0.10		0.10	ug/L		31-MAR-20	R5047882
Copper (Cu)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Iron (Fe)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Lead (Pb)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Lithium (Li)-Total	<0.0010		0.0010	mg/L		31-MAR-20	R5047882
Magnesium (Mg)-Total	<0.10		0.10	mg/L		31-MAR-20	R5047882
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Potassium (K)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Selenium (Se)-Total	<0.050		0.050	ug/L		31-MAR-20	R5047882
Silicon (Si)-Total	<0.10		0.10	mg/L		31-MAR-20	R5047882
Silver (Ag)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Sodium (Na)-Total	<0.050		0.050	mg/L		31-MAR-20	R5047882
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		31-MAR-20	R5047882
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-MAR-20	R5047882
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Uranium (U)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Vanadium (V)-Total	<0.00050		0.00050	mg/L		31-MAR-20	R5047882
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		31-MAR-20	R5047882
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		27-MAR-20	R5042766

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-3 WG_Q1-2020_MT1 Sampled By: KC/DT on 25-MAR-20 @ 11:20 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Ammonia, Total (as N)							
Ammonia as N	0.0625	RRV	0.0050	mg/L		27-MAR-20	R5042406
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		27-MAR-20	R5043558
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		27-MAR-20	R5043558
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-MAR-20	R5042994
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		27-MAR-20	R5043558
Ion Balance Calculation							
Ion Balance	0.0		-100	%		31-MAR-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		31-MAR-20	
Anion Sum	<0.10			meq/L		31-MAR-20	
Cation Sum	<0.10			meq/L		31-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		27-MAR-20	R5043558
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-MAR-20	R5043558
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-MAR-20	R5041231
Oxidation redution potential by elect.							
ORP	464		-1000	mV		26-MAR-20	R5041648
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-MAR-20	R5042175
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		27-MAR-20	R5043558
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		26-MAR-20	R5042868
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-MAR-20	R5043006
Turbidity							
Turbidity	<0.10		0.10	NTU		27-MAR-20	R5043453
pH							
pH	4.59		0.10	pH		27-MAR-20	R5042994
L2431925-4 WG_Q1-2020_CC1 Sampled By: KC/DT on 25-MAR-20 @ 11:20 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	463		5.0	mg/L		27-MAR-20	R5042994
Carbonate (CO3)	8.2		5.0	mg/L		27-MAR-20	R5042994
Dissolved Organic Carbon	9.67		0.50	mg/L		27-MAR-20	R5043598
Hydroxide (OH)	<5.0		5.0	mg/L		27-MAR-20	R5042994
Total Kjeldahl Nitrogen	2.27		0.050	mg/L		28-MAR-20	R5043618
Total Organic Carbon	16.0		0.50	mg/L		27-MAR-20	R5043598
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-4 WG_Q1-2020_CC1							
Sampled By: KC/DT on 25-MAR-20 @ 11:20							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-MAR-20	31-MAR-20	R5047888
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047358
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-MAR-20	31-MAR-20	R5047831
Dissolved Mercury Filtration Location	FIELD					31-MAR-20	R5047448
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					31-MAR-20	R5047358
Aluminum (Al)-Dissolved	0.0304		0.0030	mg/L	31-MAR-20	31-MAR-20	R5047888
Antimony (Sb)-Dissolved	0.00109		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Arsenic (As)-Dissolved	0.00070		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Barium (Ba)-Dissolved	3.64		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Boron (B)-Dissolved	0.027		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cadmium (Cd)-Dissolved	<0.020	DLA	0.020	ug/L	31-MAR-20	31-MAR-20	R5047888
Calcium (Ca)-Dissolved	53.3		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Cobalt (Co)-Dissolved	1.69		0.10	ug/L	31-MAR-20	31-MAR-20	R5047888
Copper (Cu)-Dissolved	0.00120		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Iron (Fe)-Dissolved	0.044		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Lead (Pb)-Dissolved	0.000064		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Lithium (Li)-Dissolved	0.557		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Magnesium (Mg)-Dissolved	35.7		0.10	mg/L	31-MAR-20	31-MAR-20	R5047888
Manganese (Mn)-Dissolved	0.0376		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Molybdenum (Mo)-Dissolved	0.0177		0.000050	mg/L	31-MAR-20	31-MAR-20	R5047888
Nickel (Ni)-Dissolved	0.00359		0.00050	mg/L	31-MAR-20	31-MAR-20	R5047888
Potassium (K)-Dissolved	25.4		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Selenium (Se)-Dissolved	0.065		0.050	ug/L	31-MAR-20	31-MAR-20	R5047888
Silicon (Si)-Dissolved	2.74		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Sodium (Na)-Dissolved	34.8		0.050	mg/L	31-MAR-20	31-MAR-20	R5047888
Strontium (Sr)-Dissolved	0.211		0.00020	mg/L	31-MAR-20	31-MAR-20	R5047888
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Tin (Sn)-Dissolved	0.00033		0.00010	mg/L	31-MAR-20	31-MAR-20	R5047888
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-MAR-20	31-MAR-20	R5047888
Uranium (U)-Dissolved	0.000171		0.000010	mg/L	31-MAR-20	31-MAR-20	R5047888
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-MAR-20	31-MAR-20	R5047888
Zinc (Zn)-Dissolved	0.0305		0.0010	mg/L	31-MAR-20	31-MAR-20	R5047888
Hardness							
Hardness (as CaCO3)	280		0.50	mg/L		31-MAR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-MAR-20	R5047882
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		31-MAR-20	R5047831
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.244		0.0030	mg/L		31-MAR-20	R5047882
Antimony (Sb)-Total	0.00221		0.00010	mg/L		31-MAR-20	R5047882
Arsenic (As)-Total	0.00088		0.00010	mg/L		31-MAR-20	R5047882
Barium (Ba)-Total	3.99		0.00010	mg/L		31-MAR-20	R5047882
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-MAR-20	R5047882
Boron (B)-Total	0.024		0.010	mg/L		31-MAR-20	R5047882
Cadmium (Cd)-Total	0.0360		0.0050	ug/L		31-MAR-20	R5047882

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2431925-4 WG_Q1-2020_CC1							
Sampled By: KC/DT on 25-MAR-20 @ 11:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Calcium (Ca)-Total	53.1		0.050	mg/L		31-MAR-20	R5047882
Chromium (Cr)-Total	0.00099		0.00010	mg/L		31-MAR-20	R5047882
Cobalt (Co)-Total	1.95		0.10	ug/L		31-MAR-20	R5047882
Copper (Cu)-Total	0.00615		0.00050	mg/L		31-MAR-20	R5047882
Iron (Fe)-Total	0.395		0.010	mg/L		31-MAR-20	R5047882
Lead (Pb)-Total	0.000714		0.000050	mg/L		31-MAR-20	R5047882
Lithium (Li)-Total	0.541		0.0010	mg/L		31-MAR-20	R5047882
Magnesium (Mg)-Total	35.3		0.10	mg/L		31-MAR-20	R5047882
Manganese (Mn)-Total	0.0453		0.00010	mg/L		31-MAR-20	R5047882
Molybdenum (Mo)-Total	0.0191		0.000050	mg/L		31-MAR-20	R5047882
Nickel (Ni)-Total	0.00444		0.00050	mg/L		31-MAR-20	R5047882
Potassium (K)-Total	26.9		0.050	mg/L		31-MAR-20	R5047882
Selenium (Se)-Total	0.056		0.050	ug/L		31-MAR-20	R5047882
Silicon (Si)-Total	3.00		0.10	mg/L		31-MAR-20	R5047882
Silver (Ag)-Total	0.000012		0.000010	mg/L		31-MAR-20	R5047882
Sodium (Na)-Total	34.3		0.050	mg/L		31-MAR-20	R5047882
Strontium (Sr)-Total	0.225		0.00020	mg/L		31-MAR-20	R5047882
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		31-MAR-20	R5047882
Tin (Sn)-Total	0.00065		0.00010	mg/L		31-MAR-20	R5047882
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-MAR-20	R5047882
Uranium (U)-Total	0.000190		0.000010	mg/L		31-MAR-20	R5047882
Vanadium (V)-Total	0.00075		0.00050	mg/L		31-MAR-20	R5047882
Zinc (Zn)-Total	0.0526		0.0030	mg/L		31-MAR-20	R5047882
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042766
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	380		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Carbonate (as CaCO3)	13.6		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-MAR-20	R5042994
Alkalinity, Total (as CaCO3)	393		1.0	mg/L		27-MAR-20	R5042994
Ammonia, Total (as N)							
Ammonia as N	2.44	DLHC	0.050	mg/L		27-MAR-20	R5042406
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.055		0.050	mg/L		27-MAR-20	R5043558
Chloride in Water by IC							
Chloride (Cl)	0.85		0.50	mg/L		27-MAR-20	R5043558
Electrical Conductivity (EC)							
Conductivity (@ 25C)	673		2.0	uS/cm		27-MAR-20	R5042994
Fluoride in Water by IC							
Fluoride (F)	0.162		0.020	mg/L		27-MAR-20	R5043558
Ion Balance Calculation							
Cation - Anion Balance	0.2			%		31-MAR-20	
Anion Sum	7.90			meq/L		31-MAR-20	
Cation Sum	7.94			meq/L		31-MAR-20	
Ion Balance Calculation							
Ion Balance	100		-100	%		31-MAR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0078		0.0050	mg/L		27-MAR-20	R5043558
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0057		0.0010	mg/L		27-MAR-20	R5043558
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC GW 20200325

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2431925

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5042766							
WG3300244-2	LCS							
Acidity (as CaCO3)			93.5		%		85-115	27-MAR-20
WG3300244-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	27-MAR-20
ALK-MAN-CL								
	Water							
Batch	R5042994							
WG3300263-2	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	27-MAR-20
WG3300263-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-MAR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5047888							
WG3301656-2	LCS							
Beryllium (Be)-Dissolved			98.0		%		80-120	31-MAR-20
WG3301656-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-MAR-20
WG3301656-4	MS	L2431925-1						
Beryllium (Be)-Dissolved			92.5		%		70-130	31-MAR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5047882							
WG3301657-2	LCS							
Beryllium (Be)-Total			96.2		%		80-120	31-MAR-20
WG3301657-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-MAR-20
BR-L-IC-N-CL								
	Water							
Batch	R5043558							
WG3300497-3	DUP	L2431925-2						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2	LCS							
Bromide (Br)			104.8		%		85-115	27-MAR-20
WG3300497-6	LCS							
Bromide (Br)			98.8		%		85-115	27-MAR-20
WG3300497-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-20
WG3300497-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-MAR-20
WG3300497-4	MS	L2431925-2						



Quality Control Report

Workorder: L2431925

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
	Water							
Batch	R5043558							
WG3300497-4	MS	L2431925-2						
Bromide (Br)			97.8		%		75-125	27-MAR-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5043598							
WG3300529-3	DUP	L2431925-4						
Dissolved Organic Carbon		9.67	9.99		mg/L	3.3	20	27-MAR-20
WG3300529-2	LCS							
Dissolved Organic Carbon			115.3		%		80-120	27-MAR-20
WG3300529-6	LCS							
Dissolved Organic Carbon			118.2		%		80-120	27-MAR-20
WG3300529-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-MAR-20
WG3300529-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-MAR-20
WG3300529-4	MS	L2431925-4						
Dissolved Organic Carbon			104.1		%		70-130	27-MAR-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5043598							
WG3300529-3	DUP	L2431925-4						
Total Organic Carbon		16.0	16.8		mg/L	4.4	20	27-MAR-20
WG3300529-2	LCS							
Total Organic Carbon			117.5		%		80-120	27-MAR-20
WG3300529-6	LCS							
Total Organic Carbon			94.8		%		80-120	27-MAR-20
WG3300529-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-MAR-20
WG3300529-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-MAR-20
WG3300529-4	MS	L2431925-4						
Total Organic Carbon			112.3		%		70-130	27-MAR-20
CL-IC-N-CL								
	Water							
Batch	R5043558							
WG3300497-3	DUP	L2431925-2						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2	LCS							
Chloride (Cl)			99.4		%		90-110	27-MAR-20
WG3300497-6	LCS							



Quality Control Report

Workorder: L2431925

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Water								
Batch	R5043558							
WG3300497-6	LCS							
Chloride (Cl)			100.8		%		90-110	27-MAR-20
WG3300497-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	27-MAR-20
WG3300497-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	27-MAR-20
WG3300497-4	MS	L2431925-2						
Chloride (Cl)			105.6		%		75-125	27-MAR-20
EC-L-PCT-CL								
Water								
Batch	R5042994							
WG3300263-2	LCS							
Conductivity (@ 25C)			108.5		%		90-110	27-MAR-20
WG3300263-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-MAR-20
F-IC-N-CL								
Water								
Batch	R5043558							
WG3300497-3	DUP	L2431925-2						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2	LCS							
Fluoride (F)			101.5		%		90-110	27-MAR-20
WG3300497-6	LCS							
Fluoride (F)			109.1		%		90-110	27-MAR-20
WG3300497-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	27-MAR-20
WG3300497-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	27-MAR-20
WG3300497-4	MS	L2431925-2						
Fluoride (F)			101.9		%		75-125	27-MAR-20
HG-D-CVAA-VA								
Water								
Batch	R5047831							
WG3301690-2	LCS							
Mercury (Hg)-Dissolved			100.3		%		80-120	31-MAR-20
WG3301690-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-MAR-20
HG-T-CVAA-VA								
Water								



Quality Control Report

Workorder: L2431925

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA								
	Water							
Batch	R5047831							
WG3301854-2	LCS							
Mercury (Hg)-Total			98.9		%		80-120	31-MAR-20
WG3301854-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	31-MAR-20
MET-D-CCMS-CL								
	Water							
Batch	R5041278							
WG3299695-10	LCS	TMRM						
Calcium (Ca)-Dissolved			93.6		%		80-120	26-MAR-20
Magnesium (Mg)-Dissolved			101.8		%		80-120	26-MAR-20
Potassium (K)-Dissolved			99.0		%		80-120	26-MAR-20
Sodium (Na)-Dissolved			97.3		%		80-120	26-MAR-20
WG3299695-9	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-MAR-20
MET-D-CCMS-VA								
	Water							
Batch	R5047888							
WG3301656-2	LCS							
Aluminum (Al)-Dissolved			105.9		%		80-120	31-MAR-20
Antimony (Sb)-Dissolved			97.2		%		80-120	31-MAR-20
Arsenic (As)-Dissolved			98.6		%		80-120	31-MAR-20
Barium (Ba)-Dissolved			98.1		%		80-120	31-MAR-20
Bismuth (Bi)-Dissolved			99.0		%		80-120	31-MAR-20
Boron (B)-Dissolved			101.0		%		80-120	31-MAR-20
Cadmium (Cd)-Dissolved			98.7		%		80-120	31-MAR-20
Calcium (Ca)-Dissolved			96.1		%		80-120	31-MAR-20
Chromium (Cr)-Dissolved			97.1		%		80-120	31-MAR-20
Cobalt (Co)-Dissolved			97.8		%		80-120	31-MAR-20
Copper (Cu)-Dissolved			98.3		%		80-120	31-MAR-20
Iron (Fe)-Dissolved			98.5		%		80-120	31-MAR-20
Lead (Pb)-Dissolved			96.5		%		80-120	31-MAR-20
Lithium (Li)-Dissolved			97.8		%		80-120	31-MAR-20
Magnesium (Mg)-Dissolved			98.8		%		80-120	31-MAR-20
Manganese (Mn)-Dissolved			100.4		%		80-120	31-MAR-20
Molybdenum (Mo)-Dissolved			91.7		%		80-120	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5047888							
WG3301656-2	LCS							
Nickel (Ni)-Dissolved			95.7		%		80-120	31-MAR-20
Potassium (K)-Dissolved			101.0		%		80-120	31-MAR-20
Selenium (Se)-Dissolved			93.0		%		80-120	31-MAR-20
Silicon (Si)-Dissolved			97.4		%		60-140	31-MAR-20
Silver (Ag)-Dissolved			92.4		%		80-120	31-MAR-20
Sodium (Na)-Dissolved			103.5		%		80-120	31-MAR-20
Strontium (Sr)-Dissolved			102.2		%		80-120	31-MAR-20
Thallium (Tl)-Dissolved			99.1		%		80-120	31-MAR-20
Tin (Sn)-Dissolved			93.1		%		80-120	31-MAR-20
Titanium (Ti)-Dissolved			96.2		%		80-120	31-MAR-20
Uranium (U)-Dissolved			91.2		%		80-120	31-MAR-20
Vanadium (V)-Dissolved			100.3		%		80-120	31-MAR-20
Zinc (Zn)-Dissolved			100.8		%		80-120	31-MAR-20
WG3301656-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5047888							
WG3301656-1 MB		NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
WG3301656-4 MS		L2431925-1						
Aluminum (Al)-Dissolved			97.9		%		70-130	31-MAR-20
Antimony (Sb)-Dissolved			92.4		%		70-130	31-MAR-20
Arsenic (As)-Dissolved			102.5		%		70-130	31-MAR-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Bismuth (Bi)-Dissolved			83.2		%		70-130	31-MAR-20
Boron (B)-Dissolved			90.6		%		70-130	31-MAR-20
Cadmium (Cd)-Dissolved			92.4		%		70-130	31-MAR-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Chromium (Cr)-Dissolved			93.1		%		70-130	31-MAR-20
Cobalt (Co)-Dissolved			90.8		%		70-130	31-MAR-20
Copper (Cu)-Dissolved			85.6		%		70-130	31-MAR-20
Iron (Fe)-Dissolved			89.5		%		70-130	31-MAR-20
Lead (Pb)-Dissolved			86.1		%		70-130	31-MAR-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Molybdenum (Mo)-Dissolved			89.3		%		70-130	31-MAR-20
Nickel (Ni)-Dissolved			87.1		%		70-130	31-MAR-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Selenium (Se)-Dissolved			102.8		%		70-130	31-MAR-20
Silicon (Si)-Dissolved			84.1		%		70-130	31-MAR-20
Silver (Ag)-Dissolved			90.8		%		70-130	31-MAR-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5047888							
WG3301656-4	MS	L2431925-1						
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	31-MAR-20
Thallium (Tl)-Dissolved			87.4		%		70-130	31-MAR-20
Tin (Sn)-Dissolved			89.6		%		70-130	31-MAR-20
Titanium (Ti)-Dissolved			95.0		%		70-130	31-MAR-20
Uranium (U)-Dissolved			93.6		%		70-130	31-MAR-20
Vanadium (V)-Dissolved			97.4		%		70-130	31-MAR-20
Zinc (Zn)-Dissolved			93.0		%		70-130	31-MAR-20
Batch	R5047955							
WG3301937-2	LCS							
Aluminum (Al)-Dissolved			96.3		%		80-120	31-MAR-20
Antimony (Sb)-Dissolved			101.6		%		80-120	31-MAR-20
Arsenic (As)-Dissolved			97.4		%		80-120	31-MAR-20
Barium (Ba)-Dissolved			99.98		%		80-120	31-MAR-20
Bismuth (Bi)-Dissolved			104.7		%		80-120	31-MAR-20
Boron (B)-Dissolved			100.5		%		80-120	31-MAR-20
Cadmium (Cd)-Dissolved			98.9		%		80-120	31-MAR-20
Calcium (Ca)-Dissolved			101.6		%		80-120	31-MAR-20
Chromium (Cr)-Dissolved			98.8		%		80-120	31-MAR-20
Cobalt (Co)-Dissolved			95.4		%		80-120	31-MAR-20
Copper (Cu)-Dissolved			95.4		%		80-120	31-MAR-20
Iron (Fe)-Dissolved			99.2		%		80-120	31-MAR-20
Lead (Pb)-Dissolved			101.6		%		80-120	31-MAR-20
Lithium (Li)-Dissolved			127.9	MES	%		80-120	31-MAR-20
Magnesium (Mg)-Dissolved			96.4		%		80-120	31-MAR-20
Manganese (Mn)-Dissolved			99.3		%		80-120	31-MAR-20
Molybdenum (Mo)-Dissolved			99.0		%		80-120	31-MAR-20
Nickel (Ni)-Dissolved			97.6		%		80-120	31-MAR-20
Potassium (K)-Dissolved			98.8		%		80-120	31-MAR-20
Selenium (Se)-Dissolved			95.8		%		80-120	31-MAR-20
Silicon (Si)-Dissolved			97.1		%		60-140	31-MAR-20
Silver (Ag)-Dissolved			98.9		%		80-120	31-MAR-20
Sodium (Na)-Dissolved			101.6		%		80-120	31-MAR-20
Strontium (Sr)-Dissolved			101.1		%		80-120	31-MAR-20
Thallium (Tl)-Dissolved			98.5		%		80-120	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5047955							
WG3301937-2	LCS							
Tin (Sn)-Dissolved			97.9		%		80-120	31-MAR-20
Titanium (Ti)-Dissolved			95.2		%		80-120	31-MAR-20
Uranium (U)-Dissolved			105.6		%		80-120	31-MAR-20
Vanadium (V)-Dissolved			101.7		%		80-120	31-MAR-20
Zinc (Zn)-Dissolved			95.4		%		80-120	31-MAR-20
WG3301937-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5047955							
WG3301937-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAR-20
MET-T-CCMS-VA								
	Water							
Batch	R5047882							
WG3301657-2	LCS							
Aluminum (Al)-Total			103.8		%		80-120	31-MAR-20
Antimony (Sb)-Total			102.0		%		80-120	31-MAR-20
Arsenic (As)-Total			103.4		%		80-120	31-MAR-20
Barium (Ba)-Total			109.1		%		80-120	31-MAR-20
Bismuth (Bi)-Total			100.6		%		80-120	31-MAR-20
Boron (B)-Total			96.2		%		80-120	31-MAR-20
Cadmium (Cd)-Total			101.1		%		80-120	31-MAR-20
Calcium (Ca)-Total			96.5		%		80-120	31-MAR-20
Chromium (Cr)-Total			103.6		%		80-120	31-MAR-20
Cobalt (Co)-Total			103.3		%		80-120	31-MAR-20
Copper (Cu)-Total			100.9		%		80-120	31-MAR-20
Iron (Fe)-Total			92.1		%		80-120	31-MAR-20
Lead (Pb)-Total			99.1		%		80-120	31-MAR-20
Lithium (Li)-Total			97.4		%		80-120	31-MAR-20
Magnesium (Mg)-Total			100.9		%		80-120	31-MAR-20
Manganese (Mn)-Total			104.7		%		80-120	31-MAR-20
Molybdenum (Mo)-Total			97.4		%		80-120	31-MAR-20
Nickel (Ni)-Total			100.6		%		80-120	31-MAR-20
Potassium (K)-Total			104.5		%		80-120	31-MAR-20
Selenium (Se)-Total			98.9		%		80-120	31-MAR-20
Silicon (Si)-Total			106.0		%		80-120	31-MAR-20
Silver (Ag)-Total			91.4		%		80-120	31-MAR-20
Sodium (Na)-Total			101.0		%		80-120	31-MAR-20
Strontium (Sr)-Total			97.4		%		80-120	31-MAR-20
Thallium (Tl)-Total			102.8		%		80-120	31-MAR-20
Tin (Sn)-Total			97.2		%		80-120	31-MAR-20
Titanium (Ti)-Total			99.9		%		80-120	31-MAR-20
Uranium (U)-Total			100.6		%		80-120	31-MAR-20
Vanadium (V)-Total			103.0		%		80-120	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5047882							
WG3301657-2	LCS							
Zinc (Zn)-Total			99.5		%		80-120	31-MAR-20
WG3301657-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	31-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	31-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	31-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	31-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	31-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5047955							
WG3301941-3	DUP	L2431925-2						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	31-MAR-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Barium (Ba)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAR-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAR-20
Calcium (Ca)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-MAR-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-MAR-20
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAR-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAR-20
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-MAR-20
Magnesium (Mg)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	31-MAR-20
Manganese (Mn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAR-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-MAR-20
Potassium (K)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-MAR-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAR-20
Silicon (Si)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	31-MAR-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-MAR-20
Sodium (Na)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-MAR-20
Strontium (Sr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	31-MAR-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-MAR-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAR-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAR-20
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-MAR-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-MAR-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	31-MAR-20
WG3301941-2	LCS							
Aluminum (Al)-Total			93.6		%		80-120	31-MAR-20
Antimony (Sb)-Total			98.8		%		80-120	31-MAR-20
Arsenic (As)-Total			91.8		%		80-120	31-MAR-20
Barium (Ba)-Total			91.6		%		80-120	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5047955							
WG3301941-2	LCS							
Bismuth (Bi)-Total			99.4		%		80-120	31-MAR-20
Boron (B)-Total			112.7		%		80-120	31-MAR-20
Cadmium (Cd)-Total			92.7		%		80-120	31-MAR-20
Calcium (Ca)-Total			96.5		%		80-120	31-MAR-20
Chromium (Cr)-Total			96.6		%		80-120	31-MAR-20
Cobalt (Co)-Total			94.8		%		80-120	31-MAR-20
Copper (Cu)-Total			90.9		%		80-120	31-MAR-20
Iron (Fe)-Total			95.6		%		80-120	31-MAR-20
Lead (Pb)-Total			96.7		%		80-120	31-MAR-20
Lithium (Li)-Total			124.4	MES	%		80-120	31-MAR-20
Magnesium (Mg)-Total			92.3		%		80-120	31-MAR-20
Manganese (Mn)-Total			95.3		%		80-120	31-MAR-20
Molybdenum (Mo)-Total			97.4		%		80-120	31-MAR-20
Nickel (Ni)-Total			96.4		%		80-120	31-MAR-20
Potassium (K)-Total			93.7		%		80-120	31-MAR-20
Selenium (Se)-Total			92.9		%		80-120	31-MAR-20
Silicon (Si)-Total			94.3		%		80-120	31-MAR-20
Silver (Ag)-Total			95.6		%		80-120	31-MAR-20
Sodium (Na)-Total			99.8		%		80-120	31-MAR-20
Strontium (Sr)-Total			97.4		%		80-120	31-MAR-20
Thallium (Tl)-Total			90.9		%		80-120	31-MAR-20
Tin (Sn)-Total			93.5		%		80-120	31-MAR-20
Titanium (Ti)-Total			99.99		%		80-120	31-MAR-20
Uranium (U)-Total			98.3		%		80-120	31-MAR-20
Vanadium (V)-Total			96.8		%		80-120	31-MAR-20
Zinc (Zn)-Total			95.1		%		80-120	31-MAR-20
WG3301941-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	31-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5047955							
WG3301941-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-MAR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	31-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-MAR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	31-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	31-MAR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	31-MAR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5042406							
WG3300103-10	LCS							
Ammonia as N			108.6		%		85-115	27-MAR-20
WG3300103-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAR-20
NO2-L-IC-N-CL								
	Water							
Batch	R5043558							
WG3300497-3	DUP	L2431925-2						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2	LCS							
Nitrite (as N)			101.9		%		90-110	27-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Water								
Batch	R5043558							
WG3300497-6	LCS							
Nitrite (as N)			101.5		%		90-110	27-MAR-20
WG3300497-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-20
WG3300497-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-MAR-20
WG3300497-4	MS	L2431925-2						
Nitrite (as N)			108.2		%		75-125	27-MAR-20
NO3-L-IC-N-CL								
Water								
Batch	R5043558							
WG3300497-3	DUP	L2431925-2						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2	LCS							
Nitrate (as N)			100.8		%		90-110	27-MAR-20
WG3300497-6	LCS							
Nitrate (as N)			102.0		%		90-110	27-MAR-20
WG3300497-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-20
WG3300497-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-MAR-20
WG3300497-4	MS	L2431925-2						
Nitrate (as N)			107.4		%		75-125	27-MAR-20
ORP-CL								
Water								
Batch	R5041648							
WG3299752-3	CRM	CL-ORP						
ORP			219		mV		210-230	26-MAR-20
P-T-L-COL-CL								
Water								
Batch	R5042175							
WG3299963-14	LCS							
Phosphorus (P)-Total			100.7		%		80-120	27-MAR-20
WG3299963-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-MAR-20
PH-CL								
Water								
Batch	R5042994							
WG3300263-2	LCS							
pH			7.00		pH		6.9-7.1	27-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch R5041231								
WG3299616-10 LCS								
Orthophosphate-Dissolved (as P)			103.4		%		80-120	26-MAR-20
WG3299616-3 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-MAR-20
SO4-IC-N-CL Water								
Batch R5043558								
WG3300497-3 DUP								
Sulfate (SO4)		L2431925-2 <0.30	<0.30	RPD-NA	mg/L	N/A	20	27-MAR-20
WG3300497-2 LCS								
Sulfate (SO4)			100.5		%		90-110	27-MAR-20
WG3300497-6 LCS								
Sulfate (SO4)			101.3		%		90-110	27-MAR-20
WG3300497-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-20
WG3300497-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-MAR-20
WG3300497-4 MS								
Sulfate (SO4)		L2431925-2	106.3		%		75-125	27-MAR-20
SOLIDS-TDS-CL Water								
Batch R5042868								
WG3299150-11 LCS								
Total Dissolved Solids			102.3		%		85-115	26-MAR-20
WG3299150-10 MB								
Total Dissolved Solids			<10		mg/L		10	26-MAR-20
TKN-L-F-CL Water								
Batch R5043618								
WG3300521-10 LCS								
Total Kjeldahl Nitrogen			98.6		%		75-125	28-MAR-20
WG3300521-6 LCS								
Total Kjeldahl Nitrogen			100.0		%		75-125	28-MAR-20
WG3300521-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-MAR-20
WG3300521-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-MAR-20
TSS-L-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL								
	Water							
Batch	R5043006							
WG3299140-6	LCS							
Total Suspended Solids			95.0		%		85-115	26-MAR-20
WG3299140-5	MB							
Total Suspended Solids			<1.0		mg/L		1	26-MAR-20
TURBIDITY-CL								
	Water							
Batch	R5043453							
WG3299888-3	DUP	L2431925-2						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	27-MAR-20
WG3299888-2	LCS							
Turbidity			105.0		%		85-115	27-MAR-20
WG3299888-1	MB							
Turbidity			<0.10		NTU		0.1	27-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	25-MAR-20 11:20	26-MAR-20 19:00	0.25	32	hours	EHTR-FM
	2	25-MAR-20 11:25	26-MAR-20 19:00	0.25	32	hours	EHTR-FM
	3	25-MAR-20 11:20	26-MAR-20 19:00	0.25	32	hours	EHTR-FM
	4	25-MAR-20 11:20	26-MAR-20 19:00	0.25	32	hours	EHTR-FM
pH							
	1	25-MAR-20 11:20	27-MAR-20 13:00	0.25	50	hours	EHTR-FM
	2	25-MAR-20 11:25	27-MAR-20 13:00	0.25	50	hours	EHTR-FM
	3	25-MAR-20 11:20	27-MAR-20 13:00	0.25	50	hours	EHTR-FM
	4	25-MAR-20 11:20	27-MAR-20 13:00	0.25	50	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2431925 were received on 26-MAR-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	DC GW 20200325	TURNAROUND TIME:	2-3 Days	RUSH: Priority
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution
Project Manager	Carla Froyman Parker	Lab Contact	Lyudmyla Shvets	Excel PDF EDD
Email	carla.froymanparker@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 1: carla.froymanparker@teck.com
Address	Box 2003	Address	2559 29 Street NE	Email 2: teckcoal@equisonline.com
	15km North Hwy 43			Email 3: drake.tymstra@teck.com
City	Sparwood	Province	BC	Email 4: kirsten.campbell@teck.com
Postal Code	V0B 2G0	Country	Canada	Email 4: dominique.nichols@teck.com
Phone Number	250-425-3196	Phone Number	403 407 1794	PO number
				VPO00680643

SAMPLE DETAILS Filtered: P: Field, L: Lab, PL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-EPH	HG-T-CVAF-VA		
LC_PIZDC1404D_WG_Q1-2020_NP	LC_PIZDC1404D	WG		3/25/2020	11:20	G	6	1	1	1	1	1	1	1	1		
WG_Q1-2020_RD1	LC_RD1	WG		3/25/2020	11:25	G	4		1			1	1		1		
WG_Q1-2020_MTI	LC_PIZDC1404D	WG		3/25/2020	11:20	G	7	1	1	1	1	1	1	1	1		
WG_Q1-2020_CC1	LC_PIZDC1404D	WG		3/25/2020	11:20	G	7	1	1	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/K.Campbell	25-Mar	<i>[Signature]</i>	3/26 835

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	Sampler's Name	K. Campbell/D. Tymstra	Mobile #	<i>8</i>
Priority (2-3 business days) - 50% surcharge X	Sampler's Signature		Date/Time	March 25, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 23-APR-20
Report Date: 18-DEC-20 14:25 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8478

Certificate of Analysis

Lab Work Order #: L2439850
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: 20200422 DCGW
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:58

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-1 LC_PIZDC1307_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 11:29							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	274		5.0	mg/L		24-APR-20	R5064142
Carbonate (CO3)	<5.0		5.0	mg/L		24-APR-20	R5064142
Dissolved Organic Carbon	1.87		0.50	mg/L		30-APR-20	R5071316
Hydroxide (OH)	<5.0		5.0	mg/L		24-APR-20	R5064142
Total Kjeldahl Nitrogen	0.288		0.050	mg/L		01-MAY-20	R5072396
Total Organic Carbon	1.79		0.50	mg/L		30-APR-20	R5071316
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-APR-20	29-APR-20	R5069702
Dissolved Metals Filtration Location	FIELD					29-APR-20	R5069620
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-APR-20	28-APR-20	R5068196
Dissolved Mercury Filtration Location	FIELD					28-APR-20	R5066800
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					29-APR-20	R5069620
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-APR-20	29-APR-20	R5069702
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Arsenic (As)-Dissolved	0.00153		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Barium (Ba)-Dissolved	1.48		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Boron (B)-Dissolved	0.021		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-APR-20	29-APR-20	R5069702
Calcium (Ca)-Dissolved	38.9		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-APR-20	29-APR-20	R5069702
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-APR-20	29-APR-20	R5069702
Iron (Fe)-Dissolved	0.757		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Lithium (Li)-Dissolved	0.0755		0.0010	mg/L	29-APR-20	29-APR-20	R5069702
Magnesium (Mg)-Dissolved	20.8		0.10	mg/L	29-APR-20	29-APR-20	R5069702
Manganese (Mn)-Dissolved	0.00865		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Molybdenum (Mo)-Dissolved	0.0324		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Nickel (Ni)-Dissolved	0.00062		0.00050	mg/L	29-APR-20	29-APR-20	R5069702
Potassium (K)-Dissolved	5.02		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-APR-20	29-APR-20	R5069702
Silicon (Si)-Dissolved	2.77		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Sodium (Na)-Dissolved	14.1		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Strontium (Sr)-Dissolved	0.139		0.00020	mg/L	29-APR-20	29-APR-20	R5069702
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Uranium (U)-Dissolved	0.000031		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-APR-20	29-APR-20	R5069702
Zinc (Zn)-Dissolved	0.0032		0.0010	mg/L	29-APR-20	29-APR-20	R5069702
Hardness							
Hardness (as CaCO3)	183		0.50	mg/L		30-APR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-20	R5068436
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-1 LC_PIZDC1307_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 11:29							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0577		0.0030	mg/L		28-APR-20	R5068436
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Arsenic (As)-Total	0.00173		0.00010	mg/L		28-APR-20	R5068436
Barium (Ba)-Total	1.54		0.00010	mg/L		28-APR-20	R5068436
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-20	R5068436
Boron (B)-Total	0.023		0.010	mg/L		28-APR-20	R5068436
Cadmium (Cd)-Total	<0.060	DLM	0.060	ug/L		28-APR-20	R5068436
Calcium (Ca)-Total	45.5		0.050	mg/L		28-APR-20	R5068436
Chromium (Cr)-Total	0.00032		0.00010	mg/L		28-APR-20	R5068436
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-APR-20	R5068436
Copper (Cu)-Total	0.00183		0.00050	mg/L		28-APR-20	R5068436
Iron (Fe)-Total	1.27		0.010	mg/L		28-APR-20	R5068436
Lead (Pb)-Total	0.000357		0.000050	mg/L		28-APR-20	R5068436
Lithium (Li)-Total	0.0831		0.0010	mg/L		28-APR-20	R5068436
Magnesium (Mg)-Total	22.8		0.10	mg/L		28-APR-20	R5068436
Manganese (Mn)-Total	0.0118		0.00010	mg/L		28-APR-20	R5068436
Molybdenum (Mo)-Total	0.0318		0.000050	mg/L		28-APR-20	R5068436
Nickel (Ni)-Total	0.00098		0.00050	mg/L		28-APR-20	R5068436
Potassium (K)-Total	5.83		0.050	mg/L		28-APR-20	R5068436
Selenium (Se)-Total	<0.050		0.050	ug/L		28-APR-20	R5068436
Silicon (Si)-Total	2.94		0.10	mg/L		28-APR-20	R5068436
Silver (Ag)-Total	0.000013		0.000010	mg/L		28-APR-20	R5068436
Sodium (Na)-Total	14.2		0.050	mg/L		28-APR-20	R5068436
Strontium (Sr)-Total	0.141		0.00020	mg/L		28-APR-20	R5068436
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-20	R5068436
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436
Uranium (U)-Total	0.000047		0.000010	mg/L		28-APR-20	R5068436
Vanadium (V)-Total	0.00061		0.00050	mg/L		28-APR-20	R5068436
Zinc (Zn)-Total	0.0085		0.0030	mg/L		28-APR-20	R5068436
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064097
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	224		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Total (as CaCO3)	224		1.0	mg/L		24-APR-20	R5064142
Ammonia, Total (as N)							
Ammonia as N	0.116		0.0050	mg/L		01-MAY-20	R5072717
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		24-APR-20	R5065633
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		24-APR-20	R5065633
Electrical Conductivity (EC)							
Conductivity (@ 25C)	371		2.0	uS/cm		24-APR-20	R5064142
Fluoride in Water by IC							
Fluoride (F)	0.500		0.020	mg/L		24-APR-20	R5065633
Ion Balance Calculation							
Cation - Anion Balance	-0.8			%		30-APR-20	
Anion Sum	4.51			meq/L		30-APR-20	
Cation Sum	4.44			meq/L		30-APR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-1 LC_PIZDC1307_WG_Q2-2020_NP Sampled By: KC/DT on 22-APR-20 @ 11:29 Matrix: WG							
Ion Balance Calculation							
Ion Balance	98.5		-100	%		30-APR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0112		0.0050	mg/L		24-APR-20	R5065633
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		24-APR-20	R5065633
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0010		0.0010	mg/L		24-APR-20	R5064397
Oxidation redution potential by elect.							
ORP	240		-1000	mV		28-APR-20	R5068884
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0236		0.0020	mg/L		01-MAY-20	R5071360
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		24-APR-20	R5065633
Total Dissolved Solids							
Total Dissolved Solids	197		20	mg/L		29-APR-20	R5070288
Total Suspended Solids							
Total Suspended Solids	4.8		1.0	mg/L		29-APR-20	R5070294
Turbidity							
Turbidity	9.26		0.10	NTU		24-APR-20	R5063220
pH							
pH	8.16		0.10	pH		24-APR-20	R5064142
L2439850-2 LC_PIZDC1308_WG_Q2-2020_NP Sampled By: KC/DT on 22-APR-20 @ 10:15 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	413		5.0	mg/L		24-APR-20	R5064142
Carbonate (CO3)	<5.0		5.0	mg/L		24-APR-20	R5064142
Dissolved Organic Carbon	1.90		0.50	mg/L		30-APR-20	R5071316
Hydroxide (OH)	<5.0		5.0	mg/L		24-APR-20	R5064142
Total Kjeldahl Nitrogen	0.117		0.050	mg/L		01-MAY-20	R5072396
Total Organic Carbon	1.84		0.50	mg/L		30-APR-20	R5071316
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-APR-20	29-APR-20	R5069702
Dissolved Metals Filtration Location	FIELD					29-APR-20	R5069620
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-APR-20	28-APR-20	R5068196
Dissolved Mercury Filtration Location	FIELD					28-APR-20	R5066800
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					29-APR-20	R5069620
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-APR-20	29-APR-20	R5069702
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Barium (Ba)-Dissolved	0.406		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Boron (B)-Dissolved	<0.010		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Cadmium (Cd)-Dissolved	0.0279		0.0050	ug/L	29-APR-20	29-APR-20	R5069702
Calcium (Ca)-Dissolved	92.0		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Cobalt (Co)-Dissolved	0.73		0.10	ug/L	29-APR-20	29-APR-20	R5069702
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-APR-20	29-APR-20	R5069702

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-2 LC_PIZDC1308_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 10:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	0.227		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Lithium (Li)-Dissolved	0.0081		0.0010	mg/L	29-APR-20	29-APR-20	R5069702
Magnesium (Mg)-Dissolved	26.6		0.10	mg/L	29-APR-20	29-APR-20	R5069702
Manganese (Mn)-Dissolved	0.0429		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Molybdenum (Mo)-Dissolved	0.00185		0.000050	mg/L	29-APR-20	29-APR-20	R5069702
Nickel (Ni)-Dissolved	0.00160		0.00050	mg/L	29-APR-20	29-APR-20	R5069702
Potassium (K)-Dissolved	1.96		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Selenium (Se)-Dissolved	0.156		0.050	ug/L	29-APR-20	29-APR-20	R5069702
Silicon (Si)-Dissolved	4.74		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Sodium (Na)-Dissolved	1.46		0.050	mg/L	29-APR-20	29-APR-20	R5069702
Strontium (Sr)-Dissolved	0.0997		0.00020	mg/L	29-APR-20	29-APR-20	R5069702
Thallium (Tl)-Dissolved	0.000033		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-APR-20	29-APR-20	R5069702
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-APR-20	29-APR-20	R5069702
Uranium (U)-Dissolved	0.00125		0.000010	mg/L	29-APR-20	29-APR-20	R5069702
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-APR-20	29-APR-20	R5069702
Zinc (Zn)-Dissolved	0.0067		0.0010	mg/L	29-APR-20	29-APR-20	R5069702
Hardness							
Hardness (as CaCO3)	339		0.50	mg/L		30-APR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-20	R5068436
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0052		0.0030	mg/L		28-APR-20	R5068436
Antimony (Sb)-Total	0.00012		0.00010	mg/L		28-APR-20	R5068436
Arsenic (As)-Total	0.00025		0.00010	mg/L		28-APR-20	R5068436
Barium (Ba)-Total	0.420		0.00010	mg/L		28-APR-20	R5068436
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-20	R5068436
Boron (B)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436
Cadmium (Cd)-Total	0.0688		0.0050	ug/L		28-APR-20	R5068436
Calcium (Ca)-Total	99.3		0.050	mg/L		28-APR-20	R5068436
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Cobalt (Co)-Total	0.84		0.10	ug/L		28-APR-20	R5068436
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-20	R5068436
Iron (Fe)-Total	0.284		0.010	mg/L		28-APR-20	R5068436
Lead (Pb)-Total	0.000066		0.000050	mg/L		28-APR-20	R5068436
Lithium (Li)-Total	0.0077		0.0010	mg/L		28-APR-20	R5068436
Magnesium (Mg)-Total	28.6		0.10	mg/L		28-APR-20	R5068436
Manganese (Mn)-Total	0.0455		0.00010	mg/L		28-APR-20	R5068436
Molybdenum (Mo)-Total	0.00185		0.000050	mg/L		28-APR-20	R5068436
Nickel (Ni)-Total	0.00182		0.00050	mg/L		28-APR-20	R5068436
Potassium (K)-Total	2.03		0.050	mg/L		28-APR-20	R5068436
Selenium (Se)-Total	0.144		0.050	ug/L		28-APR-20	R5068436
Silicon (Si)-Total	4.84		0.10	mg/L		28-APR-20	R5068436
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-20	R5068436
Sodium (Na)-Total	1.53		0.050	mg/L		28-APR-20	R5068436
Strontium (Sr)-Total	0.0999		0.00020	mg/L		28-APR-20	R5068436
Thallium (Tl)-Total	0.000044		0.000010	mg/L		28-APR-20	R5068436
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-2 LC_PIZDC1308_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 10:15							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.00123		0.000010	mg/L		28-APR-20	R5068436
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-20	R5068436
Zinc (Zn)-Total	0.0082		0.0030	mg/L		28-APR-20	R5068436
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	11.4		1.0	mg/L		24-APR-20	R5064097
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	339		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Total (as CaCO3)	339		1.0	mg/L		24-APR-20	R5064142
Ammonia, Total (as N)							
Ammonia as N	0.0204		0.0050	mg/L		01-MAY-20	R5072717
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		24-APR-20	R5065633
Chloride in Water by IC							
Chloride (Cl)	1.22		0.50	mg/L		24-APR-20	R5065633
Electrical Conductivity (EC)							
Conductivity (@ 25C)	569		2.0	uS/cm		24-APR-20	R5064142
Fluoride in Water by IC							
Fluoride (F)	0.151		0.020	mg/L		24-APR-20	R5065633
Ion Balance Calculation							
Ion Balance	99.6		-100	%		30-APR-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.2			%		30-APR-20	
Anion Sum	6.94			meq/L		30-APR-20	
Cation Sum	6.91			meq/L		30-APR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0636		0.0050	mg/L		24-APR-20	R5065633
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0034		0.0010	mg/L		24-APR-20	R5065633
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		24-APR-20	R5064397
Oxidation redution potential by elect.							
ORP	386		-1000	mV		28-APR-20	R5068884
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-MAY-20	R5071360
Sulfate in Water by IC							
Sulfate (SO4)	5.54		0.30	mg/L		24-APR-20	R5065633
Total Dissolved Solids							
Total Dissolved Solids	334		20	mg/L		29-APR-20	R5070288
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		29-APR-20	R5070294
Turbidity							
Turbidity	1.62		0.10	NTU		24-APR-20	R5063220
pH							
pH	7.57		0.10	pH		24-APR-20	R5064142
L2439850-3 LC_RD2_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 13:23							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		24-APR-20	R5064142

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-3 LC_RD2_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 13:23							
Matrix: WG							
Carbonate (CO3)	<5.0		5.0	mg/L		24-APR-20	R5064142
Hydroxide (OH)	<5.0		5.0	mg/L		24-APR-20	R5064142
Total Kjeldahl Nitrogen	0.125	RRV	0.050	mg/L		01-MAY-20	R5072396
Total Organic Carbon	<0.50		0.50	mg/L		30-APR-20	R5071316
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-20	R5068436
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-APR-20	R5068996
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-20	R5068436
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-20	R5068436
Boron (B)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-APR-20	R5068436
Calcium (Ca)-Total	<0.050		0.050	mg/L		28-APR-20	R5068436
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-APR-20	R5068436
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-20	R5068436
Iron (Fe)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-20	R5068436
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-APR-20	R5068436
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-APR-20	R5068436
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-APR-20	R5068436
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-APR-20	R5068436
Potassium (K)-Total	<0.050		0.050	mg/L		28-APR-20	R5068436
Selenium (Se)-Total	<0.050		0.050	ug/L		28-APR-20	R5068436
Silicon (Si)-Total	<0.10		0.10	mg/L		28-APR-20	R5068436
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-20	R5068436
Sodium (Na)-Total	<0.050		0.050	mg/L		28-APR-20	R5068436
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-APR-20	R5068436
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-20	R5068436
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-20	R5068436
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-20	R5068436
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-APR-20	R5068436
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-20	R5068436
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-20	R5068436
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.1		1.0	mg/L		24-APR-20	R5064097
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Ammonia, Total (as N)							
Ammonia as N	0.0532	RRV	0.0050	mg/L		01-MAY-20	R5072717
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		24-APR-20	R5065633

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2439850-3 LC_RD2_WG_Q2-2020_NP							
Sampled By: KC/DT on 22-APR-20 @ 13:23							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		24-APR-20	R5065633
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					30-APR-20	R5070166
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		30-APR-20	R5070188
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		30-APR-20	R5070188
Potassium (K)-Dissolved	<0.050		0.050	mg/L		30-APR-20	R5070188
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		30-APR-20	R5070188
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		24-APR-20	R5064142
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		24-APR-20	R5065633
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		01-MAY-20	
Anion Sum	<0.10			meq/L		01-MAY-20	
Cation Sum	<0.10			meq/L		01-MAY-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		01-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		24-APR-20	R5065633
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		24-APR-20	R5065633
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-APR-20	R5064397
Oxidation redution potential by elect.							
ORP	534		-1000	mV		28-APR-20	R5068884
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-MAY-20	R5071360
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		24-APR-20	R5065633
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		29-APR-20	R5070288
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		29-APR-20	R5070294
Turbidity							
Turbidity	<0.10		0.10	NTU		24-APR-20	R5063220
pH							
pH	5.52		0.10	pH		24-APR-20	R5064142

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	-3 D-CATIONS SUBSAMPLED/FILTERED/PRESERVED AT THE LAB - Sample was Filtered and Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

20200422 DCGW

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2439850

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5064097							
WG3313285-11	LCS							
Acidity (as CaCO3)			100.4		%		85-115	24-APR-20
WG3313285-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	24-APR-20
ALK-MAN-CL								
	Water							
Batch	R5064142							
WG3313289-5	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	24-APR-20
WG3313289-8	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	24-APR-20
WG3313289-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-APR-20
WG3313289-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-APR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5069702							
WG3315143-2	LCS							
Beryllium (Be)-Dissolved			89.9		%		80-120	29-APR-20
WG3315143-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-APR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5068436							
WG3313900-2	LCS							
Beryllium (Be)-Total			94.8		%		80-120	28-APR-20
WG3313900-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-APR-20
BIC-CL								
	Water							
Batch	R5064142							
WG3313289-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-APR-20
BR-L-IC-N-CL								
	Water							
Batch	R5065633							
WG3313677-6	LCS							
Bromide (Br)			101.9		%		85-115	24-APR-20
WG3313677-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-APR-20



Quality Control Report

Workorder: L2439850

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5071316							
WG3316252-2 LCS								
Dissolved Organic Carbon			107.6		%		80-120	30-APR-20
WG3316252-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-APR-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5071316							
WG3316252-2 LCS								
Total Organic Carbon			110.2		%		80-120	30-APR-20
WG3316252-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	30-APR-20
CL-IC-N-CL	Water							
Batch	R5065633							
WG3313677-6 LCS								
Chloride (Cl)			101.0		%		90-110	24-APR-20
WG3313677-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	24-APR-20
CO3-CL	Water							
Batch	R5064142							
WG3313289-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-APR-20
EC-L-PCT-CL	Water							
Batch	R5064142							
WG3313289-5 LCS								
Conductivity (@ 25C)			95.2		%		90-110	24-APR-20
WG3313289-8 LCS								
Conductivity (@ 25C)			100.1		%		90-110	24-APR-20
WG3313289-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-APR-20
WG3313289-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-APR-20
F-IC-N-CL	Water							
Batch	R5065633							
WG3313677-6 LCS								
Fluoride (F)			100.7		%		90-110	24-APR-20
WG3313677-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	24-APR-20



Quality Control Report

Workorder: L2439850

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA Water								
Batch	R5068196							
WG3314073-2 LCS								
Mercury (Hg)-Dissolved			97.8		%		80-120	28-APR-20
WG3314073-1 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	28-APR-20
HG-T-CVAA-VA Water								
Batch	R5068996							
WG3314797-2 LCS								
Mercury (Hg)-Total			100.2		%		80-120	29-APR-20
WG3314797-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-APR-20
MET-D-CCMS-CL Water								
Batch	R5070188							
WG3315895-2 LCS								
Calcium (Ca)-Dissolved		TMRM	104.7		%		80-120	30-APR-20
Magnesium (Mg)-Dissolved			111.6		%		80-120	30-APR-20
Potassium (K)-Dissolved			106.5		%		80-120	30-APR-20
Sodium (Na)-Dissolved			97.1		%		80-120	30-APR-20
WG3315895-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-APR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-APR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-APR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-APR-20
MET-D-CCMS-VA Water								
Batch	R5069702							
WG3315143-2 LCS								
Aluminum (Al)-Dissolved			95.8		%		80-120	29-APR-20
Antimony (Sb)-Dissolved			100.6		%		80-120	29-APR-20
Arsenic (As)-Dissolved			91.6		%		80-120	29-APR-20
Barium (Ba)-Dissolved			100.0		%		80-120	29-APR-20
Bismuth (Bi)-Dissolved			96.0		%		80-120	29-APR-20
Boron (B)-Dissolved			83.2		%		80-120	29-APR-20
Cadmium (Cd)-Dissolved			96.2		%		80-120	29-APR-20
Calcium (Ca)-Dissolved			93.9		%		80-120	29-APR-20
Chromium (Cr)-Dissolved			93.4		%		80-120	29-APR-20
Cobalt (Co)-Dissolved			94.2		%		80-120	29-APR-20
Copper (Cu)-Dissolved			94.4		%		80-120	29-APR-20



Quality Control Report

Workorder: L2439850

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5069702							
WG3315143-2	LCS							
Iron (Fe)-Dissolved			92.5		%		80-120	29-APR-20
Lead (Pb)-Dissolved			98.2		%		80-120	29-APR-20
Lithium (Li)-Dissolved			94.4		%		80-120	29-APR-20
Magnesium (Mg)-Dissolved			97.7		%		80-120	29-APR-20
Manganese (Mn)-Dissolved			97.5		%		80-120	29-APR-20
Molybdenum (Mo)-Dissolved			98.9		%		80-120	29-APR-20
Nickel (Ni)-Dissolved			94.9		%		80-120	29-APR-20
Potassium (K)-Dissolved			95.6		%		80-120	29-APR-20
Selenium (Se)-Dissolved			94.3		%		80-120	29-APR-20
Silicon (Si)-Dissolved			91.2		%		60-140	29-APR-20
Silver (Ag)-Dissolved			96.3		%		80-120	29-APR-20
Sodium (Na)-Dissolved			102.7		%		80-120	29-APR-20
Strontium (Sr)-Dissolved			106.1		%		80-120	29-APR-20
Thallium (Tl)-Dissolved			98.4		%		80-120	29-APR-20
Tin (Sn)-Dissolved			92.8		%		80-120	29-APR-20
Titanium (Ti)-Dissolved			87.8		%		80-120	29-APR-20
Uranium (U)-Dissolved			98.5		%		80-120	29-APR-20
Vanadium (V)-Dissolved			94.7		%		80-120	29-APR-20
Zinc (Zn)-Dissolved			97.3		%		80-120	29-APR-20
WG3315143-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-APR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-APR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-APR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-APR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-APR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-APR-20



Quality Control Report

Workorder: L2439850

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5069702							
WG3315143-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-APR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-APR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-APR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-APR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-APR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-APR-20
MET-T-CCMS-VA								
	Water							
Batch	R5068436							
WG3313900-2	LCS							
Aluminum (Al)-Total			104.3		%		80-120	28-APR-20
Antimony (Sb)-Total			103.2		%		80-120	28-APR-20
Arsenic (As)-Total			101.3		%		80-120	28-APR-20
Barium (Ba)-Total			106.5		%		80-120	28-APR-20
Bismuth (Bi)-Total			113.3		%		80-120	28-APR-20
Boron (B)-Total			92.0		%		80-120	28-APR-20
Cadmium (Cd)-Total			104.4		%		80-120	28-APR-20
Calcium (Ca)-Total			101.9		%		80-120	28-APR-20
Chromium (Cr)-Total			102.4		%		80-120	28-APR-20
Cobalt (Co)-Total			102.4		%		80-120	28-APR-20
Copper (Cu)-Total			101.6		%		80-120	28-APR-20
Iron (Fe)-Total			97.4		%		80-120	28-APR-20
Lead (Pb)-Total			103.9		%		80-120	28-APR-20
Lithium (Li)-Total			95.9		%		80-120	28-APR-20
Magnesium (Mg)-Total			108.5		%		80-120	28-APR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5068436							
WG3313900-2	LCS							
Manganese (Mn)-Total			105.4		%		80-120	28-APR-20
Molybdenum (Mo)-Total			98.4		%		80-120	28-APR-20
Nickel (Ni)-Total			102.5		%		80-120	28-APR-20
Potassium (K)-Total			104.2		%		80-120	28-APR-20
Selenium (Se)-Total			101.6		%		80-120	28-APR-20
Silicon (Si)-Total			99.6		%		80-120	28-APR-20
Silver (Ag)-Total			101.0		%		80-120	28-APR-20
Sodium (Na)-Total			104.5		%		80-120	28-APR-20
Strontium (Sr)-Total			100.5		%		80-120	28-APR-20
Thallium (Tl)-Total			103.2		%		80-120	28-APR-20
Tin (Sn)-Total			100.8		%		80-120	28-APR-20
Titanium (Ti)-Total			98.0		%		80-120	28-APR-20
Uranium (U)-Total			100.5		%		80-120	28-APR-20
Vanadium (V)-Total			107.1		%		80-120	28-APR-20
Zinc (Zn)-Total			99.9		%		80-120	28-APR-20
WG3313900-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-APR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-APR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-APR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-APR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-APR-20
Boron (B)-Total			<0.010		mg/L		0.01	28-APR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-APR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-APR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-APR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-APR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-APR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	28-APR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-APR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-APR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-APR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-APR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-APR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-APR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5068436							
WG3313900-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	28-APR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-APR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	28-APR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-APR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	28-APR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-APR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-APR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-APR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-APR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-APR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-APR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-APR-20
NH3-L-F-CL		Water						
Batch	R5072717							
WG3316765-6	LCS							
Ammonia as N			104.3		%		85-115	01-MAY-20
WG3316765-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	01-MAY-20
NO2-L-IC-N-CL		Water						
Batch	R5065633							
WG3313677-6	LCS							
Nitrite (as N)			103.1		%		90-110	24-APR-20
WG3313677-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-APR-20
NO3-L-IC-N-CL		Water						
Batch	R5065633							
WG3313677-6	LCS							
Nitrate (as N)			100.4		%		90-110	24-APR-20
WG3313677-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-APR-20
OH-CL		Water						
Batch	R5064142							
WG3313289-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-APR-20



Quality Control Report

Workorder: L2439850

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5068884							
WG3314623-5	CRM	CL-ORP						
ORP			223		mV		210-230	28-APR-20
P-T-L-COL-CL	Water							
Batch	R5071360							
WG3316440-6	LCS							
Phosphorus (P)-Total			101.9		%		80-120	01-MAY-20
WG3316440-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-MAY-20
PH-CL	Water							
Batch	R5064142							
WG3313289-5	LCS							
pH			6.98		pH		6.9-7.1	24-APR-20
WG3313289-8	LCS							
pH			6.98		pH		6.9-7.1	24-APR-20
PO4-DO-L-COL-CL	Water							
Batch	R5064397							
WG3312961-5	LCS							
Orthophosphate-Dissolved (as P)			105.4		%		80-120	24-APR-20
WG3312961-6	LCS							
Orthophosphate-Dissolved (as P)			106.7		%		80-120	24-APR-20
WG3312961-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-APR-20
WG3312961-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-APR-20
SO4-IC-N-CL	Water							
Batch	R5065633							
WG3313677-6	LCS							
Sulfate (SO4)			100.4		%		90-110	24-APR-20
WG3313677-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-APR-20
SOLIDS-TDS-CL	Water							
Batch	R5070288							
WG3314750-11	LCS							
Total Dissolved Solids			99.9		%		85-115	29-APR-20
WG3314750-8	LCS							
Total Dissolved Solids			105.4		%		85-115	29-APR-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5070288							
WG3314750-10 MB								
Total Dissolved Solids			<10		mg/L		10	29-APR-20
WG3314750-7 MB								
Total Dissolved Solids			<10		mg/L		10	29-APR-20
TKN-L-F-CL		Water						
Batch	R5072396							
WG3316700-11 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	01-MAY-20
WG3316700-15 LCS								
Total Kjeldahl Nitrogen			97.7		%		75-125	01-MAY-20
WG3316700-19 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	01-MAY-20
WG3316700-2 LCS								
Total Kjeldahl Nitrogen			98.1		%		75-125	01-MAY-20
WG3316700-23 LCS								
Total Kjeldahl Nitrogen			97.4		%		75-125	01-MAY-20
WG3316700-6 LCS								
Total Kjeldahl Nitrogen			95.6		%		75-125	01-MAY-20
WG3316700-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
WG3316700-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
WG3316700-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
WG3316700-18 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
WG3316700-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
WG3316700-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAY-20
TSS-L-CL		Water						
Batch	R5070294							
WG3314775-4 LCS								
Total Suspended Solids			108.4		%		85-115	29-APR-20
WG3314775-3 MB								
Total Suspended Solids			<1.0		mg/L		1	29-APR-20
TURBIDITY-CL		Water						



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Workorder: L2439850

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5063220							
WG3313083-11	LCS							
Turbidity			98.0		%		85-115	24-APR-20
WG3313083-10	MB							
Turbidity			<0.10		NTU		0.1	24-APR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	22-APR-20 11:29	28-APR-20 06:59	0.25	139	hours	EHTR-FM
	2	22-APR-20 10:15	28-APR-20 06:59	0.25	141	hours	EHTR-FM
	3	22-APR-20 13:23	28-APR-20 06:59	0.25	138	hours	EHTR-FM
pH	1	22-APR-20 11:29	24-APR-20 13:00	0.25	49	hours	EHTR-FM
	2	22-APR-20 10:15	24-APR-20 13:00	0.25	51	hours	EHTR-FM
	3	22-APR-20 13:23	24-APR-20 13:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2439850 were received on 23-APR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20200422 DCGW			TURNAROUND TIME:		RUSH:					
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.com	x	x
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	kirsten.campbell@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholas@teck.com	x	x
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2439850-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED									
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	HG-T-CVAF-VA			
LC_PIZDC1307_WG_Q2-2020_NP	LC_PIZDC1307	WG		2020/04/22	11:29	G	6	1	1	1	1	1	1				
LC_PIZDC1308_WG_Q2-2020_NP	LC_PIZDC1308	WG		2020/04/22	10:15	G	6	1	1	1	1	1	1				
LC_RD2_WG_Q2-2020_NP	LC_RD2	WG		4/22/2020	13:23	G	4			1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/K.Campbell	22-04-2020	<i>[Signature]</i>	4/23/2020
SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X	K. Campbell/D. Tymstra		<i>[Signature]</i>	22-04-2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 24-APR-20
Report Date: 29-JAN-21 16:34 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2440229
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_PIZP1103_2020-04
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2440229-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2440229-1 LC_PIZP1103_WG_Q2-2020_NP							
Sampled By: DN/DT on 23-APR-20 @ 12:18							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	463		5.0	mg/L		24-APR-20	R5064142
Carbonate (CO3)	<5.0		5.0	mg/L		24-APR-20	R5064142
Dissolved Organic Carbon	4.04		0.50	mg/L		01-MAY-20	R5072079
Hydroxide (OH)	<5.0		5.0	mg/L		24-APR-20	R5064142
Total Kjeldahl Nitrogen	0.453		0.050	mg/L		04-MAY-20	R5075693
Total Organic Carbon	3.72		0.50	mg/L		01-MAY-20	R5072079
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	28-APR-20	29-APR-20	R5069702
Dissolved Metals Filtration Location	FIELD					28-APR-20	R5068076
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-APR-20	30-APR-20	R5069976
Dissolved Mercury Filtration Location	FIELD					29-APR-20	R5069813
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					28-APR-20	R5068076
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	28-APR-20	29-APR-20	R5069702
Antimony (Sb)-Dissolved	0.00046		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Arsenic (As)-Dissolved	0.00140		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Barium (Ba)-Dissolved	0.0677		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	28-APR-20	29-APR-20	R5069702
Boron (B)-Dissolved	0.446		0.010	mg/L	28-APR-20	29-APR-20	R5069702
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	28-APR-20	29-APR-20	R5069702
Calcium (Ca)-Dissolved	30.9		0.050	mg/L	28-APR-20	29-APR-20	R5069702
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Cobalt (Co)-Dissolved	0.54		0.10	ug/L	28-APR-20	29-APR-20	R5069702
Copper (Cu)-Dissolved	0.00085		0.00020	mg/L	28-APR-20	29-APR-20	R5069702
Iron (Fe)-Dissolved	0.112		0.010	mg/L	28-APR-20	29-APR-20	R5069702
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	28-APR-20	29-APR-20	R5069702
Lithium (Li)-Dissolved	0.120		0.0010	mg/L	28-APR-20	29-APR-20	R5069702
Magnesium (Mg)-Dissolved	16.7		0.10	mg/L	28-APR-20	29-APR-20	R5069702
Manganese (Mn)-Dissolved	0.631		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Molybdenum (Mo)-Dissolved	0.00714		0.000050	mg/L	28-APR-20	29-APR-20	R5069702
Nickel (Ni)-Dissolved	0.00200		0.00050	mg/L	28-APR-20	29-APR-20	R5069702
Potassium (K)-Dissolved	1.62		0.050	mg/L	28-APR-20	29-APR-20	R5069702
Selenium (Se)-Dissolved	0.058		0.050	ug/L	28-APR-20	29-APR-20	R5069702
Silicon (Si)-Dissolved	4.52		0.050	mg/L	28-APR-20	29-APR-20	R5069702
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	28-APR-20	29-APR-20	R5069702
Sodium (Na)-Dissolved	135		0.050	mg/L	28-APR-20	29-APR-20	R5069702
Strontium (Sr)-Dissolved	0.851		0.00020	mg/L	28-APR-20	29-APR-20	R5069702
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	28-APR-20	29-APR-20	R5069702
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	28-APR-20	29-APR-20	R5069702
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	28-APR-20	29-APR-20	R5069702
Uranium (U)-Dissolved	0.00163		0.000010	mg/L	28-APR-20	29-APR-20	R5069702
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	28-APR-20	29-APR-20	R5069702
Zinc (Zn)-Dissolved	0.0139		0.0010	mg/L	28-APR-20	29-APR-20	R5069702
Hardness							
Hardness (as CaCO3)	146		0.50	mg/L		29-APR-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.023		0.020	ug/L		29-APR-20	R5069116
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2440229-1 LC_PIZP1103_WG_Q2-2020_NP							
Sampled By: DN/DT on 23-APR-20 @ 12:18							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.251		0.0030	mg/L		29-APR-20	R5069116
Antimony (Sb)-Total	0.00072		0.00010	mg/L		29-APR-20	R5069116
Arsenic (As)-Total	0.00145		0.00010	mg/L		29-APR-20	R5069116
Barium (Ba)-Total	0.0666		0.00010	mg/L		29-APR-20	R5069116
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-APR-20	R5069116
Boron (B)-Total	0.427		0.010	mg/L		29-APR-20	R5069116
Cadmium (Cd)-Total	0.0399		0.0050	ug/L		29-APR-20	R5069116
Calcium (Ca)-Total	30.2		0.050	mg/L		29-APR-20	R5069116
Chromium (Cr)-Total	0.00090		0.00010	mg/L		29-APR-20	R5069116
Cobalt (Co)-Total	0.74		0.10	ug/L		29-APR-20	R5069116
Copper (Cu)-Total	0.00419		0.00050	mg/L		29-APR-20	R5069116
Iron (Fe)-Total	0.560		0.010	mg/L		29-APR-20	R5069116
Lead (Pb)-Total	0.000623		0.000050	mg/L		29-APR-20	R5069116
Lithium (Li)-Total	0.108		0.0010	mg/L		29-APR-20	R5069116
Magnesium (Mg)-Total	15.5		0.10	mg/L		29-APR-20	R5069116
Manganese (Mn)-Total	0.591		0.00010	mg/L		29-APR-20	R5069116
Molybdenum (Mo)-Total	0.00688		0.000050	mg/L		29-APR-20	R5069116
Nickel (Ni)-Total	0.00276		0.00050	mg/L		29-APR-20	R5069116
Potassium (K)-Total	1.64		0.050	mg/L		29-APR-20	R5069116
Selenium (Se)-Total	<0.050		0.050	ug/L		29-APR-20	R5069116
Silicon (Si)-Total	4.89		0.10	mg/L		29-APR-20	R5069116
Silver (Ag)-Total	0.000033		0.000010	mg/L		29-APR-20	R5069116
Sodium (Na)-Total	126		0.050	mg/L		29-APR-20	R5069116
Strontium (Sr)-Total	0.818		0.00020	mg/L		29-APR-20	R5069116
Thallium (Tl)-Total	0.000010		0.000010	mg/L		29-APR-20	R5069116
Tin (Sn)-Total	0.00060		0.00010	mg/L		29-APR-20	R5069116
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-APR-20	R5069116
Uranium (U)-Total	0.00158		0.000010	mg/L		29-APR-20	R5069116
Vanadium (V)-Total	0.00084		0.00050	mg/L		29-APR-20	R5069116
Zinc (Zn)-Total	0.0281		0.0030	mg/L		29-APR-20	R5069116
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064097
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	380		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Carbonate (as CaCO3)	7.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-APR-20	R5064142
Alkalinity, Total (as CaCO3)	387		1.0	mg/L		24-APR-20	R5064142
Ammonia, Total (as N)							
Ammonia as N	0.0325		0.0050	mg/L		04-MAY-20	R5075867
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.087		0.050	mg/L		25-APR-20	R5064916
Chloride in Water by IC							
Chloride (Cl)	2.88		0.50	mg/L		25-APR-20	R5064916
Electrical Conductivity (EC)							
Conductivity (@ 25C)	703		2.0	uS/cm		24-APR-20	R5064142
Fluoride in Water by IC							
Fluoride (F)	0.395		0.020	mg/L		25-APR-20	R5064916
Ion Balance Calculation							
Ion Balance	106		-100	%		29-APR-20	
Ion Balance Calculation							
Cation - Anion Balance	2.8			%		29-APR-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2440229-1 LC_PIZP1103_WG_Q2-2020_NP							
Sampled By: DN/DT on 23-APR-20 @ 12:18							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	8.37			meq/L		29-APR-20	
Cation Sum	8.85			meq/L		29-APR-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0084		0.0050	mg/L		25-APR-20	R5064916
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-APR-20	R5064916
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0218		0.0010	mg/L		25-APR-20	R5065218
Oxidation redution potential by elect.							
ORP	250		-1000	mV		29-APR-20	R5069510
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0659		0.0020	mg/L		05-MAY-20	R5075803
Sulfate in Water by IC							
Sulfate (SO4)	26.1		0.30	mg/L		25-APR-20	R5064916
Total Dissolved Solids							
Total Dissolved Solids	528	DLHC	20	mg/L		30-APR-20	R5072176
Total Suspended Solids							
Total Suspended Solids	22.0		1.0	mg/L		30-APR-20	R5071415
Turbidity							
Turbidity	21.8		0.10	NTU		25-APR-20	R5064523
pH							
pH	8.37		0.10	pH		24-APR-20	R5064142

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_PIZP1103_2020-04

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2440229

Report Date: 29-JAN-21

Page 1 of 11

Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5064097							
WG3313285-17	LCS							
Acidity (as CaCO3)			103.4		%		85-115	24-APR-20
WG3313285-16	MB							
Acidity (as CaCO3)			1.1		mg/L		2	24-APR-20
ALK-MAN-CL								
	Water							
Batch	R5064142							
WG3313289-23	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	24-APR-20
WG3313289-22	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-APR-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5069702							
WG3314490-2	LCS							
Beryllium (Be)-Dissolved			96.1		%		80-120	29-APR-20
WG3314490-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-APR-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5069116							
WG3314466-2	LCS							
Beryllium (Be)-Total			93.4		%		80-120	29-APR-20
WG3314466-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-APR-20
BIC-CL								
	Water							
Batch	R5064142							
WG3313289-22	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-APR-20
BR-L-IC-N-CL								
	Water							
Batch	R5064916							
WG3313487-6	LCS							
Bromide (Br)			107.3		%		85-115	25-APR-20
WG3313487-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	25-APR-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5072079							
WG3316643-2 LCS								
Dissolved Organic Carbon			95.3		%		80-120	01-MAY-20
WG3316643-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5072079							
WG3316643-2 LCS								
Total Organic Carbon			98.6		%		80-120	01-MAY-20
WG3316643-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	01-MAY-20
CL-IC-N-CL	Water							
Batch	R5064916							
WG3313487-6 LCS								
Chloride (Cl)			102.2		%		90-110	25-APR-20
WG3313487-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	25-APR-20
CO3-CL	Water							
Batch	R5064142							
WG3313289-22 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-APR-20
EC-L-PCT-CL	Water							
Batch	R5064142							
WG3313289-23 LCS								
Conductivity (@ 25C)			95.8		%		90-110	24-APR-20
WG3313289-22 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-APR-20
F-IC-N-CL	Water							
Batch	R5064916							
WG3313487-6 LCS								
Fluoride (F)			99.4		%		90-110	25-APR-20
WG3313487-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-APR-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5069976							
WG3315417-10	LCS							
Mercury (Hg)-Dissolved			102.0		%		80-120	30-APR-20
WG3315417-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-APR-20
MET-D-CCMS-VA								
	Water							
Batch	R5069702							
WG3314490-2	LCS							
Aluminum (Al)-Dissolved			96.9		%		80-120	29-APR-20
Antimony (Sb)-Dissolved			104.4		%		80-120	29-APR-20
Arsenic (As)-Dissolved			94.5		%		80-120	29-APR-20
Barium (Ba)-Dissolved			104.8		%		80-120	29-APR-20
Bismuth (Bi)-Dissolved			101.5		%		80-120	29-APR-20
Boron (B)-Dissolved			91.7		%		80-120	29-APR-20
Cadmium (Cd)-Dissolved			99.1		%		80-120	29-APR-20
Calcium (Ca)-Dissolved			101.8		%		80-120	29-APR-20
Chromium (Cr)-Dissolved			98.5		%		80-120	29-APR-20
Cobalt (Co)-Dissolved			99.2		%		80-120	29-APR-20
Copper (Cu)-Dissolved			95.2		%		80-120	29-APR-20
Iron (Fe)-Dissolved			99.9		%		80-120	29-APR-20
Lead (Pb)-Dissolved			99.6		%		80-120	29-APR-20
Lithium (Li)-Dissolved			103.2		%		80-120	29-APR-20
Magnesium (Mg)-Dissolved			99.9		%		80-120	29-APR-20
Manganese (Mn)-Dissolved			100.6		%		80-120	29-APR-20
Molybdenum (Mo)-Dissolved			104.6		%		80-120	29-APR-20
Nickel (Ni)-Dissolved			98.5		%		80-120	29-APR-20
Potassium (K)-Dissolved			98.7		%		80-120	29-APR-20
Selenium (Se)-Dissolved			99.8		%		80-120	29-APR-20
Silicon (Si)-Dissolved			106.8		%		60-140	29-APR-20
Silver (Ag)-Dissolved			100.8		%		80-120	29-APR-20
Sodium (Na)-Dissolved			97.6		%		80-120	29-APR-20
Strontium (Sr)-Dissolved			107.0		%		80-120	29-APR-20
Thallium (Tl)-Dissolved			101.5		%		80-120	29-APR-20
Tin (Sn)-Dissolved			98.0		%		80-120	29-APR-20
Titanium (Ti)-Dissolved			92.5		%		80-120	29-APR-20
Uranium (U)-Dissolved			101.7		%		80-120	29-APR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5069702							
WG3314490-2	LCS							
Vanadium (V)-Dissolved			98.6		%		80-120	29-APR-20
Zinc (Zn)-Dissolved			100.8		%		80-120	29-APR-20
WG3314490-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-APR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-APR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-APR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-APR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-APR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-APR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-APR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-APR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-APR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-APR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-APR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-APR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-APR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-APR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-APR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-APR-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5069116							
WG3314466-2	LCS							
Aluminum (Al)-Total			109.2		%		80-120	29-APR-20
Antimony (Sb)-Total			105.8		%		80-120	29-APR-20
Arsenic (As)-Total			102.3		%		80-120	29-APR-20
Barium (Ba)-Total			108.7		%		80-120	29-APR-20
Bismuth (Bi)-Total			101.9		%		80-120	29-APR-20
Boron (B)-Total			88.7		%		80-120	29-APR-20
Cadmium (Cd)-Total			103.4		%		80-120	29-APR-20
Calcium (Ca)-Total			103.4		%		80-120	29-APR-20
Chromium (Cr)-Total			106.1		%		80-120	29-APR-20
Cobalt (Co)-Total			104.0		%		80-120	29-APR-20
Copper (Cu)-Total			102.4		%		80-120	29-APR-20
Iron (Fe)-Total			97.3		%		80-120	29-APR-20
Lead (Pb)-Total			98.0		%		80-120	29-APR-20
Lithium (Li)-Total			97.9		%		80-120	29-APR-20
Magnesium (Mg)-Total			102.1		%		80-120	29-APR-20
Manganese (Mn)-Total			108.4		%		80-120	29-APR-20
Molybdenum (Mo)-Total			102.6		%		80-120	29-APR-20
Nickel (Ni)-Total			102.6		%		80-120	29-APR-20
Potassium (K)-Total			106.3		%		80-120	29-APR-20
Selenium (Se)-Total			100.4		%		80-120	29-APR-20
Silicon (Si)-Total			102.2		%		80-120	29-APR-20
Silver (Ag)-Total			99.9		%		80-120	29-APR-20
Sodium (Na)-Total			101.5		%		80-120	29-APR-20
Strontium (Sr)-Total			106.7		%		80-120	29-APR-20
Thallium (Tl)-Total			98.3		%		80-120	29-APR-20
Tin (Sn)-Total			102.7		%		80-120	29-APR-20
Titanium (Ti)-Total			97.4		%		80-120	29-APR-20
Uranium (U)-Total			96.1		%		80-120	29-APR-20
Vanadium (V)-Total			103.2		%		80-120	29-APR-20
Zinc (Zn)-Total			104.7		%		80-120	29-APR-20
WG3314466-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-APR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-APR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-APR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5069116							
WG3314466-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-APR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-APR-20
Boron (B)-Total			<0.010		mg/L		0.01	29-APR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	29-APR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-APR-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-APR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-APR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-APR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	29-APR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-APR-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-APR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-APR-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-APR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-APR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-APR-20
Potassium (K)-Total			<0.050		mg/L		0.05	29-APR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-APR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	29-APR-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-APR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	29-APR-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-APR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-APR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-APR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-APR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-APR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-APR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-APR-20
NH3-L-F-CL		Water						
Batch	R5075867							
WG3317781-6	LCS							
Ammonia as N			96.5		%		85-115	04-MAY-20
WG3317781-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-MAY-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5064916							
WG3313487-6	LCS							
Nitrite (as N)			98.0		%		90-110	25-APR-20
WG3313487-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	25-APR-20
NO3-L-IC-N-CL	Water							
Batch	R5064916							
WG3313487-6	LCS							
Nitrate (as N)			103.3		%		90-110	25-APR-20
WG3313487-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	25-APR-20
OH-CL	Water							
Batch	R5064142							
WG3313289-22	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-APR-20
ORP-CL	Water							
Batch	R5069510							
WG3315033-3	CRM	CL-ORP						
ORP			220		mV		210-230	29-APR-20
P-T-L-COL-CL	Water							
Batch	R5075803							
WG3317756-10	LCS							
Phosphorus (P)-Total			95.7		%		80-120	05-MAY-20
WG3317756-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-MAY-20
PH-CL	Water							
Batch	R5064142							
WG3313289-23	LCS							
pH			6.97		pH		6.9-7.1	24-APR-20
PO4-DO-L-COL-CL	Water							
Batch	R5065218							
WG3313345-6	LCS							
Orthophosphate-Dissolved (as P)			105.6		%		80-120	25-APR-20
WG3313345-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-APR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch	R5064916							
WG3313487-6	LCS							
Sulfate (SO4)			103.7		%		90-110	25-APR-20
WG3313487-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-APR-20
SOLIDS-TDS-CL								
Batch	R5072176							
WG3315463-5	LCS							
Total Dissolved Solids			111.5		%		85-115	30-APR-20
WG3315463-4	MB							
Total Dissolved Solids			<10		mg/L		10	30-APR-20
TKN-L-F-CL								
Batch	R5075693							
WG3317654-10	LCS							
Total Kjeldahl Nitrogen			91.8		%		75-125	04-MAY-20
WG3317654-14	LCS							
Total Kjeldahl Nitrogen			92.2		%		75-125	04-MAY-20
WG3317654-2	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	04-MAY-20
WG3317654-6	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	04-MAY-20
WG3317654-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAY-20
WG3317654-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAY-20
WG3317654-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAY-20
WG3317654-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-MAY-20
TSS-L-CL								
Batch	R5071415							
WG3315462-4	LCS							
Total Suspended Solids			103.0		%		85-115	30-APR-20
WG3315462-3	MB							
Total Suspended Solids			<1.0		mg/L		1	30-APR-20
TURBIDITY-CL								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5064523							
WG3313377-17 LCS								
Turbidity			104.0		%		85-115	25-APR-20
WG3313377-16 MB								
Turbidity			<0.10		NTU		0.1	25-APR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	23-APR-20 12:18	29-APR-20 11:53	0.25	144	hours	EHTR-FM
pH	1	23-APR-20 12:18	24-APR-20 13:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2440229 were received on 24-APR-20 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 01-MAY-20
Report Date: 28-JAN-21 16:48 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2442691
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_Q2_WG_2020-04-30
Legal Site Desc:

Comments: 11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2442691-1 LC_PIZDC0901_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 12:41							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	519		5.0	mg/L		02-MAY-20	R5073319
Carbonate (CO3)	<5.0		5.0	mg/L		02-MAY-20	R5073319
Dissolved Organic Carbon	4.50		0.50	mg/L		07-MAY-20	R5080263
Hydroxide (OH)	<5.0		5.0	mg/L		02-MAY-20	R5073319
Total Kjeldahl Nitrogen	0.248		0.050	mg/L		08-MAY-20	R5080434
Total Organic Carbon	4.61		0.50	mg/L		07-MAY-20	R5080263
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-MAY-20	07-MAY-20	R5079908
Dissolved Metals Filtration Location	FIELD					06-MAY-20	R5078698
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-MAY-20	05-MAY-20	R5075748
Dissolved Mercury Filtration Location	FIELD					05-MAY-20	R5075739
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					07-MAY-20	R5079994
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-MAY-20	07-MAY-20	R5079908
Antimony (Sb)-Dissolved	0.00019		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Arsenic (As)-Dissolved	0.00037		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Barium (Ba)-Dissolved	0.331		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Cadmium (Cd)-Dissolved	0.119		0.0050	ug/L	06-MAY-20	07-MAY-20	R5079908
Calcium (Ca)-Dissolved	116		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-MAY-20	07-MAY-20	R5079908
Copper (Cu)-Dissolved	0.00655		0.00020	mg/L	07-MAY-20	07-MAY-20	R5079955
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Lead (Pb)-Dissolved	0.000426		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Lithium (Li)-Dissolved	0.0031		0.0010	mg/L	06-MAY-20	07-MAY-20	R5079908
Magnesium (Mg)-Dissolved	36.0		0.10	mg/L	06-MAY-20	07-MAY-20	R5079908
Manganese (Mn)-Dissolved	0.00068		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Molybdenum (Mo)-Dissolved	0.000691		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Nickel (Ni)-Dissolved	0.00117		0.00050	mg/L	06-MAY-20	07-MAY-20	R5079908
Potassium (K)-Dissolved	1.24		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Selenium (Se)-Dissolved	1.15		0.050	ug/L	06-MAY-20	07-MAY-20	R5079908
Silicon (Si)-Dissolved	3.88		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Sodium (Na)-Dissolved	2.24		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Strontium (Sr)-Dissolved	0.249		0.00020	mg/L	06-MAY-20	07-MAY-20	R5079908
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Uranium (U)-Dissolved	0.00580		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Vanadium (V)-Dissolved	0.00074		0.00050	mg/L	06-MAY-20	07-MAY-20	R5079908
Zinc (Zn)-Dissolved	0.0122		0.0010	mg/L	06-MAY-20	07-MAY-20	R5079908
Hardness							
Hardness (as CaCO3)	438		0.50	mg/L		08-MAY-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		07-MAY-20	R5079557
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2442691-1 LC_PIZDC0901_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 12:41							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0414		0.0030	mg/L		07-MAY-20	R5079557
Antimony (Sb)-Total	0.00020		0.00010	mg/L		07-MAY-20	R5079557
Arsenic (As)-Total	0.00035		0.00010	mg/L		07-MAY-20	R5079557
Barium (Ba)-Total	0.292		0.00010	mg/L		07-MAY-20	R5079557
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-MAY-20	R5079557
Boron (B)-Total	<0.010		0.010	mg/L		07-MAY-20	R5079557
Cadmium (Cd)-Total	0.269		0.0050	ug/L		07-MAY-20	R5079557
Calcium (Ca)-Total	121		0.050	mg/L		07-MAY-20	R5079557
Chromium (Cr)-Total	0.00017		0.00010	mg/L		07-MAY-20	R5079557
Cobalt (Co)-Total	0.61		0.10	ug/L		07-MAY-20	R5079557
Copper (Cu)-Total	0.00514		0.00050	mg/L		07-MAY-20	R5079557
Iron (Fe)-Total	0.076		0.010	mg/L		07-MAY-20	R5079557
Lead (Pb)-Total	0.000590		0.000050	mg/L		07-MAY-20	R5079557
Lithium (Li)-Total	0.0031		0.0010	mg/L		07-MAY-20	R5079557
Magnesium (Mg)-Total	30.8		0.10	mg/L		07-MAY-20	R5079557
Manganese (Mn)-Total	0.0685		0.00010	mg/L		07-MAY-20	R5079557
Molybdenum (Mo)-Total	0.000693		0.000050	mg/L		07-MAY-20	R5079557
Nickel (Ni)-Total	0.00196		0.00050	mg/L		07-MAY-20	R5079557
Potassium (K)-Total	1.19		0.050	mg/L		07-MAY-20	R5079557
Selenium (Se)-Total	0.919		0.050	ug/L		07-MAY-20	R5079557
Silicon (Si)-Total	4.15		0.10	mg/L		07-MAY-20	R5079557
Silver (Ag)-Total	<0.000010		0.000010	mg/L		07-MAY-20	R5079557
Sodium (Na)-Total	2.07		0.050	mg/L		07-MAY-20	R5079557
Strontium (Sr)-Total	0.239		0.00020	mg/L		07-MAY-20	R5079557
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		07-MAY-20	R5079557
Tin (Sn)-Total	<0.00010		0.00010	mg/L		07-MAY-20	R5079557
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-MAY-20	R5079557
Uranium (U)-Total	0.00566		0.000010	mg/L		07-MAY-20	R5079557
Vanadium (V)-Total	0.00099		0.00050	mg/L		07-MAY-20	R5079557
Zinc (Zn)-Total	0.0106		0.0030	mg/L		07-MAY-20	R5079557
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	35.8		1.0	mg/L		02-MAY-20	R5073316
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	426		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Total (as CaCO3)	426		1.0	mg/L		02-MAY-20	R5073319
Ammonia, Total (as N)							
Ammonia as N	0.0066		0.0050	mg/L		08-MAY-20	R5080203
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		02-MAY-20	R5073340
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		02-MAY-20	R5073340
Electrical Conductivity (EC)							
Conductivity (@ 25C)	674		2.0	uS/cm		02-MAY-20	R5073319
Fluoride in Water by IC							
Fluoride (F)	0.088		0.020	mg/L		02-MAY-20	R5073340
Ion Balance Calculation							
Ion Balance	102		-100	%		08-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	0.8			%		08-MAY-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2442691-1 LC_PIZDC0901_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 12:41							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	8.74			meq/L		08-MAY-20	
Cation Sum	8.88			meq/L		08-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.226		0.0050	mg/L		02-MAY-20	R5073340
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-20	R5073340
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0209		0.0010	mg/L		02-MAY-20	R5073876
Oxidation redution potential by elect.							
ORP	383		-1000	mV		06-MAY-20	R5078862
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.029	DLM	0.020	mg/L		07-MAY-20	R5079530
Sulfate in Water by IC							
Sulfate (SO4)	10.3		0.30	mg/L		02-MAY-20	R5073340
Total Dissolved Solids							
Total Dissolved Solids	414	DLHC	20	mg/L		06-MAY-20	R5079905
Total Suspended Solids							
Total Suspended Solids	5.1		1.0	mg/L		07-MAY-20	R5080454
Turbidity							
Turbidity	3.35		0.10	NTU		02-MAY-20	R5073116
pH							
pH	7.65		0.10	pH		02-MAY-20	R5073319
L2442691-2 LC_PIZDC1306_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 09:54							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	315		5.0	mg/L		02-MAY-20	R5073319
Carbonate (CO3)	<5.0		5.0	mg/L		02-MAY-20	R5073319
Dissolved Organic Carbon	2.59		0.50	mg/L		07-MAY-20	R5080263
Hydroxide (OH)	<5.0		5.0	mg/L		02-MAY-20	R5073319
Total Kjeldahl Nitrogen	0.205		0.050	mg/L		08-MAY-20	R5080434
Total Organic Carbon	2.29		0.50	mg/L		07-MAY-20	R5080263
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-MAY-20	07-MAY-20	R5079908
Dissolved Metals Filtration Location	FIELD					06-MAY-20	R5078698
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	05-MAY-20	05-MAY-20	R5075748
Dissolved Mercury Filtration Location	FIELD					05-MAY-20	R5075739
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-MAY-20	R5078698
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-MAY-20	07-MAY-20	R5079908
Antimony (Sb)-Dissolved	0.00020		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Barium (Ba)-Dissolved	0.168		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Cadmium (Cd)-Dissolved	0.126		0.0050	ug/L	06-MAY-20	07-MAY-20	R5079908
Calcium (Ca)-Dissolved	65.7		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-MAY-20	07-MAY-20	R5079908

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2442691-2 LC_PIZDC1306_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 09:54							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00039		0.00020	mg/L	06-MAY-20	07-MAY-20	R5079908
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Lithium (Li)-Dissolved	0.0133		0.0010	mg/L	06-MAY-20	07-MAY-20	R5079908
Magnesium (Mg)-Dissolved	26.0		0.10	mg/L	06-MAY-20	07-MAY-20	R5079908
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Molybdenum (Mo)-Dissolved	0.00177		0.000050	mg/L	06-MAY-20	07-MAY-20	R5079908
Nickel (Ni)-Dissolved	0.00112		0.00050	mg/L	06-MAY-20	07-MAY-20	R5079908
Potassium (K)-Dissolved	2.15		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Selenium (Se)-Dissolved	2.63		0.050	ug/L	06-MAY-20	07-MAY-20	R5079908
Silicon (Si)-Dissolved	3.07		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Sodium (Na)-Dissolved	0.887		0.050	mg/L	06-MAY-20	07-MAY-20	R5079908
Strontium (Sr)-Dissolved	0.0693		0.00020	mg/L	06-MAY-20	07-MAY-20	R5079908
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAY-20	07-MAY-20	R5079908
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-MAY-20	07-MAY-20	R5079908
Uranium (U)-Dissolved	0.000756		0.000010	mg/L	06-MAY-20	07-MAY-20	R5079908
Vanadium (V)-Dissolved	0.00057		0.00050	mg/L	06-MAY-20	07-MAY-20	R5079908
Zinc (Zn)-Dissolved	0.0037		0.0010	mg/L	06-MAY-20	07-MAY-20	R5079908
Hardness							
Hardness (as CaCO3)	271		0.50	mg/L		07-MAY-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		07-MAY-20	R5079557
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0204		0.0030	mg/L		07-MAY-20	R5079557
Antimony (Sb)-Total	0.00021		0.00010	mg/L		07-MAY-20	R5079557
Arsenic (As)-Total	<0.00010		0.00010	mg/L		07-MAY-20	R5079557
Barium (Ba)-Total	0.164		0.00010	mg/L		07-MAY-20	R5079557
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-MAY-20	R5079557
Boron (B)-Total	<0.010		0.010	mg/L		07-MAY-20	R5079557
Cadmium (Cd)-Total	0.127		0.0050	ug/L		07-MAY-20	R5079557
Calcium (Ca)-Total	64.9		0.050	mg/L		07-MAY-20	R5079557
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		07-MAY-20	R5079557
Cobalt (Co)-Total	<0.10		0.10	ug/L		07-MAY-20	R5079557
Copper (Cu)-Total	<0.00050		0.00050	mg/L		07-MAY-20	R5079557
Iron (Fe)-Total	0.014		0.010	mg/L		07-MAY-20	R5079557
Lead (Pb)-Total	<0.000050		0.000050	mg/L		07-MAY-20	R5079557
Lithium (Li)-Total	0.0129		0.0010	mg/L		07-MAY-20	R5079557
Magnesium (Mg)-Total	21.9		0.10	mg/L		07-MAY-20	R5079557
Manganese (Mn)-Total	0.00039		0.00010	mg/L		07-MAY-20	R5079557
Molybdenum (Mo)-Total	0.00192		0.000050	mg/L		07-MAY-20	R5079557
Nickel (Ni)-Total	0.00128		0.00050	mg/L		07-MAY-20	R5079557
Potassium (K)-Total	2.07		0.050	mg/L		07-MAY-20	R5079557
Selenium (Se)-Total	2.26		0.050	ug/L		07-MAY-20	R5079557
Silicon (Si)-Total	3.16		0.10	mg/L		07-MAY-20	R5079557
Silver (Ag)-Total	<0.000010		0.000010	mg/L		07-MAY-20	R5079557
Sodium (Na)-Total	0.817		0.050	mg/L		07-MAY-20	R5079557
Strontium (Sr)-Total	0.0729		0.00020	mg/L		07-MAY-20	R5079557
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		07-MAY-20	R5079557
Tin (Sn)-Total	<0.00010		0.00010	mg/L		07-MAY-20	R5079557

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2442691-2 LC_PIZDC1306_WG_Q2-2020_NP							
Sampled By: DN/SF on 30-APR-20 @ 09:54							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-MAY-20	R5079557
Uranium (U)-Total	0.000746		0.000010	mg/L		07-MAY-20	R5079557
Vanadium (V)-Total	0.00075		0.00050	mg/L		07-MAY-20	R5079557
Zinc (Zn)-Total	0.0038		0.0030	mg/L		07-MAY-20	R5079557
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	13.6		1.0	mg/L		02-MAY-20	R5073316
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	258		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-MAY-20	R5073319
Alkalinity, Total (as CaCO3)	258		1.0	mg/L		02-MAY-20	R5073319
Ammonia, Total (as N)							
Ammonia as N	0.0100		0.0050	mg/L		08-MAY-20	R5080203
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		02-MAY-20	R5073340
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		02-MAY-20	R5073340
Electrical Conductivity (EC)							
Conductivity (@ 25C)	430		2.0	uS/cm		02-MAY-20	R5073319
Fluoride in Water by IC							
Fluoride (F)	0.185		0.020	mg/L		02-MAY-20	R5073340
Ion Balance Calculation							
Cation - Anion Balance	2.1			%		07-MAY-20	
Anion Sum	5.28			meq/L		07-MAY-20	
Cation Sum	5.51			meq/L		07-MAY-20	
Ion Balance Calculation							
Ion Balance	104		-100	%		07-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.204		0.0050	mg/L		02-MAY-20	R5073340
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		02-MAY-20	R5073340
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		02-MAY-20	R5073876
Oxidation redution potential by elect.							
ORP	385		-1000	mV		06-MAY-20	R5078862
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0028		0.0020	mg/L		07-MAY-20	R5079530
Sulfate in Water by IC							
Sulfate (SO4)	4.77		0.30	mg/L		02-MAY-20	R5073340
Total Dissolved Solids							
Total Dissolved Solids	253	DLHC	20	mg/L		06-MAY-20	R5079905
Total Suspended Solids							
Total Suspended Solids	1.7		1.0	mg/L		07-MAY-20	R5080454
Turbidity							
Turbidity	1.39		0.10	NTU		02-MAY-20	R5073116
pH							
pH	7.86		0.10	pH		02-MAY-20	R5073319

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_Q2_WG_2020-04-30

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2442691

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5073316							
WG3316958-2	LCS							
Acidity (as CaCO3)			103.8		%		85-115	02-MAY-20
WG3316958-1	MB							
Acidity (as CaCO3)			1.2		mg/L		2	02-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5073319							
WG3316959-8	LCS							
Alkalinity, Total (as CaCO3)			103.1		%		85-115	02-MAY-20
WG3316959-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5079908							
WG3318995-2	LCS							
Beryllium (Be)-Dissolved			98.2		%		80-120	07-MAY-20
WG3318995-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5079557							
WG3318226-2	LCS							
Beryllium (Be)-Total			102.5		%		80-120	07-MAY-20
WG3318226-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	07-MAY-20
BIC-CL								
	Water							
Batch	R5073319							
WG3316959-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5073340							
WG3316969-2	LCS							
Bromide (Br)			94.6		%		85-115	02-MAY-20
WG3316969-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5080263							
WG3319952-2 LCS								
Dissolved Organic Carbon			90.9		%		80-120	07-MAY-20
WG3319952-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5080263							
WG3319952-2 LCS								
Total Organic Carbon			95.3		%		80-120	07-MAY-20
WG3319952-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	07-MAY-20
CL-IC-N-CL	Water							
Batch	R5073340							
WG3316969-2 LCS								
Chloride (Cl)			102.5		%		90-110	02-MAY-20
WG3316969-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	02-MAY-20
CO3-CL	Water							
Batch	R5073319							
WG3316959-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	02-MAY-20
EC-L-PCT-CL	Water							
Batch	R5073319							
WG3316959-8 LCS								
Conductivity (@ 25C)			95.0		%		90-110	02-MAY-20
WG3316959-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-MAY-20
F-IC-N-CL	Water							
Batch	R5073340							
WG3316969-2 LCS								
Fluoride (F)			102.1		%		90-110	02-MAY-20
WG3316969-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-MAY-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5075748							
WG3317744-14	LCS							
Mercury (Hg)-Dissolved			99.2		%		80-120	05-MAY-20
WG3317744-18	LCS							
Mercury (Hg)-Dissolved			100.1		%		80-120	05-MAY-20
WG3317744-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-MAY-20
WG3317744-17	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-MAY-20
MET-D-CCMS-VA								
	Water							
Batch	R5079908							
WG3318995-2	LCS							
Aluminum (Al)-Dissolved			105.9		%		80-120	07-MAY-20
Antimony (Sb)-Dissolved			90.4		%		80-120	07-MAY-20
Arsenic (As)-Dissolved			99.4		%		80-120	07-MAY-20
Barium (Ba)-Dissolved			101.2		%		80-120	07-MAY-20
Bismuth (Bi)-Dissolved			104.2		%		80-120	07-MAY-20
Boron (B)-Dissolved			88.1		%		80-120	07-MAY-20
Cadmium (Cd)-Dissolved			100.2		%		80-120	07-MAY-20
Calcium (Ca)-Dissolved			96.6		%		80-120	07-MAY-20
Chromium (Cr)-Dissolved			105.2		%		80-120	07-MAY-20
Cobalt (Co)-Dissolved			101.8		%		80-120	07-MAY-20
Copper (Cu)-Dissolved			100.7		%		80-120	07-MAY-20
Iron (Fe)-Dissolved			92.3		%		80-120	07-MAY-20
Lead (Pb)-Dissolved			94.8		%		80-120	07-MAY-20
Lithium (Li)-Dissolved			98.5		%		80-120	07-MAY-20
Magnesium (Mg)-Dissolved			101.4		%		80-120	07-MAY-20
Manganese (Mn)-Dissolved			102.8		%		80-120	07-MAY-20
Molybdenum (Mo)-Dissolved			93.6		%		80-120	07-MAY-20
Nickel (Ni)-Dissolved			102.1		%		80-120	07-MAY-20
Potassium (K)-Dissolved			99.5		%		80-120	07-MAY-20
Selenium (Se)-Dissolved			94.4		%		80-120	07-MAY-20
Silicon (Si)-Dissolved			97.2		%		60-140	07-MAY-20
Silver (Ag)-Dissolved			94.4		%		80-120	07-MAY-20
Sodium (Na)-Dissolved			107.2		%		80-120	07-MAY-20
Strontium (Sr)-Dissolved			95.4		%		80-120	07-MAY-20
Thallium (Tl)-Dissolved			99.3		%		80-120	07-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5079908							
WG3318995-2	LCS							
Tin (Sn)-Dissolved			92.5		%		80-120	07-MAY-20
Titanium (Ti)-Dissolved			102.4		%		80-120	07-MAY-20
Uranium (U)-Dissolved			98.8		%		80-120	07-MAY-20
Vanadium (V)-Dissolved			103.7		%		80-120	07-MAY-20
Zinc (Zn)-Dissolved			98.1		%		80-120	07-MAY-20
WG3318995-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5079908							
WG3318995-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20
Batch	R5079955							
WG3319775-2	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	07-MAY-20
Antimony (Sb)-Dissolved			100.9		%		80-120	07-MAY-20
Arsenic (As)-Dissolved			101.3		%		80-120	07-MAY-20
Barium (Ba)-Dissolved			102.6		%		80-120	07-MAY-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	07-MAY-20
Boron (B)-Dissolved			88.6		%		80-120	07-MAY-20
Cadmium (Cd)-Dissolved			100.8		%		80-120	07-MAY-20
Calcium (Ca)-Dissolved			99.3		%		80-120	07-MAY-20
Chromium (Cr)-Dissolved			103.8		%		80-120	07-MAY-20
Cobalt (Co)-Dissolved			101.6		%		80-120	07-MAY-20
Copper (Cu)-Dissolved			99.6		%		80-120	07-MAY-20
Iron (Fe)-Dissolved			99.4		%		80-120	07-MAY-20
Lead (Pb)-Dissolved			94.5		%		80-120	07-MAY-20
Lithium (Li)-Dissolved			94.4		%		80-120	07-MAY-20
Magnesium (Mg)-Dissolved			103.0		%		80-120	07-MAY-20
Manganese (Mn)-Dissolved			102.1		%		80-120	07-MAY-20
Molybdenum (Mo)-Dissolved			100.8		%		80-120	07-MAY-20
Nickel (Ni)-Dissolved			100.8		%		80-120	07-MAY-20
Potassium (K)-Dissolved			105.4		%		80-120	07-MAY-20
Selenium (Se)-Dissolved			106.8		%		80-120	07-MAY-20
Silicon (Si)-Dissolved			103.7		%		60-140	07-MAY-20
Silver (Ag)-Dissolved			100.7		%		80-120	07-MAY-20
Sodium (Na)-Dissolved			110.3		%		80-120	07-MAY-20
Strontium (Sr)-Dissolved			106.1		%		80-120	07-MAY-20
Thallium (Tl)-Dissolved			100.4		%		80-120	07-MAY-20
Tin (Sn)-Dissolved			101.0		%		80-120	07-MAY-20
Titanium (Ti)-Dissolved			101.4		%		80-120	07-MAY-20
Uranium (U)-Dissolved			99.5		%		80-120	07-MAY-20
Vanadium (V)-Dissolved			101.8		%		80-120	07-MAY-20
Zinc (Zn)-Dissolved			97.7		%		80-120	07-MAY-20
WG3319775-1		NP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5079955							
WG3319775-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAY-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5079557							
WG3318226-2	LCS							
Aluminum (Al)-Total			97.1		%		80-120	07-MAY-20
Antimony (Sb)-Total			103.5		%		80-120	07-MAY-20
Arsenic (As)-Total			98.8		%		80-120	07-MAY-20
Barium (Ba)-Total			100.9		%		80-120	07-MAY-20
Bismuth (Bi)-Total			107.6		%		80-120	07-MAY-20
Boron (B)-Total			97.2		%		80-120	07-MAY-20
Cadmium (Cd)-Total			98.8		%		80-120	07-MAY-20
Calcium (Ca)-Total			105.7		%		80-120	07-MAY-20
Chromium (Cr)-Total			99.0		%		80-120	07-MAY-20
Cobalt (Co)-Total			99.5		%		80-120	07-MAY-20
Copper (Cu)-Total			98.3		%		80-120	07-MAY-20
Iron (Fe)-Total			96.4		%		80-120	07-MAY-20
Lead (Pb)-Total			107.4		%		80-120	07-MAY-20
Lithium (Li)-Total			106.1		%		80-120	07-MAY-20
Magnesium (Mg)-Total			98.1		%		80-120	07-MAY-20
Manganese (Mn)-Total			98.4		%		80-120	07-MAY-20
Molybdenum (Mo)-Total			104.5		%		80-120	07-MAY-20
Nickel (Ni)-Total			99.0		%		80-120	07-MAY-20
Potassium (K)-Total			104.1		%		80-120	07-MAY-20
Selenium (Se)-Total			103.2		%		80-120	07-MAY-20
Silicon (Si)-Total			103.3		%		80-120	07-MAY-20
Silver (Ag)-Total			103.4		%		80-120	07-MAY-20
Sodium (Na)-Total			102.3		%		80-120	07-MAY-20
Strontium (Sr)-Total			104.5		%		80-120	07-MAY-20
Thallium (Tl)-Total			108.1		%		80-120	07-MAY-20
Tin (Sn)-Total			102.2		%		80-120	07-MAY-20
Titanium (Ti)-Total			99.5		%		80-120	07-MAY-20
Uranium (U)-Total			100.6		%		80-120	07-MAY-20
Vanadium (V)-Total			101.5		%		80-120	07-MAY-20
Zinc (Zn)-Total			101.9		%		80-120	07-MAY-20
WG3318226-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5079557							
WG3318226-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	07-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	07-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	07-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	07-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	07-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	07-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-MAY-20
NH3-L-F-CL		Water						
Batch	R5080203							
WG3319590-18	LCS							
Ammonia as N			100.4		%		85-115	08-MAY-20
WG3319590-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	08-MAY-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5073340							
WG3316969-2	LCS							
Nitrite (as N)			99.9		%		90-110	02-MAY-20
WG3316969-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5073340							
WG3316969-2	LCS							
Nitrate (as N)			102.9		%		90-110	02-MAY-20
WG3316969-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-MAY-20
OH-CL	Water							
Batch	R5073319							
WG3316959-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-MAY-20
ORP-CL	Water							
Batch	R5078862							
WG3319006-13	CRM	CL-ORP						
ORP			220		mV		210-230	06-MAY-20
P-T-L-COL-CL	Water							
Batch	R5079530							
WG3319282-14	LCS							
Phosphorus (P)-Total			100.4		%		80-120	07-MAY-20
WG3319282-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-MAY-20
PH-CL	Water							
Batch	R5073319							
WG3316959-8	LCS							
pH			6.99		pH		6.9-7.1	02-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5073876							
WG3316889-14	LCS							
Orthophosphate-Dissolved (as P)			104.2		%		80-120	02-MAY-20
WG3316889-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5073340							
WG3316969-2	LCS							
Sulfate (SO4)			106.2		%		90-110	02-MAY-20
WG3316969-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	02-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5079905							
WG3318423-8	LCS							
Total Dissolved Solids			100.3		%		85-115	06-MAY-20
WG3318423-7	MB							
Total Dissolved Solids			<10		mg/L		10	06-MAY-20
TKN-L-F-CL	Water							
Batch	R5080434							
WG3320325-10	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	08-MAY-20
WG3320325-14	LCS							
Total Kjeldahl Nitrogen			90.1		%		75-125	08-MAY-20
WG3320325-18	LCS							
Total Kjeldahl Nitrogen			90.8		%		75-125	08-MAY-20
WG3320325-2	LCS							
Total Kjeldahl Nitrogen			92.9		%		75-125	08-MAY-20
WG3320325-22	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	08-MAY-20
WG3320325-26	LCS							
Total Kjeldahl Nitrogen			94.6		%		75-125	08-MAY-20
WG3320325-6	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	08-MAY-20
WG3320325-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
WG3320325-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
WG3320325-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
WG3320325-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
WG3320325-25	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
WG3320325-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5080434							
WG3320325-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-20
TSS-L-CL	Water							
Batch	R5080454							
WG3319188-4 LCS								
Total Suspended Solids			110.9		%		85-115	07-MAY-20
WG3319188-3 MB								
Total Suspended Solids			<1.0		mg/L		1	07-MAY-20
TURBIDITY-CL	Water							
Batch	R5073116							
WG3316918-17 LCS								
Turbidity			104.0		%		85-115	02-MAY-20
WG3316918-16 MB								
Turbidity			<0.10		NTU		0.1	02-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	30-APR-20 12:41	06-MAY-20 19:00	0.25	150	hours	EHTR-FM
	2	30-APR-20 09:54	06-MAY-20 19:00	0.25	153	hours	EHTR-FM
pH	1	30-APR-20 12:41	02-MAY-20 13:00	0.25	48	hours	EHTR-FM
	2	30-APR-20 09:54	02-MAY-20 13:00	0.25	51	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2442691 were received on 01-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	LC_Q2_WG_2020-04-30	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Carla Froyman Parker	Lab Contact	Lyudmyla Shvets	Email 1:	carla.froymanparker@teck.com
Email	carla.froymanparker@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	teckcoal@equisonline.com
Address	Box 2003	Address	2559 29 Street NE	Email 3:	drake.tymstra@teck.com
	15km North Hwy 43			Email 4:	sharise.fossen@teck.com
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	PO number	VPO0680643

SAMPLE DETAILS Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED											
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
LC_PIZDC0901_WG_Q2-2020_NP	LC_PIZDC0901	WG		2020/04/30	12:41	G	6	1	1	1	1	1	1						
LC_PIZDC1306_WG_Q2-2020_NP	LC_PIZDC1306	WG		2020/04/30	09:54	G	6	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/K.Campbell	30-Apr	<i>[Signature]</i>	5/1/875

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) X	D.Nicholas/S.Fossen		April 30, 2020
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



SNC-Lavalin
ATTN: Kirsti Medig
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 21-MAY-20
Report Date: 29-MAY-20 15:37 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2450173
Project P.O. #: 672225
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2450173-1	L2450173-2	L2450173-3
		Description	WG	WG	WG
		Sampled Date	20-MAY-20	20-MAY-20	20-MAY-20
		Sampled Time	12:45	10:55	09:45
		Client ID	EV_MW_MCGWA_ WG_2020_05_20_ NP	LC_MW_ER4A_W G_2020_05_20_NP	LC_MW_ER4B_W G_2020_05_20_NP
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	493	323	350	
	Hardness (as CaCO3) (mg/L)	354	248	278	
	pH (pH)	7.94	8.17	8.18	
	ORP (mV)	447	318	498	
	Total Suspended Solids (mg/L)	6.0	2.3	<1.0	
	Total Dissolved Solids (mg/L)	393 ^{DLHC}	304 ^{DLHC}	326 ^{DLHC}	
	Turbidity (NTU)	5.10	2.16	0.13	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.8	2.6	3.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	247	161	187	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	247	161	187	
	Ammonia as N (mg/L)	0.0133	<0.0050	<0.0050	
	Bicarbonate (HCO3) (mg/L)	301	196	228	
	Bromide (Br) (mg/L)	0.155	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	36.9	2.26	2.35	
	Fluoride (F) (mg/L)	0.187	0.151	0.145	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	116	98.0	97.1	
	Nitrate and Nitrite (as N) (mg/L)	1.06	<0.0051	3.07	
	Nitrate (as N) (mg/L)	1.04	<0.0050	3.07	
	Nitrite (as N) (mg/L)	0.0123	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.252	<0.050	0.059 ^{TKNI}	
	Total Nitrogen (mg/L)	1.31	<0.050	3.13	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0024	<0.0010	0.0014	
	Phosphorus (P)-Total (mg/L)	0.0064	0.0035	<0.0020	
	Sulfate (SO4) (mg/L)	26.6	92.2	86.9	
	Anion Sum (meq/L)	6.62	5.21	5.84	
	Cation Sum (meq/L)	7.68	5.10	5.67	
Cation - Anion Balance (%)	7.4	-1.0	-1.4		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0021	0.0011	0.0012	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2450173-1	L2450173-2	L2450173-3
		Description	WG	WG	WG
		Sampled Date	20-MAY-20	20-MAY-20	20-MAY-20
		Sampled Time	12:45	10:55	09:45
		Client ID	EV_MW_MCGWA_ WG_2020_05_20_ NP	LC_MW_ER4A_W G_2020_05_20_NP	LC_MW_ER4B_W G_2020_05_20_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00119	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00039	0.00122	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.354	0.0578	0.0787	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.032	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000457	<0.0000050	0.0000129	
	Calcium (Ca)-Dissolved (mg/L)	89.5	68.3	73.6	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	
	Cobalt (Co)-Dissolved (mg/L)	0.00041	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.255	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000102	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0228	0.0054	0.0076	
	Magnesium (Mg)-Dissolved (mg/L)	31.6	18.9	22.9	
	Manganese (Mn)-Dissolved (mg/L)	0.0528	0.0586	0.00045	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00484	0.00376	0.00102	
	Nickel (Ni)-Dissolved (mg/L)	0.00206	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	2.19	0.51	0.42	
	Selenium (Se)-Dissolved (mg/L)	0.00252	0.000093	0.0163	
	Silicon (Si)-Dissolved (mg/L)	4.88	2.55	1.96	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	12.7	2.60	2.52	
	Strontium (Sr)-Dissolved (mg/L)	0.418	0.281	0.242	
	Sulfur (S)-Dissolved (mg/L)	9.94	30.8	28.9	
	Thallium (Tl)-Dissolved (mg/L)	0.000020	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	0.00015	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.00117	0.000450	0.00116	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0026	<0.0010	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2450173-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2450173-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Kirsti Medig

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5095404							
WG3327856-14	LCS							
Acidity (as CaCO3)			103.3		%		85-115	22-MAY-20
WG3327856-13	MB							
Acidity (as CaCO3)			1.6		mg/L		2	22-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5097136							
WG3328697-5	LCS							
Alkalinity, Total (as CaCO3)			105.6		%		85-115	24-MAY-20
WG3328697-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-MAY-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5099432							
WG3330117-2	LCS	TMRM						
Beryllium (Be)-Dissolved			101.3		%		80-120	27-MAY-20
WG3330117-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-MAY-20
BIC-CL								
	Water							
Batch	R5097136							
WG3328697-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5098769							
WG3329308-6	LCS							
Bromide (Br)			102.8		%		85-115	23-MAY-20
WG3329308-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5099191							
WG3329869-10	LCS							
Dissolved Organic Carbon			92.7		%		80-120	26-MAY-20
WG3329869-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5099191							
WG3329869-10 LCS								
Total Organic Carbon			96.3		%		80-120	26-MAY-20
WG3329869-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
CL-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6 LCS								
Chloride (Cl)			100.9		%		90-110	23-MAY-20
WG3329308-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-MAY-20
CO3-CL	Water							
Batch	R5097136							
WG3328697-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-MAY-20
EC-L-PCT-CL	Water							
Batch	R5097136							
WG3328697-5 LCS								
Conductivity (@ 25C)			93.1		%		90-110	24-MAY-20
WG3328697-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-MAY-20
F-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6 LCS								
Fluoride (F)			104.7		%		90-110	23-MAY-20
WG3329308-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-MAY-20
HG-D-CVAA-CL	Water							
Batch	R5098787							
WG3329359-2 LCS								
Mercury (Hg)-Dissolved			109.0		%		80-120	26-MAY-20
WG3329359-6 LCS								
Mercury (Hg)-Dissolved			112.0		%		80-120	26-MAY-20
WG3329359-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-MAY-20
WG3329359-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-MAY-20



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5099432							
WG3330117-2	LCS	TMRM						
Aluminum (Al)-Dissolved			103.9		%		80-120	27-MAY-20
Antimony (Sb)-Dissolved			100.8		%		80-120	27-MAY-20
Arsenic (As)-Dissolved			102.6		%		80-120	27-MAY-20
Barium (Ba)-Dissolved			105.3		%		80-120	27-MAY-20
Bismuth (Bi)-Dissolved			102.6		%		80-120	27-MAY-20
Boron (B)-Dissolved			88.6		%		80-120	27-MAY-20
Cadmium (Cd)-Dissolved			104.5		%		80-120	27-MAY-20
Calcium (Ca)-Dissolved			100.9		%		80-120	27-MAY-20
Chromium (Cr)-Dissolved			101.3		%		80-120	27-MAY-20
Cobalt (Co)-Dissolved			103.4		%		80-120	27-MAY-20
Copper (Cu)-Dissolved			101.5		%		80-120	27-MAY-20
Iron (Fe)-Dissolved			108.1		%		80-120	27-MAY-20
Lead (Pb)-Dissolved			103.0		%		80-120	27-MAY-20
Lithium (Li)-Dissolved			101.0		%		80-120	27-MAY-20
Magnesium (Mg)-Dissolved			103.6		%		80-120	27-MAY-20
Manganese (Mn)-Dissolved			105.0		%		80-120	27-MAY-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	27-MAY-20
Nickel (Ni)-Dissolved			101.3		%		80-120	27-MAY-20
Phosphorus (P)-Dissolved			104.8		%		70-130	27-MAY-20
Potassium (K)-Dissolved			100.9		%		80-120	27-MAY-20
Selenium (Se)-Dissolved			100.4		%		80-120	27-MAY-20
Silicon (Si)-Dissolved			101.6		%		60-140	27-MAY-20
Silver (Ag)-Dissolved			101.5		%		80-120	27-MAY-20
Sodium (Na)-Dissolved			99.9		%		80-120	27-MAY-20
Strontium (Sr)-Dissolved			102.7		%		80-120	27-MAY-20
Sulfur (S)-Dissolved			95.1		%		80-120	27-MAY-20
Thallium (Tl)-Dissolved			102.6		%		80-120	27-MAY-20
Tin (Sn)-Dissolved			101.8		%		80-120	27-MAY-20
Titanium (Ti)-Dissolved			103.6		%		80-120	27-MAY-20
Uranium (U)-Dissolved			104.8		%		80-120	27-MAY-20
Vanadium (V)-Dissolved			102.8		%		80-120	27-MAY-20
Zinc (Zn)-Dissolved			103.6		%		80-120	27-MAY-20
Zirconium (Zr)-Dissolved			99.3		%		80-120	27-MAY-20
WG3330117-1	MB							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5099432							
WG3330117-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-MAY-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20

NH3-L-F-CL

Water



Quality Control Report

Workorder: L2450173

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5099747								
WG3330212-38	LCS							
Ammonia as N			100.7		%		85-115	27-MAY-20
WG3330212-54	LCS							
Ammonia as N			98.8		%		85-115	27-MAY-20
WG3330212-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
WG3330212-53	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
NO2-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrite (as N)			98.5		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-MAY-20
NO3-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrate (as N)			102.0		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-MAY-20
OH-CL								
Water								
Batch R5097136								
WG3328697-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-MAY-20
ORP-CL								
Water								
Batch R5100136								
WG3330985-1	CRM	CL-ORP						
ORP			224		mV		210-230	28-MAY-20
P-T-L-COL-CL								
Water								
Batch R5098761								
WG3329209-6	LCS							
Phosphorus (P)-Total			107.9		%		80-120	26-MAY-20
WG3329209-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-MAY-20
PH-CL								
Water								



Quality Control Report

Workorder: L2450173

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5097136							
WG3328697-5	LCS							
pH			6.98		pH		6.9-7.1	24-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5094759							
WG3326869-15	LCS							
Orthophosphate-Dissolved (as P)			107.5		%		80-120	21-MAY-20
WG3326869-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-MAY-20
SO4-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6	LCS							
Sulfate (SO4)			104.6		%		90-110	23-MAY-20
WG3329308-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5099604							
WG3328958-21	DUP	L2450173-1						
Total Dissolved Solids		393	415		mg/L	5.6	20	26-MAY-20
WG3328958-20	LCS							
Total Dissolved Solids			102.8		%		85-115	26-MAY-20
WG3328958-19	MB							
Total Dissolved Solids			<10		mg/L		10	26-MAY-20
TKN-L-F-CL	Water							
Batch	R5099526							
WG3330275-10	LCS							
Total Kjeldahl Nitrogen			79.0		%		75-125	27-MAY-20
WG3330275-14	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-18	LCS							
Total Kjeldahl Nitrogen			84.0		%		75-125	27-MAY-20
WG3330275-2	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	27-MAY-20
WG3330275-22	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-28	LCS							
Total Kjeldahl Nitrogen			84.5		%		75-125	27-MAY-20
WG3330275-32	LCS							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-32	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	27-MAY-20
WG3330275-36	LCS							
Total Kjeldahl Nitrogen			86.7		%		75-125	27-MAY-20
WG3330275-40	LCS							
Total Kjeldahl Nitrogen			88.8		%		75-125	27-MAY-20
WG3330275-6	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	27-MAY-20
WG3330275-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-31	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-39	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
TSS-L-CL		Water						
Batch	R5099537							
WG3328959-14	LCS							
Total Suspended Solids			105.1		%		85-115	26-MAY-20
WG3328959-13	MB							
Total Suspended Solids			<1.0		mg/L		1	26-MAY-20
TURBIDITY-CL		Water						



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5095522							
WG3327876-5	LCS							
Turbidity			103.5		%		85-115	23-MAY-20
WG3327876-4	MB							
Turbidity			<0.10		NTU		0.1	23-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-MAY-20 12:45	28-MAY-20 06:30	0.25	186	hours	EHTR-FM
	2	20-MAY-20 10:55	28-MAY-20 06:30	0.25	188	hours	EHTR-FM
	3	20-MAY-20 09:45	28-MAY-20 06:30	0.25	189	hours	EHTR-FM
pH	1	20-MAY-20 12:45	24-MAY-20 15:00	0.25	98	hours	EHTR-FM
	2	20-MAY-20 10:55	24-MAY-20 15:00	0.25	100	hours	EHTR-FM
	3	20-MAY-20 09:45	24-MAY-20 15:00	0.25	101	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450173 were received on 21-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2450173-COFC-

Report To: Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																	
Company: SNC-Lavalin ~Cranbrook		Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Kirsti Medig		Quality Control (QC) Report with Report <input type="checkbox"/> NO		Priority (Business Days)			EMERGENCY														
Phone: Cell.: 250.421.9408		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box		4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% <input type="checkbox"/>														
Street: 4500 Mennie Road		Emails: SNC - 'Kirsti.Medig', 'Vicky.Lipinski'		2 day [P2-50%] <input type="checkbox"/>			(Laboratory opening fees may apply)]														
City/Province: Cranbrook, BC		@sncilavalin.com		Date and Time Required for all E&P TATs:																	
Postal Code: V1C 4J6		Teck - 'Cam.Jaeger', 'Jennifer.DeWerk' @teck.com		For tests that can not be performed according to the service level selected, you will be contacted.																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Analysis Request																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Company:		Emails: Kirsti.Medig@sncilavalin.com		F/P P F/P																	
Contact:		payables@sncilavalin.com		DOC (C-DIS-ORG-LOW-CL)																	
Project Information		Oil and Gas Required Fields (client use)		TOC (C-TOT-ORG-LOW-CL)																	
ALS Account # / Quote #:		AFE/Cost Center: PO#		BCMDG D-Met +Hg (MET-D-BCMDG-CL)																	
Job #: RGMP		Major/Minor Code: Routing Code:		Total N Calc. (N-T-CALC-CL)																	
PO / AFE: 62917 672225		Requisitioner:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
LSD:		Location:		Teck Routine (TECKCOAL-ROUTINE-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		TKN (TKN-L-F-CL)																	
		Sampler: MTB		Bicarbonate (BIC-CL)																	
				Carbonate (CO3-CL)																	
				Hydroxide (OH-CL)																	
				SAMPLES ON HOLD																	
				Sample is hazardous (please provide further details)																	
				NUMBER OF CONTAINERS																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type											
		EV_MW_SP1A_WG_2020_NP		EV_MW_SP1A																	
		EV_MW_SP1B_WG_2020_NP		EV_MW_SP1B																	
		EV_MW_SP1C_WG_2020_NP		EV_MW_SP1C																	
		EV_MW_MCgwA_WG_2020_05_20_NP		EV_MW_MCgwA		20-MAY-20		12:45		Water											
		EV_MW_MCgwB_WG_2020_05_20_NP		EV_MW_MCgwB																	
		LC_MW_ER4A_WG_2020_05_20_NP		LC_MW_ER4A		20-MAY-20		10:55		Water											
		LC_MW_ER4B_WG_2020_05_20_NP		LC_MW_ER4B		20-MAY-20		9:45		Water											
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System? <input type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input type="checkbox"/>		Teck Facility Name: Regional EVO		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
		FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input checked="" type="checkbox"/>																	
				INITIAL COOLER TEMPERATURES °C																	
				FINAL COOLER TEMPERATURES °C																	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																	
Released by: MARC BEATON		Date: MAY 20/2020		Received by: [Signature]		Date: 5/21		Received by: [Signature]		Date:											
Time: 14:00																					



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 28-MAY-20
Report Date: 21-DEC-20 18:00 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2453223
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: PIZP1104-Q2
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2453223-1.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2453223-1 LC_PIZP1104_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 27-MAY-20 @ 10:40							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	305		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	0.64		0.50	mg/L		03-JUN-20	R5106800
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.071		0.050	mg/L		01-JUN-20	R5103017
Total Organic Carbon	2.02		0.50	mg/L		03-JUN-20	R5106800
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-JUN-20	03-JUN-20	R5104319
Dissolved Metals Filtration Location	FIELD					02-JUN-20	R5103649
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-JUN-20	05-JUN-20	R5109296
Dissolved Mercury Filtration Location	FIELD					05-JUN-20	R5108939
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-JUN-20	R5103649
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-JUN-20	03-JUN-20	R5104319
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Arsenic (As)-Dissolved	0.00041		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Barium (Ba)-Dissolved	0.233		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-JUN-20	03-JUN-20	R5104319
Boron (B)-Dissolved	0.024		0.010	mg/L	02-JUN-20	03-JUN-20	R5104319
Cadmium (Cd)-Dissolved	0.0199		0.0050	ug/L	02-JUN-20	03-JUN-20	R5104319
Calcium (Ca)-Dissolved	140		0.050	mg/L	02-JUN-20	03-JUN-20	R5104319
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Cobalt (Co)-Dissolved	0.76		0.10	ug/L	02-JUN-20	03-JUN-20	R5104319
Copper (Cu)-Dissolved	0.00043		0.00020	mg/L	02-JUN-20	03-JUN-20	R5104319
Iron (Fe)-Dissolved	0.549		0.010	mg/L	02-JUN-20	03-JUN-20	R5104319
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-JUN-20	03-JUN-20	R5104319
Lithium (Li)-Dissolved	0.0229		0.0010	mg/L	02-JUN-20	03-JUN-20	R5104319
Magnesium (Mg)-Dissolved	47.1		0.10	mg/L	02-JUN-20	03-JUN-20	R5104319
Manganese (Mn)-Dissolved	0.395		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Molybdenum (Mo)-Dissolved	0.00163		0.000050	mg/L	02-JUN-20	03-JUN-20	R5104319
Nickel (Ni)-Dissolved	0.00159		0.00050	mg/L	02-JUN-20	03-JUN-20	R5104319
Potassium (K)-Dissolved	2.91		0.050	mg/L	02-JUN-20	03-JUN-20	R5104319
Selenium (Se)-Dissolved	0.155		0.050	ug/L	02-JUN-20	03-JUN-20	R5104319
Silicon (Si)-Dissolved	4.20		0.050	mg/L	02-JUN-20	03-JUN-20	R5104319
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-JUN-20	03-JUN-20	R5104319
Sodium (Na)-Dissolved	15.2		0.050	mg/L	02-JUN-20	03-JUN-20	R5104319
Strontium (Sr)-Dissolved	0.498		0.00020	mg/L	02-JUN-20	03-JUN-20	R5104319
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	02-JUN-20	03-JUN-20	R5104319
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-JUN-20	03-JUN-20	R5104319
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-JUN-20	03-JUN-20	R5104319
Uranium (U)-Dissolved	0.00283		0.000010	mg/L	02-JUN-20	03-JUN-20	R5104319
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-JUN-20	03-JUN-20	R5104319
Zinc (Zn)-Dissolved	0.0029		0.0010	mg/L	02-JUN-20	03-JUN-20	R5104319
Hardness							
Hardness (as CaCO3)	544		0.50	mg/L		03-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.038		0.020	ug/L		01-JUN-20	R5102637
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2453223-1 LC_PIZP1104_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 27-MAY-20 @ 10:40							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.574		0.0030	mg/L		01-JUN-20	R5102637
Antimony (Sb)-Total	0.00012		0.00010	mg/L		01-JUN-20	R5102637
Arsenic (As)-Total	0.00082		0.00010	mg/L		01-JUN-20	R5102637
Barium (Ba)-Total	0.252		0.00010	mg/L		01-JUN-20	R5102637
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-JUN-20	R5102637
Boron (B)-Total	0.024		0.010	mg/L		01-JUN-20	R5102637
Cadmium (Cd)-Total	0.108		0.0050	ug/L		01-JUN-20	R5102637
Calcium (Ca)-Total	143		0.050	mg/L		01-JUN-20	R5102637
Chromium (Cr)-Total	0.00129		0.00010	mg/L		01-JUN-20	R5102637
Cobalt (Co)-Total	1.08		0.10	ug/L		01-JUN-20	R5102637
Copper (Cu)-Total	0.00157		0.00050	mg/L		01-JUN-20	R5102637
Iron (Fe)-Total	1.69		0.010	mg/L		01-JUN-20	R5102637
Lead (Pb)-Total	0.000556		0.000050	mg/L		01-JUN-20	R5102637
Lithium (Li)-Total	0.0229		0.0010	mg/L		01-JUN-20	R5102637
Magnesium (Mg)-Total	47.1		0.10	mg/L		01-JUN-20	R5102637
Manganese (Mn)-Total	0.445		0.00010	mg/L		01-JUN-20	R5102637
Molybdenum (Mo)-Total	0.00141		0.000050	mg/L		01-JUN-20	R5102637
Nickel (Ni)-Total	0.00296		0.00050	mg/L		01-JUN-20	R5102637
Potassium (K)-Total	2.98		0.050	mg/L		01-JUN-20	R5102637
Selenium (Se)-Total	0.137		0.050	ug/L		01-JUN-20	R5102637
Silicon (Si)-Total	5.19		0.10	mg/L		01-JUN-20	R5102637
Silver (Ag)-Total	0.000017		0.000010	mg/L		01-JUN-20	R5102637
Sodium (Na)-Total	15.0		0.050	mg/L		01-JUN-20	R5102637
Strontium (Sr)-Total	0.479		0.00020	mg/L		01-JUN-20	R5102637
Thallium (Tl)-Total	0.000034		0.000010	mg/L		01-JUN-20	R5102637
Tin (Sn)-Total	0.00010		0.00010	mg/L		01-JUN-20	R5102637
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-JUN-20	R5102637
Uranium (U)-Total	0.00301		0.000010	mg/L		01-JUN-20	R5102637
Vanadium (V)-Total	0.00212		0.00050	mg/L		01-JUN-20	R5102637
Zinc (Zn)-Total	0.0080		0.0030	mg/L		01-JUN-20	R5102637
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	10.0		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	250		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	250		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0062		0.0050	mg/L		04-JUN-20	R5108000
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.75	DLHC	0.25	mg/L		29-MAY-20	R5102198
Chloride in Water by IC							
Chloride (Cl)	236	DLHC	2.5	mg/L		29-MAY-20	R5102198
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1090		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		29-MAY-20	R5102198
Ion Balance Calculation							
Ion Balance	88.6		-100	%		03-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-6.1			%		03-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2453223-1 LC_PIZP1104_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 27-MAY-20 @ 10:40							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	13.2			meq/L		03-JUN-20	
Cation Sum	11.7			meq/L		03-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.439	DLHC	0.025	mg/L		29-MAY-20	R5102198
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAY-20	R5102198
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		28-MAY-20	R5100319
Oxidation redution potential by elect.							
ORP	318		-1000	mV		04-JUN-20	R5107817
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0833		0.0020	mg/L		01-JUN-20	R5102855
Sulfate in Water by IC							
Sulfate (SO4)	71.3	DLHC	1.5	mg/L		29-MAY-20	R5102198
Total Dissolved Solids							
Total Dissolved Solids	801	DLHC	20	mg/L		02-JUN-20	R5105244
Total Suspended Solids							
Total Suspended Solids	43.7		1.0	mg/L		02-JUN-20	R5105582
Turbidity							
Turbidity	32.9		0.10	NTU		30-MAY-20	R5102327
pH							
pH	7.81		0.10	pH		02-JUN-20	R5103909

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

PIZP1104-Q2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2453223

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-5	LCS							
Acidity (as CaCO3)			101.4		%		85-115	02-JUN-20
WG3334185-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-5	LCS							
Alkalinity, Total (as CaCO3)			102.3		%		85-115	02-JUN-20
WG3334218-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5104319							
WG3333854-2	LCS							
Beryllium (Be)-Dissolved			95.7		%		80-120	03-JUN-20
WG3333854-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5102637							
WG3332341-2	LCS							
Beryllium (Be)-Total			101.2		%		80-120	01-JUN-20
WG3332341-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-JUN-20
WG3332341-4	MS	L2453223-1						
Beryllium (Be)-Total			98.8		%		70-130	01-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5102198							
WG3332089-10	LCS							
Bromide (Br)			103.1		%		85-115	29-MAY-20
WG3332089-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2453223

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5106800							
WG3335106-6 LCS								
Dissolved Organic Carbon			91.2		%		80-120	03-JUN-20
WG3335106-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5106800							
WG3335106-6 LCS								
Total Organic Carbon			90.1		%		80-120	03-JUN-20
WG3335106-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	03-JUN-20
CL-IC-N-CL	Water							
Batch	R5102198							
WG3332089-10 LCS								
Chloride (Cl)			100.4		%		90-110	29-MAY-20
WG3332089-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	29-MAY-20
CO3-CL	Water							
Batch	R5103909							
WG3334218-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL	Water							
Batch	R5103909							
WG3334218-5 LCS								
Conductivity (@ 25C)			98.4		%		90-110	02-JUN-20
WG3334218-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20
F-IC-N-CL	Water							
Batch	R5102198							
WG3332089-10 LCS								
Fluoride (F)			105.7		%		90-110	29-MAY-20
WG3332089-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	29-MAY-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2453223

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5109296							
WG3335928-6	LCS							
Mercury (Hg)-Dissolved			103.4		%		80-120	05-JUN-20
WG3335928-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-JUN-20
MET-D-CCMS-VA								
	Water							
Batch	R5104319							
WG3333854-2	LCS							
Aluminum (Al)-Dissolved			101.1		%		80-120	03-JUN-20
Antimony (Sb)-Dissolved			106.8		%		80-120	03-JUN-20
Arsenic (As)-Dissolved			102.7		%		80-120	03-JUN-20
Barium (Ba)-Dissolved			99.2		%		80-120	03-JUN-20
Bismuth (Bi)-Dissolved			95.0		%		80-120	03-JUN-20
Boron (B)-Dissolved			91.4		%		80-120	03-JUN-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	03-JUN-20
Calcium (Ca)-Dissolved			99.1		%		80-120	03-JUN-20
Chromium (Cr)-Dissolved			100.5		%		80-120	03-JUN-20
Cobalt (Co)-Dissolved			101.0		%		80-120	03-JUN-20
Copper (Cu)-Dissolved			99.0		%		80-120	03-JUN-20
Iron (Fe)-Dissolved			98.0		%		80-120	03-JUN-20
Lead (Pb)-Dissolved			98.0		%		80-120	03-JUN-20
Lithium (Li)-Dissolved			95.3		%		80-120	03-JUN-20
Magnesium (Mg)-Dissolved			99.8		%		80-120	03-JUN-20
Manganese (Mn)-Dissolved			99.2		%		80-120	03-JUN-20
Molybdenum (Mo)-Dissolved			110.6		%		80-120	03-JUN-20
Nickel (Ni)-Dissolved			97.7		%		80-120	03-JUN-20
Potassium (K)-Dissolved			100.2		%		80-120	03-JUN-20
Selenium (Se)-Dissolved			98.7		%		80-120	03-JUN-20
Silicon (Si)-Dissolved			93.5		%		60-140	03-JUN-20
Silver (Ag)-Dissolved			104.8		%		80-120	03-JUN-20
Sodium (Na)-Dissolved			101.8		%		80-120	03-JUN-20
Strontium (Sr)-Dissolved			109.0		%		80-120	03-JUN-20
Thallium (Tl)-Dissolved			99.4		%		80-120	03-JUN-20
Tin (Sn)-Dissolved			99.3		%		80-120	03-JUN-20
Titanium (Ti)-Dissolved			97.0		%		80-120	03-JUN-20
Uranium (U)-Dissolved			100.5		%		80-120	03-JUN-20



Quality Control Report

Workorder: L2453223

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5104319							
WG3333854-2	LCS							
Vanadium (V)-Dissolved			101.5		%		80-120	03-JUN-20
Zinc (Zn)-Dissolved			103.0		%		80-120	03-JUN-20
WG3333854-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-JUN-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5102637							
WG3332341-2 LCS								
Aluminum (Al)-Total			100.0		%		80-120	01-JUN-20
Antimony (Sb)-Total			96.9		%		80-120	01-JUN-20
Arsenic (As)-Total			96.6		%		80-120	01-JUN-20
Barium (Ba)-Total			99.9		%		80-120	01-JUN-20
Bismuth (Bi)-Total			93.0		%		80-120	01-JUN-20
Boron (B)-Total			94.5		%		80-120	01-JUN-20
Cadmium (Cd)-Total			99.6		%		80-120	01-JUN-20
Calcium (Ca)-Total			100.1		%		80-120	01-JUN-20
Chromium (Cr)-Total			96.9		%		80-120	01-JUN-20
Cobalt (Co)-Total			96.4		%		80-120	01-JUN-20
Copper (Cu)-Total			99.5		%		80-120	01-JUN-20
Iron (Fe)-Total			94.6		%		80-120	01-JUN-20
Lead (Pb)-Total			98.4		%		80-120	01-JUN-20
Lithium (Li)-Total			99.4		%		80-120	01-JUN-20
Magnesium (Mg)-Total			98.9		%		80-120	01-JUN-20
Manganese (Mn)-Total			98.6		%		80-120	01-JUN-20
Molybdenum (Mo)-Total			97.8		%		80-120	01-JUN-20
Nickel (Ni)-Total			97.8		%		80-120	01-JUN-20
Potassium (K)-Total			98.4		%		80-120	01-JUN-20
Selenium (Se)-Total			99.9		%		80-120	01-JUN-20
Silicon (Si)-Total			95.7		%		80-120	01-JUN-20
Silver (Ag)-Total			94.8		%		80-120	01-JUN-20
Sodium (Na)-Total			99.3		%		80-120	01-JUN-20
Strontium (Sr)-Total			96.6		%		80-120	01-JUN-20
Thallium (Tl)-Total			85.1		%		80-120	01-JUN-20
Tin (Sn)-Total			98.0		%		80-120	01-JUN-20
Titanium (Ti)-Total			97.8		%		80-120	01-JUN-20
Uranium (U)-Total			99.3		%		80-120	01-JUN-20
Vanadium (V)-Total			96.5		%		80-120	01-JUN-20
Zinc (Zn)-Total			100.0		%		80-120	01-JUN-20
WG3332341-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5102637							
WG3332341-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	01-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	01-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	01-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	01-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	01-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-JUN-20
WG3332341-4	MS	L2453223-1						
Aluminum (Al)-Total			N/A	MS-B	%		-	01-JUN-20
Antimony (Sb)-Total			98.3		%		70-130	01-JUN-20
Arsenic (As)-Total			98.2		%		70-130	01-JUN-20
Barium (Ba)-Total			N/A	MS-B	%		-	01-JUN-20
Bismuth (Bi)-Total			90.5		%		70-130	01-JUN-20
Boron (B)-Total			97.9		%		70-130	01-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5102637							
WG3332341-4	MS	L2453223-1						
Cadmium (Cd)-Total			98.9		%		70-130	01-JUN-20
Calcium (Ca)-Total			N/A	MS-B	%		-	01-JUN-20
Chromium (Cr)-Total			95.7		%		70-130	01-JUN-20
Cobalt (Co)-Total			91.9		%		70-130	01-JUN-20
Copper (Cu)-Total			90.7		%		70-130	01-JUN-20
Iron (Fe)-Total			91.8		%		70-130	01-JUN-20
Lead (Pb)-Total			91.0		%		70-130	01-JUN-20
Lithium (Li)-Total			101.6		%		70-130	01-JUN-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	01-JUN-20
Manganese (Mn)-Total			N/A	MS-B	%		-	01-JUN-20
Molybdenum (Mo)-Total			99.3		%		70-130	01-JUN-20
Nickel (Ni)-Total			91.9		%		70-130	01-JUN-20
Potassium (K)-Total			96.9		%		70-130	01-JUN-20
Selenium (Se)-Total			98.9		%		70-130	01-JUN-20
Silicon (Si)-Total			90.9		%		70-130	01-JUN-20
Silver (Ag)-Total			92.2		%		70-130	01-JUN-20
Sodium (Na)-Total			N/A	MS-B	%		-	01-JUN-20
Strontium (Sr)-Total			N/A	MS-B	%		-	01-JUN-20
Thallium (Tl)-Total			87.9		%		70-130	01-JUN-20
Tin (Sn)-Total			99.4		%		70-130	01-JUN-20
Titanium (Ti)-Total			113.0		%		70-130	01-JUN-20
Uranium (U)-Total			93.9		%		70-130	01-JUN-20
Vanadium (V)-Total			96.3		%		70-130	01-JUN-20
Zinc (Zn)-Total			92.3		%		70-130	01-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5108000							
WG3335569-39	DUP	L2453223-1						
Ammonia as N		0.0062	0.0066		mg/L	6.3	20	04-JUN-20
WG3335569-38	LCS							
Ammonia as N			98.5		%		85-115	04-JUN-20
WG3335569-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-JUN-20
WG3335569-40	MS	L2453223-1						
Ammonia as N			123.3		%		75-125	04-JUN-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5102198							
WG3332089-10 LCS								
Nitrite (as N)			106.8		%		90-110	29-MAY-20
WG3332089-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5102198							
WG3332089-10 LCS								
Nitrate (as N)			109.9		%		90-110	29-MAY-20
WG3332089-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAY-20
OH-CL	Water							
Batch	R5103909							
WG3334218-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL	Water							
Batch	R5107817							
WG3335568-5 CRM		CL-ORP						
ORP			220		mV		210-230	04-JUN-20
P-T-L-COL-CL	Water							
Batch	R5102855							
WG3332850-34 LCS								
Phosphorus (P)-Total			101.2		%		80-120	01-JUN-20
WG3332850-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-JUN-20
PH-CL	Water							
Batch	R5103909							
WG3334218-5 LCS								
pH			6.99		pH		6.9-7.1	02-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5100319							
WG3331067-14 LCS								
Orthophosphate-Dissolved (as P)			105.3		%		80-120	28-MAY-20
WG3331067-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5102198							
WG3332089-10 LCS								
Sulfate (SO4)			101.8		%		90-110	29-MAY-20
WG3332089-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5105244							
WG3333304-23 LCS								
Total Dissolved Solids			101.6		%		85-115	02-JUN-20
WG3333304-22 MB								
Total Dissolved Solids			<10		mg/L		10	02-JUN-20
TKN-L-F-CL	Water							
Batch	R5103017							
WG3333058-10 LCS								
Total Kjeldahl Nitrogen			85.0		%		75-125	01-JUN-20
WG3333058-14 LCS								
Total Kjeldahl Nitrogen			81.0		%		75-125	01-JUN-20
WG3333058-18 LCS								
Total Kjeldahl Nitrogen			83.1		%		75-125	01-JUN-20
WG3333058-2 LCS								
Total Kjeldahl Nitrogen			83.5		%		75-125	01-JUN-20
WG3333058-22 LCS								
Total Kjeldahl Nitrogen			82.0		%		75-125	01-JUN-20
WG3333058-26 LCS								
Total Kjeldahl Nitrogen			83.1		%		75-125	01-JUN-20
WG3333058-30 LCS								
Total Kjeldahl Nitrogen			81.0		%		75-125	01-JUN-20
WG3333058-6 LCS								
Total Kjeldahl Nitrogen			82.2		%		75-125	01-JUN-20
WG3333058-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-25 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5103017							
WG3333058-29 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
WG3333058-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-JUN-20
TSS-L-CL		Water						
Batch	R5105582							
WG3333306-12 LCS								
Total Suspended Solids			109.6		%		85-115	02-JUN-20
WG3333306-11 MB								
Total Suspended Solids			<1.0		mg/L		1	02-JUN-20
TURBIDITY-CL		Water						
Batch	R5102327							
WG3332171-5 LCS								
Turbidity			104.5		%		85-115	30-MAY-20
WG3332171-4 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	27-MAY-20 10:40	04-JUN-20 13:00	0.25	194	hours	EHTR-FM
pH	1	27-MAY-20 10:40	02-JUN-20 13:00	0.25	146	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2453223 were received on 28-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **PIZP1104-Q2** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.com	x	x	
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholas@teck.com	x	x	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643			
Phone Number	250-425-8478			Phone Number	403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	Y	N	Y	Y	N	N	NAHSO ₄	HCL					
								ALSO ₄	H2SO4	HCl	HNO3	HNO3	NONE	NAHSO ₄	HCL						
								ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-EPH	HG-T-CVAF-VA						
LC_PIZP1104_WG_Q2-2020_NP	LC_PIZP1104	WG		27-May	10:40	G	6	1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Samples are field filtered and preserved	D.Tymstra	27-May	<i>[Signature]</i>	5/28/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/>	D. Tymstra		
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			May 27, 2020

[Handwritten Signature]



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 29-MAY-20
Report Date: 18-DEC-20 17:36 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2454041
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_Q2_WG_2020-05-28
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:42

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454041-1 LC_PIZDC1404S_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 11:27							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	232		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	8.2		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	2.36		0.50	mg/L		05-JUN-20	R5110204
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	0.063		0.050	mg/L		04-JUN-20	R5109938
Total Organic Carbon	2.75		0.50	mg/L		05-JUN-20	R5110204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-JUN-20	06-JUN-20	R5110081
Dissolved Mercury Filtration Location	FIELD					05-JUN-20	R5109958
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					04-JUN-20	R5108797
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00231		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	0.241		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	54.7		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.36		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496
Copper (Cu)-Dissolved	0.00411	DTC	0.00020	mg/L	04-JUN-20	04-JUN-20	R5107957
Iron (Fe)-Dissolved	0.939		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000156		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.0061		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	18.2		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.0319		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.00352		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00188		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	1.54		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	04-JUN-20	04-JUN-20	R5107957
Silicon (Si)-Dissolved	3.16		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	0.929		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.0503		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.000580		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0038		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	211		0.50	mg/L		05-JUN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454041-1 LC_PIZDC1404S_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 11:27							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.285		0.0030	mg/L		05-JUN-20	R5109937
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00226		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	0.249		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0519		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	48.9		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	0.00059		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	0.39		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	1.14		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.00239		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.0054		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	18.5		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.0311		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.00328		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00222		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	1.49		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	<0.050		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	3.77		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	0.976		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.0478		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-20	R5107957
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.000562		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	0.00085		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	0.0049		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	190		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	13.6		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	0.0206		0.0050	mg/L		05-JUN-20	R5109816
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-20	R5104289
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		31-MAY-20	R5104289
Electrical Conductivity (EC)							
Conductivity (@ 25C)	339		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.153		0.020	mg/L		31-MAY-20	R5104289
Ion Balance Calculation							
Ion Balance	104		-100	%		05-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	2.1			%		05-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454041-1 LC_PIZDC1404S_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 11:27							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	4.17			meq/L		05-JUN-20	
Cation Sum	4.36			meq/L		05-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		31-MAY-20	R5104289
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-MAY-20	R5104289
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-MAY-20	R5102132
Oxidation redution potential by elect.							
ORP	276		-1000	mV		05-JUN-20	R5110031
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0100		0.0020	mg/L		02-JUN-20	R5103589
Sulfate in Water by IC							
Sulfate (SO4)	4.28		0.30	mg/L		31-MAY-20	R5104289
Total Dissolved Solids							
Total Dissolved Solids	224	DLHC	20	mg/L		04-JUN-20	R5110013
Total Suspended Solids							
Total Suspended Solids	8.6		1.0	mg/L		03-JUN-20	R5108476
Turbidity							
Turbidity	16.1		0.10	NTU		30-MAY-20	R5102327
pH							
pH	8.46		0.10	pH		02-JUN-20	R5103909
L2454041-2 LC_PIZDC1404D_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 12:23							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	537		5.0	mg/L		02-JUN-20	R5103909
Carbonate (CO3)	7.3		5.0	mg/L		02-JUN-20	R5103909
Dissolved Organic Carbon	2.24		0.50	mg/L		05-JUN-20	R5110204
Hydroxide (OH)	<5.0		5.0	mg/L		02-JUN-20	R5103909
Total Kjeldahl Nitrogen	2.43		0.050	mg/L		04-JUN-20	R5109938
Total Organic Carbon	3.20		0.50	mg/L		05-JUN-20	R5110204
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-JUN-20	04-JUN-20	R5108496
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-JUN-20	06-JUN-20	R5110081
Dissolved Mercury Filtration Location	FIELD					05-JUN-20	R5109958
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-JUN-20	R5105445
Aluminum (Al)-Dissolved	0.0055		0.0030	mg/L	03-JUN-20	04-JUN-20	R5108496
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Arsenic (As)-Dissolved	0.00348		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Barium (Ba)-Dissolved	4.60		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Boron (B)-Dissolved	0.022		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	03-JUN-20	04-JUN-20	R5108496
Calcium (Ca)-Dissolved	65.6		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Cobalt (Co)-Dissolved	0.28		0.10	ug/L	03-JUN-20	04-JUN-20	R5108496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454041-2 LC_PIZDC1404D_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 12:23							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Iron (Fe)-Dissolved	2.70		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Lead (Pb)-Dissolved	0.000160		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Lithium (Li)-Dissolved	0.692		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Magnesium (Mg)-Dissolved	41.5		0.10	mg/L	03-JUN-20	04-JUN-20	R5108496
Manganese (Mn)-Dissolved	0.0209		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Molybdenum (Mo)-Dissolved	0.0235		0.000050	mg/L	03-JUN-20	04-JUN-20	R5108496
Nickel (Ni)-Dissolved	0.00059		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Potassium (K)-Dissolved	27.6		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	03-JUN-20	04-JUN-20	R5108496
Silicon (Si)-Dissolved	2.60		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Sodium (Na)-Dissolved	42.9		0.050	mg/L	03-JUN-20	04-JUN-20	R5108496
Strontium (Sr)-Dissolved	0.258		0.00020	mg/L	03-JUN-20	04-JUN-20	R5108496
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-JUN-20	04-JUN-20	R5108496
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-JUN-20	04-JUN-20	R5108496
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-JUN-20	04-JUN-20	R5108496
Uranium (U)-Dissolved	0.000071		0.000010	mg/L	03-JUN-20	04-JUN-20	R5107957
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-JUN-20	04-JUN-20	R5108496
Zinc (Zn)-Dissolved	0.0140		0.0010	mg/L	03-JUN-20	04-JUN-20	R5108496
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	334		0.50	mg/L		05-JUN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.045		0.020	ug/L		04-JUN-20	R5107957
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.379		0.0030	mg/L		04-JUN-20	R5107957
Antimony (Sb)-Total	0.00025		0.00010	mg/L		04-JUN-20	R5107957
Arsenic (As)-Total	0.00348		0.00010	mg/L		04-JUN-20	R5107957
Barium (Ba)-Total	4.76		0.00010	mg/L		04-JUN-20	R5107957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-20	R5107957
Boron (B)-Total	0.023		0.010	mg/L		04-JUN-20	R5107957
Cadmium (Cd)-Total	0.0978		0.0050	ug/L		04-JUN-20	R5107957
Calcium (Ca)-Total	62.5		0.050	mg/L		04-JUN-20	R5107957
Chromium (Cr)-Total	0.00198		0.00010	mg/L		04-JUN-20	R5107957
Cobalt (Co)-Total	0.79		0.10	ug/L		04-JUN-20	R5107957
Copper (Cu)-Total	0.00343		0.00050	mg/L		04-JUN-20	R5107957
Iron (Fe)-Total	4.15		0.010	mg/L		04-JUN-20	R5107957
Lead (Pb)-Total	0.00101		0.000050	mg/L		04-JUN-20	R5107957
Lithium (Li)-Total	0.775		0.0010	mg/L		04-JUN-20	R5107957
Magnesium (Mg)-Total	44.5		0.10	mg/L		04-JUN-20	R5107957
Manganese (Mn)-Total	0.0363		0.00010	mg/L		04-JUN-20	R5107957
Molybdenum (Mo)-Total	0.0220		0.000050	mg/L		04-JUN-20	R5107957
Nickel (Ni)-Total	0.00287		0.00050	mg/L		04-JUN-20	R5107957
Potassium (K)-Total	25.5		0.050	mg/L		04-JUN-20	R5107957
Selenium (Se)-Total	0.071		0.050	ug/L		04-JUN-20	R5107957
Silicon (Si)-Total	3.84		0.10	mg/L		04-JUN-20	R5107957
Silver (Ag)-Total	0.000020		0.000010	mg/L		04-JUN-20	R5107957
Sodium (Na)-Total	43.5		0.050	mg/L		04-JUN-20	R5107957
Strontium (Sr)-Total	0.269		0.00020	mg/L		04-JUN-20	R5107957
Thallium (Tl)-Total	0.000016		0.000010	mg/L		04-JUN-20	R5107957
Tin (Sn)-Total	0.00022		0.00010	mg/L		04-JUN-20	R5107957

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2454041-2 LC_PIZDC1404D_WG_Q2-2020_NP							
Sampled By: SF/DT on 28-MAY-20 @ 12:23							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	0.011		0.010	mg/L		04-JUN-20	R5107957
Uranium (U)-Total	0.000136		0.000010	mg/L		04-JUN-20	R5107957
Vanadium (V)-Total	0.00259		0.00050	mg/L		04-JUN-20	R5107957
Zinc (Zn)-Total	0.0345		0.0030	mg/L		04-JUN-20	R5107957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103895
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	440		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Carbonate (as CaCO3)	12.2		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-JUN-20	R5103909
Alkalinity, Total (as CaCO3)	453		1.0	mg/L		02-JUN-20	R5103909
Ammonia, Total (as N)							
Ammonia as N	2.81	DLHC	0.050	mg/L		05-JUN-20	R5109816
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-20	R5104289
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		31-MAY-20	R5104289
Electrical Conductivity (EC)							
Conductivity (@ 25C)	714		2.0	uS/cm		02-JUN-20	R5103909
Fluoride in Water by IC							
Fluoride (F)	0.206		0.020	mg/L		31-MAY-20	R5104289
Ion Balance Calculation							
Ion Balance	104		-100	%		05-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		05-JUN-20	
Anion Sum	9.06			meq/L		05-JUN-20	
Cation Sum	9.40			meq/L		05-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		31-MAY-20	R5104289
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-MAY-20	R5104289
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-MAY-20	R5102132
Oxidation redution potential by elect.							
ORP	270		-1000	mV		05-JUN-20	R5110031
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0422		0.0020	mg/L		02-JUN-20	R5103589
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		31-MAY-20	R5104289
Total Dissolved Solids							
Total Dissolved Solids	437	DLHC	20	mg/L		04-JUN-20	R5110013
Total Suspended Solids							
Total Suspended Solids	40.1		1.0	mg/L		03-JUN-20	R5108476
Turbidity							
Turbidity	57.7		0.10	NTU		30-MAY-20	R5102327
pH							
pH	8.34		0.10	pH		02-JUN-20	R5103909

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_Q2_WG_2020-05-28

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2454041

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-17	LCS							
Acidity (as CaCO3)			101.6		%		85-115	02-JUN-20
WG3334185-16	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-17	LCS							
Alkalinity, Total (as CaCO3)			103.0		%		85-115	02-JUN-20
WG3334218-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-2	LCS							
Beryllium (Be)-Dissolved			95.0		%		80-120	04-JUN-20
WG3334633-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5107957							
WG3334570-3	DUP	L2454041-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	04-JUN-20
WG3334570-2	LCS							
Beryllium (Be)-Total			94.8		%		80-120	04-JUN-20
WG3334570-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	04-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5104289							
WG3334322-2	LCS							
Bromide (Br)			99.6		%		85-115	31-MAY-20
WG3334322-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5110204							
WG3336822-2	LCS							
Dissolved Organic Carbon			91.8		%		80-120	05-JUN-20
WG3336822-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5110204							
WG3336822-2	LCS							
Total Organic Carbon			88.3		%		80-120	05-JUN-20
WG3336822-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
CL-IC-N-CL	Water							
Batch	R5104289							
WG3334322-2	LCS							
Chloride (Cl)			104.5		%		90-110	31-MAY-20
WG3334322-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-20
CO3-CL	Water							
Batch	R5103909							
WG3334218-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL	Water							
Batch	R5103909							
WG3334218-17	LCS							
Conductivity (@ 25C)			101.8		%		90-110	02-JUN-20
WG3334218-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20
F-IC-N-CL	Water							
Batch	R5104289							
WG3334322-2	LCS							
Fluoride (F)			102.6		%		90-110	31-MAY-20
WG3334322-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5110081							
WG3336497-6	LCS							
Mercury (Hg)-Dissolved			99.95		%		80-120	06-JUN-20
WG3336497-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-JUN-20
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-2	LCS							
Aluminum (Al)-Dissolved			101.9		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			105.3		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			103.2		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			103.8		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			105.4		%		80-120	04-JUN-20
Boron (B)-Dissolved			91.7		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			104.7		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			101.6		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			102.9		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			104.0		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			103.3		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			102.0		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			100.1		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			105.8		%		80-120	04-JUN-20
Magnesium (Mg)-Dissolved			108.0		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			101.3		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			97.6		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			103.7		%		80-120	04-JUN-20
Potassium (K)-Dissolved			98.3		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			101.1		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			104.5		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			100.7		%		80-120	04-JUN-20
Sodium (Na)-Dissolved			106.8		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			110.9		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			101.9		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			98.0		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			97.4		%		80-120	04-JUN-20
Uranium (U)-Dissolved			99.4		%		80-120	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5107957							
WG3335806-2	LCS							
Vanadium (V)-Dissolved			105.9		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			100.9		%		80-120	04-JUN-20
WG3335806-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-2	LCS							
Aluminum (Al)-Dissolved			95.5		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			92.7		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			97.2		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			99.1		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	04-JUN-20
Boron (B)-Dissolved			86.5		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			107.1		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			97.3		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			98.3		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			97.6		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			90.0		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			97.3		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			95.6		%		80-120	04-JUN-20
Magnesium (Mg)-Dissolved			97.5		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			104.7		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			95.5		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			98.7		%		80-120	04-JUN-20
Potassium (K)-Dissolved			100.3		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			92.7		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			88.3		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			97.0		%		80-120	04-JUN-20
Sodium (Na)-Dissolved			98.8		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			95.0		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			98.1		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			95.3		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			100.4		%		80-120	04-JUN-20
Uranium (U)-Dissolved			98.2		%		80-120	04-JUN-20
Vanadium (V)-Dissolved			98.2		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			97.2		%		80-120	04-JUN-20
WG3334633-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3334633-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334570-3	DUP	L2454041-1						
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Arsenic (As)-Total		0.00226	0.00224		mg/L	1.1	20	04-JUN-20
Barium (Ba)-Total		0.249	0.247		mg/L	1.1	20	04-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334570-3	DUP	L2454041-1						
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Cadmium (Cd)-Total		0.0000519	0.0000529		mg/L	1.8	20	04-JUN-20
Calcium (Ca)-Total		48.9	49.0		mg/L	0.1	20	04-JUN-20
Chromium (Cr)-Total		0.00059	0.00078	J	mg/L	0.00019	0.0002	04-JUN-20
Cobalt (Co)-Total		0.00039	0.00039		mg/L	1.4	20	04-JUN-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-JUN-20
Iron (Fe)-Total		1.14	1.18		mg/L	3.0	20	04-JUN-20
Lead (Pb)-Total		0.00239	0.00240		mg/L	0.6	20	04-JUN-20
Lithium (Li)-Total		0.0054	0.0053		mg/L	0.4	20	04-JUN-20
Magnesium (Mg)-Total		18.5	18.2		mg/L	1.5	20	04-JUN-20
Manganese (Mn)-Total		0.0311	0.0312		mg/L	0.3	20	04-JUN-20
Molybdenum (Mo)-Total		0.00328	0.00335		mg/L	2.1	20	04-JUN-20
Nickel (Ni)-Total		0.00222	0.00229		mg/L	3.2	20	04-JUN-20
Potassium (K)-Total		1.49	1.50		mg/L	0.9	20	04-JUN-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-JUN-20
Silicon (Si)-Total		3.77	3.81		mg/L	1.3	20	04-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Sodium (Na)-Total		0.976	0.954		mg/L	2.2	20	04-JUN-20
Strontium (Sr)-Total		0.0478	0.0476		mg/L	0.4	20	04-JUN-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-JUN-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-JUN-20
Uranium (U)-Total		0.000562	0.000566		mg/L	0.6	20	04-JUN-20
Vanadium (V)-Total		0.00085	0.00098		mg/L	15	20	04-JUN-20
Zinc (Zn)-Total		0.0049	0.0046		mg/L	6.8	20	04-JUN-20
WG3334570-2	LCS							
Aluminum (Al)-Total			102.5		%		80-120	04-JUN-20
Antimony (Sb)-Total			103.5		%		80-120	04-JUN-20
Arsenic (As)-Total			99.6		%		80-120	04-JUN-20
Barium (Ba)-Total			102.2		%		80-120	04-JUN-20
Bismuth (Bi)-Total			103.0		%		80-120	04-JUN-20
Boron (B)-Total			93.4		%		80-120	04-JUN-20
Cadmium (Cd)-Total			99.5		%		80-120	04-JUN-20
Calcium (Ca)-Total			101.3		%		80-120	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5107957							
WG3334570-2 LCS								
Chromium (Cr)-Total			102.3		%		80-120	04-JUN-20
Cobalt (Co)-Total			101.6		%		80-120	04-JUN-20
Copper (Cu)-Total			100.9		%		80-120	04-JUN-20
Iron (Fe)-Total			99.6		%		80-120	04-JUN-20
Lead (Pb)-Total			98.9		%		80-120	04-JUN-20
Lithium (Li)-Total			109.8		%		80-120	04-JUN-20
Magnesium (Mg)-Total			106.5		%		80-120	04-JUN-20
Manganese (Mn)-Total			102.8		%		80-120	04-JUN-20
Molybdenum (Mo)-Total			97.3		%		80-120	04-JUN-20
Nickel (Ni)-Total			102.5		%		80-120	04-JUN-20
Potassium (K)-Total			98.2		%		80-120	04-JUN-20
Selenium (Se)-Total			99.9		%		80-120	04-JUN-20
Silicon (Si)-Total			96.9		%		80-120	04-JUN-20
Silver (Ag)-Total			98.2		%		80-120	04-JUN-20
Sodium (Na)-Total			107.8		%		80-120	04-JUN-20
Strontium (Sr)-Total			106.9		%		80-120	04-JUN-20
Thallium (Tl)-Total			99.4		%		80-120	04-JUN-20
Tin (Sn)-Total			97.0		%		80-120	04-JUN-20
Titanium (Ti)-Total			97.3		%		80-120	04-JUN-20
Uranium (U)-Total			98.2		%		80-120	04-JUN-20
Vanadium (V)-Total			103.5		%		80-120	04-JUN-20
Zinc (Zn)-Total			91.8		%		80-120	04-JUN-20
WG3334570-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	04-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5107957							
WG3334570-1	MB							
Iron (Fe)-Total			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	04-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-JUN-20
Batch	R5109937							
WG3335867-5	DUP	L2454041-1						
Aluminum (Al)-Total		0.285	0.317		mg/L	11	20	05-JUN-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-JUN-20
Arsenic (As)-Total		0.00226	0.00223		mg/L	1.8	20	05-JUN-20
Barium (Ba)-Total		0.249	0.224		mg/L	0.5	20	05-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-JUN-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-JUN-20
Cadmium (Cd)-Total		0.0000519	0.0000633		mg/L	13	20	05-JUN-20
Calcium (Ca)-Total		48.9	48.6		mg/L	3.3	20	05-JUN-20
Chromium (Cr)-Total		0.00059	0.00141		mg/L	18	20	05-JUN-20
Cobalt (Co)-Total		0.00039	0.00038		mg/L	1.6	20	05-JUN-20
Copper (Cu)-Total		<0.00050	0.00060		mg/L	2.1	20	05-JUN-20
Iron (Fe)-Total		1.14	1.21		mg/L	6.5	20	05-JUN-20
Lead (Pb)-Total		0.00239	0.00260		mg/L	1.9	20	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109937							
WG3335867-5	DUP	L2454041-1						
Lithium (Li)-Total		0.0054	0.0055		mg/L	3.4	20	05-JUN-20
Magnesium (Mg)-Total		18.5	16.7		mg/L	3.0	20	05-JUN-20
Manganese (Mn)-Total		0.0311	0.0315		mg/L	1.0	20	05-JUN-20
Molybdenum (Mo)-Total		0.00328	0.00360		mg/L	4.0	20	05-JUN-20
Nickel (Ni)-Total		0.00222	0.00245		mg/L	2.0	20	05-JUN-20
Potassium (K)-Total		1.49	1.55		mg/L	1.1	20	05-JUN-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-JUN-20
Silicon (Si)-Total		3.77	4.00		mg/L	4.4	20	05-JUN-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-JUN-20
Sodium (Na)-Total		0.976	0.913		mg/L	0.9	20	05-JUN-20
Strontium (Sr)-Total		0.0478	0.0463		mg/L	1.4	20	05-JUN-20
Thallium (Tl)-Total		<0.000010	0.000016		mg/L	2.3	20	05-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-JUN-20
Titanium (Ti)-Total		<0.010	0.010	RPD-NA	mg/L	N/A	20	05-JUN-20
Uranium (U)-Total		0.000562	0.000628		mg/L	3.0	20	05-JUN-20
Vanadium (V)-Total		0.00085	0.00168		mg/L	7.4	20	05-JUN-20
Zinc (Zn)-Total		0.0049	0.0053		mg/L	7.6	20	05-JUN-20
WG3335867-2								
LCS								
Aluminum (Al)-Total			103.4		%		80-120	05-JUN-20
Antimony (Sb)-Total			102.0		%		80-120	05-JUN-20
Arsenic (As)-Total			102.0		%		80-120	05-JUN-20
Barium (Ba)-Total			111.8		%		80-120	05-JUN-20
Bismuth (Bi)-Total			102.0		%		80-120	05-JUN-20
Boron (B)-Total			96.1		%		80-120	05-JUN-20
Cadmium (Cd)-Total			101.4		%		80-120	05-JUN-20
Calcium (Ca)-Total			104.8		%		80-120	05-JUN-20
Chromium (Cr)-Total			100.7		%		80-120	05-JUN-20
Cobalt (Co)-Total			98.9		%		80-120	05-JUN-20
Copper (Cu)-Total			100.5		%		80-120	05-JUN-20
Iron (Fe)-Total			101.0		%		80-120	05-JUN-20
Lead (Pb)-Total			104.3		%		80-120	05-JUN-20
Lithium (Li)-Total			101.0		%		80-120	05-JUN-20
Magnesium (Mg)-Total			99.3		%		80-120	05-JUN-20
Manganese (Mn)-Total			104.8		%		80-120	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5109937							
WG3335867-2	LCS							
Molybdenum (Mo)-Total			103.7		%		80-120	05-JUN-20
Nickel (Ni)-Total			99.9		%		80-120	05-JUN-20
Potassium (K)-Total			101.0		%		80-120	05-JUN-20
Selenium (Se)-Total			96.5		%		80-120	05-JUN-20
Silicon (Si)-Total			96.8		%		80-120	05-JUN-20
Silver (Ag)-Total			105.1		%		80-120	05-JUN-20
Sodium (Na)-Total			104.5		%		80-120	05-JUN-20
Strontium (Sr)-Total			109.0		%		80-120	05-JUN-20
Thallium (Tl)-Total			101.1		%		80-120	05-JUN-20
Tin (Sn)-Total			102.2		%		80-120	05-JUN-20
Titanium (Ti)-Total			98.6		%		80-120	05-JUN-20
Uranium (U)-Total			105.9		%		80-120	05-JUN-20
Vanadium (V)-Total			102.7		%		80-120	05-JUN-20
Zinc (Zn)-Total			95.1		%		80-120	05-JUN-20
WG3335867-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5109937							
WG3335867-1	MB							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUN-20
NH3-L-F-CL		Water						
Batch	R5109816							
WG3336368-30	LCS							
Ammonia as N			99.8		%		85-115	05-JUN-20
WG3336368-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-20
NO2-L-IC-N-CL		Water						
Batch	R5104289							
WG3334322-2	LCS							
Nitrite (as N)			101.7		%		90-110	31-MAY-20
WG3334322-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAY-20
NO3-L-IC-N-CL		Water						
Batch	R5104289							
WG3334322-2	LCS							
Nitrate (as N)			105.2		%		90-110	31-MAY-20
WG3334322-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAY-20
OH-CL		Water						
Batch	R5103909							
WG3334218-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL		Water						



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Workorder: L2454041

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5109938							
WG3336303-13	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	04-JUN-20
WG3336303-2	LCS							
Total Kjeldahl Nitrogen			89.5		%		75-125	04-JUN-20
WG3336303-6	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	04-JUN-20
WG3336303-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
TSS-L-CL		Water						
Batch	R5108476							
WG3334504-14	LCS							
Total Suspended Solids			99.3		%		85-115	03-JUN-20
WG3334504-13	MB							
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL		Water						
Batch	R5102327							
WG3332171-20	LCS							
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-19	MB							
Turbidity			<0.10		NTU		0.1	30-MAY-20

Quality Control Report

Workorder: L2454041

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2454041

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	28-MAY-20 11:27	05-JUN-20 11:00	0.25	192	hours	EHTR-FM
	2	28-MAY-20 12:23	05-JUN-20 09:30	0.25	189	hours	EHTR-FM
pH	1	28-MAY-20 11:27	02-JUN-20 13:00	0.25	121	hours	EHTR-FM
	2	28-MAY-20 12:23	02-JUN-20 13:00	0.25	121	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2454041 were received on 29-MAY-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	LC_Q2_WG_2020-05-28	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job#	Line Creek Operation		Lab Name	ALS Calgary	
Project Manager	Carla Froyman Parker		Lab Contact	Lyudmyla Shvets	
Email	carla.froymanparker@teck.com		Email	Lyudmyla.Shvets@ALSGlobal.com	
Address	Box 2003		Address	2559 29 Street NE	
	15km North Hwy 43				
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478			Postal Code	T1Y 7B5
				Country	Canada
				Phone Number	403 407 1794
				Report Format / Distribution	Excel PDF EDD
				Email 1:	carla.froymanparker@teck.com x
				Email 2:	teckcoal@equisonline.com x
				Email 3:	drake.tymstra@teck.com x
				Email 4:	shanise.fossen@teck.com x
				Email 4:	dominique.nicholas@teck.com x
				PO number	VPO00680643

SAMPLE DETAILS								ANALYSIS REQUESTED						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	N	N	N	N	N
								PREP	H2SO4	HCl	HNO3	HNO3	NONE	H2SO4
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC
LC_PIZDC1404S_WG_Q2-2020_NP	LC_PIZDC1404S	WG		28-May	11:27	G	6		1	1	1	1	1	1
LC_PIZDC1404D_WG_Q2-2020_NP	LC_PIZDC1404D	WG		28-May	12:23	G	6		1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S.Fossen/D.Tymstra	28-May	<i>[Signature]</i>	5/29/20

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	S.Fossen/D.Tymstra	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	May 28, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 03-JUN-20
Report Date: 29-DEC-20 12:19 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2456482
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: PIZP1105-Q2
Legal Site Desc:

Comments: Nitrate and Nitrite expired on sample L2456482-1.

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2456482-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456482-1 LC_PIZP1105_WG_Q2-2020_NP							
Sampled By: D. Tymstra on 02-JUN-20 @ 13:23							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	517		5.0	mg/L		05-JUN-20	R5110349
Carbonate (CO3)	<5.0		5.0	mg/L		05-JUN-20	R5110349
Dissolved Organic Carbon	0.63		0.50	mg/L		08-JUN-20	R5111572
Hydroxide (OH)	<5.0		5.0	mg/L		05-JUN-20	R5110349
Total Kjeldahl Nitrogen	0.086		0.050	mg/L		10-JUN-20	R5115509
Total Organic Carbon	2.57		0.50	mg/L		08-JUN-20	R5111572
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	09-JUN-20	10-JUN-20	R5111637
EPH19-32	<0.25		0.25	mg/L	09-JUN-20	10-JUN-20	R5111637
Surrogate: 2-Bromobenzotrifluoride	93.8		60-140	%	09-JUN-20	10-JUN-20	R5111637
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		10-JUN-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	09-JUN-20	10-JUN-20	R5111637
Surrogate: 2-Bromobenzotrifluoride	93.8		60-140	%	09-JUN-20	10-JUN-20	R5111637
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	07-JUN-20	08-JUN-20	R5113275
Dissolved Metals Filtration Location	FIELD					07-JUN-20	R5110345
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-20	10-JUN-20	R5113656
Dissolved Mercury Filtration Location	FIELD					10-JUN-20	R5113336
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					07-JUN-20	R5110345
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	07-JUN-20	08-JUN-20	R5113275
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275
Barium (Ba)-Dissolved	0.0960		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	07-JUN-20	08-JUN-20	R5113275
Boron (B)-Dissolved	0.020		0.010	mg/L	07-JUN-20	08-JUN-20	R5113275
Cadmium (Cd)-Dissolved	0.0529		0.0050	ug/L	07-JUN-20	08-JUN-20	R5113275
Calcium (Ca)-Dissolved	173		0.050	mg/L	07-JUN-20	08-JUN-20	R5113275
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275
Cobalt (Co)-Dissolved	0.39		0.10	ug/L	07-JUN-20	08-JUN-20	R5113275
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	07-JUN-20	08-JUN-20	R5113275
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	07-JUN-20	08-JUN-20	R5113275
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	07-JUN-20	08-JUN-20	R5113275
Lithium (Li)-Dissolved	0.0199		0.0010	mg/L	07-JUN-20	08-JUN-20	R5113275
Magnesium (Mg)-Dissolved	51.6		0.10	mg/L	07-JUN-20	08-JUN-20	R5113275
Manganese (Mn)-Dissolved	0.0807		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275
Molybdenum (Mo)-Dissolved	0.000319		0.000050	mg/L	07-JUN-20	08-JUN-20	R5113275
Nickel (Ni)-Dissolved	0.00126		0.00050	mg/L	07-JUN-20	08-JUN-20	R5113275
Potassium (K)-Dissolved	1.81		0.050	mg/L	07-JUN-20	08-JUN-20	R5113275
Selenium (Se)-Dissolved	0.199		0.050	ug/L	07-JUN-20	08-JUN-20	R5113275
Silicon (Si)-Dissolved	5.04		0.050	mg/L	07-JUN-20	08-JUN-20	R5113275
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	07-JUN-20	08-JUN-20	R5113275
Sodium (Na)-Dissolved	14.6		0.050	mg/L	07-JUN-20	08-JUN-20	R5113275
Strontium (Sr)-Dissolved	0.410		0.00020	mg/L	07-JUN-20	08-JUN-20	R5113275
Thallium (Tl)-Dissolved	0.000027		0.000010	mg/L	07-JUN-20	08-JUN-20	R5113275
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	07-JUN-20	08-JUN-20	R5113275

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456482-1 LC_PIZP1105_WG_Q2-2020_NP							
Sampled By: D. Tymstra on 02-JUN-20 @ 13:23							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	07-JUN-20	08-JUN-20	R5113275
Uranium (U)-Dissolved	0.000461		0.000010	mg/L	07-JUN-20	08-JUN-20	R5113275
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	07-JUN-20	08-JUN-20	R5113275
Zinc (Zn)-Dissolved	0.0040		0.0010	mg/L	07-JUN-20	08-JUN-20	R5113275
Hardness							
Hardness (as CaCO3)	645		0.50	mg/L		10-JUN-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.920		0.020	ug/L		08-JUN-20	R5112637
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.000145		0.0000050	mg/L		10-JUN-20	R5113656
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	13.1		0.0030	mg/L		08-JUN-20	R5112637
Antimony (Sb)-Total	0.00105		0.00010	mg/L		08-JUN-20	R5112637
Arsenic (As)-Total	0.00983		0.00010	mg/L		08-JUN-20	R5112637
Barium (Ba)-Total	0.550		0.00010	mg/L		08-JUN-20	R5112637
Bismuth (Bi)-Total	0.000203		0.000050	mg/L		08-JUN-20	R5112637
Boron (B)-Total	0.036		0.010	mg/L		08-JUN-20	R5112637
Cadmium (Cd)-Total	2.76		0.0050	ug/L		08-JUN-20	R5112637
Calcium (Ca)-Total	336		0.050	mg/L		08-JUN-20	R5112637
Chromium (Cr)-Total	0.0229		0.00010	mg/L		08-JUN-20	R5112637
Cobalt (Co)-Total	10.6		0.10	ug/L		08-JUN-20	R5112637
Copper (Cu)-Total	0.0272		0.00050	mg/L		08-JUN-20	R5112637
Iron (Fe)-Total	28.0		0.010	mg/L		08-JUN-20	R5112637
Lead (Pb)-Total	0.0112		0.000050	mg/L		08-JUN-20	R5112637
Lithium (Li)-Total	0.0373		0.0010	mg/L		08-JUN-20	R5112637
Magnesium (Mg)-Total	76.9		0.10	mg/L		08-JUN-20	R5112637
Manganese (Mn)-Total	1.50		0.00010	mg/L		08-JUN-20	R5112637
Molybdenum (Mo)-Total	0.00261		0.000050	mg/L		08-JUN-20	R5112637
Nickel (Ni)-Total	0.0306		0.00050	mg/L		08-JUN-20	R5112637
Potassium (K)-Total	5.36		0.050	mg/L		08-JUN-20	R5112637
Selenium (Se)-Total	1.86		0.050	ug/L		08-JUN-20	R5112637
Silicon (Si)-Total	23.1		0.10	mg/L		08-JUN-20	R5112637
Silver (Ag)-Total	0.000385		0.000010	mg/L		08-JUN-20	R5112637
Sodium (Na)-Total	14.2		0.050	mg/L		08-JUN-20	R5112637
Strontium (Sr)-Total	0.634		0.00020	mg/L		08-JUN-20	R5112637
Thallium (Tl)-Total	0.000655		0.000010	mg/L		08-JUN-20	R5112637
Tin (Sn)-Total	0.00076		0.00010	mg/L		08-JUN-20	R5112637
Titanium (Ti)-Total	0.044		0.010	mg/L		08-JUN-20	R5112637
Uranium (U)-Total	0.00136		0.000010	mg/L		08-JUN-20	R5112637
Vanadium (V)-Total	0.0376		0.00050	mg/L		08-JUN-20	R5112637
Zinc (Zn)-Total	0.178		0.0030	mg/L		08-JUN-20	R5112637
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	147		1.0	mg/L		05-JUN-20	R5110365
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	424		1.0	mg/L		05-JUN-20	R5110349
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		05-JUN-20	R5110349
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		05-JUN-20	R5110349
Alkalinity, Total (as CaCO3)	424		1.0	mg/L		05-JUN-20	R5110349
Ammonia, Total (as N)							
Ammonia as N	0.0152		0.0050	mg/L		09-JUN-20	R5112383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2456482-1 LC_PIZP1105_WG_Q2-2020_NP							
Sampled By: D. Tymstra on 02-JUN-20 @ 13:23							
Matrix: WG							
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.55	DLHC	0.25	mg/L		06-JUN-20	R5111966
Chloride in Water by IC							
Chloride (Cl)	144	DLHC	2.5	mg/L		06-JUN-20	R5111966
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1120		2.0	uS/cm		05-JUN-20	R5110349
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		06-JUN-20	R5111966
Ion Balance Calculation							
Ion Balance	92.6		-100	%		10-JUN-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.9			%		10-JUN-20	
Anion Sum	14.7			meq/L		10-JUN-20	
Cation Sum	13.6			meq/L		10-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.293	DLHC	0.025	mg/L		06-JUN-20	R5111966
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		06-JUN-20	R5111966
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0038		0.0010	mg/L		05-JUN-20	R5110047
Oxidation redution potential by elect.							
ORP	313		-1000	mV		09-JUN-20	R5113237
Phosphorus (P)-Total							
Phosphorus (P)-Total	3.35	DLHC	0.25	mg/L		09-JUN-20	R5112193
Sulfate in Water by IC							
Sulfate (SO4)	102	DLHC	1.5	mg/L		06-JUN-20	R5111966
Total Dissolved Solids							
Total Dissolved Solids	773	DLHC	20	mg/L		09-JUN-20	R5115440
Total Suspended Solids							
Total Suspended Solids	2210		1.0	mg/L		09-JUN-20	R5115375
Turbidity							
Turbidity	2180		0.10	NTU		05-JUN-20	R5109951
pH							
pH	7.53		0.10	pH		05-JUN-20	R5110349

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

PIZP1105-Q2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.
 < - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2456482

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5110365							
WG3336996-11 LCS								
Acidity (as CaCO3)			102.2		%		85-115	05-JUN-20
WG3336996-10 MB								
Acidity (as CaCO3)			<1.0		mg/L		2	05-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5110349							
WG3336978-14 LCS								
Alkalinity, Total (as CaCO3)			98.7		%		85-115	05-JUN-20
WG3336978-13 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5113275							
WG3336979-2 LCS								
Beryllium (Be)-Dissolved			103.6		%		80-120	08-JUN-20
WG3336979-1 MB		NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5112637							
WG3336995-2 LCS								
Beryllium (Be)-Total			99.1		%		80-120	08-JUN-20
WG3336995-1 MB								
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	08-JUN-20
BIC-CL								
	Water							
Batch	R5110349							
WG3336978-13 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	05-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5111966							
WG3338267-18 LCS								
Bromide (Br)			103.8		%		85-115	05-JUN-20
WG3338267-17 MB								
Bromide (Br)			<0.050		mg/L		0.05	05-JUN-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5111572							
WG3338183-6 LCS								
Dissolved Organic Carbon			107.0		%		80-120	08-JUN-20
WG3338183-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5111572							
WG3338183-6 LCS								
Total Organic Carbon			105.6		%		80-120	08-JUN-20
WG3338183-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-20
CL-IC-N-CL	Water							
Batch	R5111966							
WG3338267-18 LCS								
Chloride (Cl)			107.7		%		90-110	05-JUN-20
WG3338267-17 MB								
Chloride (Cl)			<0.50		mg/L		0.5	05-JUN-20
CO3-CL	Water							
Batch	R5110349							
WG3336978-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	05-JUN-20
EC-L-PCT-CL	Water							
Batch	R5110349							
WG3336978-14 LCS								
Conductivity (@ 25C)			99.3		%		90-110	05-JUN-20
WG3336978-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	05-JUN-20
F-IC-N-CL	Water							
Batch	R5111966							
WG3338267-18 LCS								
Fluoride (F)			102.3		%		90-110	05-JUN-20
WG3338267-17 MB								
Fluoride (F)			<0.020		mg/L		0.02	05-JUN-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5113656							
WG3338831-2	LCS							
Mercury (Hg)-Dissolved			100.5		%		80-120	10-JUN-20
WG3338831-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-JUN-20
HG-T-CVAA-VA								
Water								
Batch	R5113656							
WG3338967-2	LCS							
Mercury (Hg)-Total			101.3		%		80-120	10-JUN-20
WG3338967-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	10-JUN-20
WG3338967-8	MS	L2456482-1						
Mercury (Hg)-Total			N/A	MS-B	%		-	10-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5113275							
WG3336979-2	LCS							
Aluminum (Al)-Dissolved			103.5		%		80-120	08-JUN-20
Antimony (Sb)-Dissolved			94.9		%		80-120	08-JUN-20
Arsenic (As)-Dissolved			97.9		%		80-120	08-JUN-20
Barium (Ba)-Dissolved			103.3		%		80-120	08-JUN-20
Bismuth (Bi)-Dissolved			96.3		%		80-120	08-JUN-20
Boron (B)-Dissolved			94.8		%		80-120	08-JUN-20
Cadmium (Cd)-Dissolved			97.2		%		80-120	08-JUN-20
Calcium (Ca)-Dissolved			100.9		%		80-120	08-JUN-20
Chromium (Cr)-Dissolved			98.7		%		80-120	08-JUN-20
Cobalt (Co)-Dissolved			97.8		%		80-120	08-JUN-20
Copper (Cu)-Dissolved			94.0		%		80-120	08-JUN-20
Iron (Fe)-Dissolved			99.7		%		80-120	08-JUN-20
Lead (Pb)-Dissolved			95.8		%		80-120	08-JUN-20
Lithium (Li)-Dissolved			108.4		%		80-120	08-JUN-20
Magnesium (Mg)-Dissolved			99.7		%		80-120	08-JUN-20
Manganese (Mn)-Dissolved			102.4		%		80-120	08-JUN-20
Molybdenum (Mo)-Dissolved			98.6		%		80-120	08-JUN-20
Nickel (Ni)-Dissolved			97.3		%		80-120	08-JUN-20
Potassium (K)-Dissolved			104.6		%		80-120	08-JUN-20
Selenium (Se)-Dissolved			100.1		%		80-120	08-JUN-20
Silicon (Si)-Dissolved			103.4		%		60-140	08-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5113275							
WG3336979-2	LCS							
Silver (Ag)-Dissolved			99.1		%		80-120	08-JUN-20
Sodium (Na)-Dissolved			101.5		%		80-120	08-JUN-20
Strontium (Sr)-Dissolved			104.9		%		80-120	08-JUN-20
Thallium (Tl)-Dissolved			95.3		%		80-120	08-JUN-20
Tin (Sn)-Dissolved			96.2		%		80-120	08-JUN-20
Titanium (Ti)-Dissolved			100.5		%		80-120	08-JUN-20
Uranium (U)-Dissolved			96.0		%		80-120	08-JUN-20
Vanadium (V)-Dissolved			101.2		%		80-120	08-JUN-20
Zinc (Zn)-Dissolved			99.2		%		80-120	08-JUN-20
WG3336979-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5113275							
WG3336979-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5112637							
WG3336995-2	LCS							
Aluminum (Al)-Total			100.3		%		80-120	08-JUN-20
Antimony (Sb)-Total			108.2		%		80-120	08-JUN-20
Arsenic (As)-Total			97.1		%		80-120	08-JUN-20
Barium (Ba)-Total			96.6		%		80-120	08-JUN-20
Bismuth (Bi)-Total			105.7		%		80-120	08-JUN-20
Boron (B)-Total			99.1		%		80-120	08-JUN-20
Cadmium (Cd)-Total			101.0		%		80-120	08-JUN-20
Calcium (Ca)-Total			100.1		%		80-120	08-JUN-20
Chromium (Cr)-Total			99.0		%		80-120	08-JUN-20
Cobalt (Co)-Total			98.5		%		80-120	08-JUN-20
Copper (Cu)-Total			97.2		%		80-120	08-JUN-20
Iron (Fe)-Total			94.7		%		80-120	08-JUN-20
Lead (Pb)-Total			102.1		%		80-120	08-JUN-20
Lithium (Li)-Total			100.2		%		80-120	08-JUN-20
Magnesium (Mg)-Total			98.3		%		80-120	08-JUN-20
Manganese (Mn)-Total			103.0		%		80-120	08-JUN-20
Molybdenum (Mo)-Total			103.0		%		80-120	08-JUN-20
Nickel (Ni)-Total			99.2		%		80-120	08-JUN-20
Potassium (K)-Total			100.9		%		80-120	08-JUN-20
Selenium (Se)-Total			101.5		%		80-120	08-JUN-20
Silicon (Si)-Total			104.2		%		80-120	08-JUN-20
Silver (Ag)-Total			104.8		%		80-120	08-JUN-20
Sodium (Na)-Total			100.0		%		80-120	08-JUN-20
Strontium (Sr)-Total			110.1		%		80-120	08-JUN-20
Thallium (Tl)-Total			100.8		%		80-120	08-JUN-20



Quality Control Report

Workorder: L2456482

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5112637							
WG3336995-2	LCS							
Tin (Sn)-Total			101.2		%		80-120	08-JUN-20
Titanium (Ti)-Total			99.8		%		80-120	08-JUN-20
Uranium (U)-Total			105.9		%		80-120	08-JUN-20
Vanadium (V)-Total			100.2		%		80-120	08-JUN-20
Zinc (Zn)-Total			95.2		%		80-120	08-JUN-20
WG3336995-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	08-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	08-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	08-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	08-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	08-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	08-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-JUN-20



Quality Control Report

Workorder: L2456482

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Water								
Batch R5112637								
WG3336995-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-JUN-20
NH3-L-F-CL								
Water								
Batch R5112383								
WG3338435-58 LCS								
Ammonia as N			100.5		%		85-115	09-JUN-20
WG3338435-57 MB								
Ammonia as N			<0.0050		mg/L		0.005	09-JUN-20
NO2-L-IC-N-CL								
Water								
Batch R5111966								
WG3338267-18 LCS								
Nitrite (as N)			108.9		%		90-110	05-JUN-20
WG3338267-17 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	05-JUN-20
NO3-L-IC-N-CL								
Water								
Batch R5111966								
WG3338267-18 LCS								
Nitrate (as N)			105.8		%		90-110	05-JUN-20
WG3338267-17 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	05-JUN-20
OH-CL								
Water								
Batch R5110349								
WG3336978-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	05-JUN-20
ORP-CL								
Water								
Batch R5113237								
WG3338632-11 CRM								
ORP			222		mV		210-230	09-JUN-20
P-T-L-COL-CL								
Water								
Batch R5112193								
WG3338383-38 LCS								
Phosphorus (P)-Total			106.6		%		80-120	09-JUN-20
WG3338383-37 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-JUN-20



Quality Control Report

Workorder: L2456482

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5110349							
WG3336978-14	LCS							
pH			6.98		pH		6.9-7.1	05-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5110047							
WG3336396-2	LCS							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	05-JUN-20
WG3336396-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-20
SO4-IC-N-CL	Water							
Batch	R5111966							
WG3338267-18	LCS							
Sulfate (SO4)			105.7		%		90-110	05-JUN-20
WG3338267-17	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5115440							
WG3337967-23	LCS							
Total Dissolved Solids			104.3		%		85-115	09-JUN-20
WG3337967-22	MB							
Total Dissolved Solids			<10		mg/L		10	09-JUN-20
TEH-BC-VA-CL	Water							
Batch	R5111637							
WG3338207-3	LCS							
EPH10-19			102.0		%		70-130	09-JUN-20
EPH19-32			83.6		%		70-130	09-JUN-20
WG3338207-5	LCS							
EPH10-19			93.8		%		70-130	12-JUN-20
EPH19-32			114.2		%		70-130	12-JUN-20
WG3338207-1	MB							
EPH10-19			<0.25		mg/L		0.25	09-JUN-20
EPH19-32			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			83.0		%		60-140	09-JUN-20
WG3338207-2	MB							
EPH10-19			<0.25		mg/L		0.25	09-JUN-20
EPH19-32			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			77.5		%		60-140	09-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-BC-VA-CL		Water						
Batch R5111637								
WG3338207-4 MB								
EPH10-19			<0.25		mg/L		0.25	12-JUN-20
EPH19-32			<0.25		mg/L		0.25	12-JUN-20
Surrogate: 2-Bromobenzotrifluoride			84.1		%		60-140	12-JUN-20
TEH-WATER-VA-CL		Water						
Batch R5111637								
WG3338207-3 LCS								
TEH (C10-C30)			97.7		%		70-130	09-JUN-20
WG3338207-5 LCS								
TEH (C10-C30)			100.1		%		70-130	12-JUN-20
WG3338207-1 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			83.0		%		60-140	09-JUN-20
WG3338207-2 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	09-JUN-20
Surrogate: 2-Bromobenzotrifluoride			77.5		%		60-140	09-JUN-20
WG3338207-4 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	12-JUN-20
Surrogate: 2-Bromobenzotrifluoride			84.1		%		60-140	12-JUN-20
TKN-L-F-CL		Water						
Batch R5115509								
WG3339642-10 LCS								
Total Kjeldahl Nitrogen			87.1		%		75-125	10-JUN-20
WG3339642-2 LCS								
Total Kjeldahl Nitrogen			87.6		%		75-125	10-JUN-20
WG3339642-6 LCS								
Total Kjeldahl Nitrogen			87.1		%		75-125	10-JUN-20
WG3339642-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-JUN-20
WG3339642-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-JUN-20
WG3339642-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-JUN-20
TSS-L-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5115375							
WG3338014-14 LCS								
Total Suspended Solids			95.6		%		85-115	09-JUN-20
WG3338014-13 MB								
Total Suspended Solids			<1.0		mg/L		1	09-JUN-20
TURBIDITY-CL	Water							
Batch	R5109951							
WG3336175-20 LCS								
Turbidity			99.96		%		85-115	05-JUN-20
WG3336175-19 MB								
Turbidity			<0.10		NTU		0.1	05-JUN-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	02-JUN-20 13:23	09-JUN-20 10:00	0.25	165	hours	EHTR-FM
pH	1	02-JUN-20 13:23	05-JUN-20 07:00	0.25	66	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	02-JUN-20 13:23	06-JUN-20 07:53	3	4	days	EHT
Nitrite in Water by IC (Low Level)	1	02-JUN-20 13:23	06-JUN-20 07:53	3	4	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2456482 were received on 03-JUN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

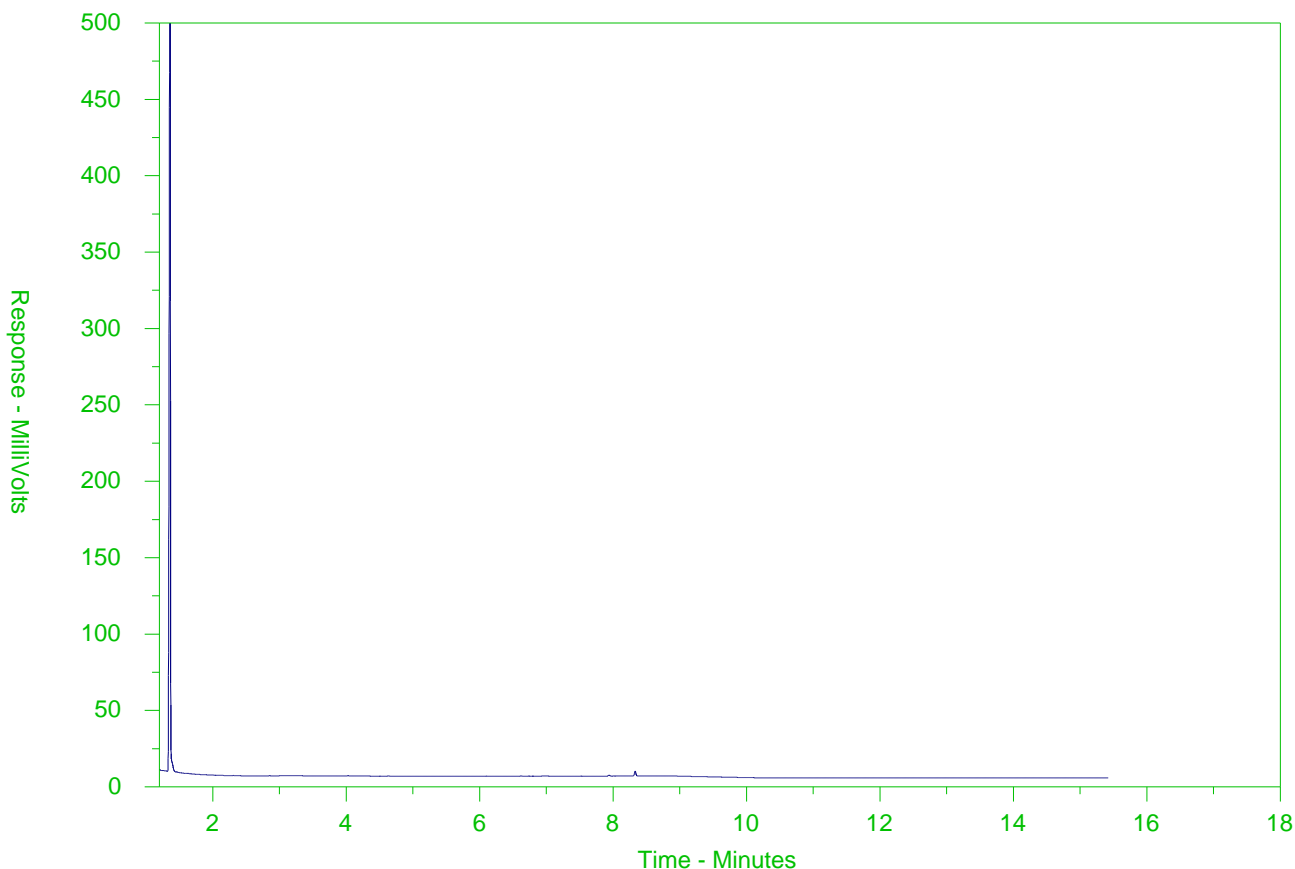
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2456482-1
 Client Sample ID: LC_PIZP1105_WG_Q2-2020_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: **PIZP1105-Q2** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla Shvets			Email 1:	carla.froymanparker@teck.x	x	
Email	carla.froymanparker@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.c		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.co.x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholas@teck.con.x	x	
Postal Code	V0B 2G0		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643	
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-EPH	HG-T-CVAF-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
								Y	N	Y	Y	N	N	Y	N	Y	N	N	N	N	
								H2SO4	H2SO4	HCl	HNO3	HNO3	NONE	NAHSO4	HCL						
LC_PIZP1105_WG_Q2-2020_NP	LC_PIZP1105	WG		2-Jun	1:23	G	6	1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Samples are field filtered and preserved	D. Tymstra	2-Jun	<i>Dor</i>	6/3 900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	D. Tymstra	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time
		June 2, 2020



TECK COAL LIMITED (LINE CREEK)
ATTN: Carla Froyman Parker
Box 2003 15km North Hwy 43
Sparwood BC V0B 2G0

Date Received: 12-JUN-20
Report Date: 21-DEC-20 18:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-3196

Certificate of Analysis

Lab Work Order #: L2460147
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: PIZP1101-Q2
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2460147-1.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2460147-1 LC_PIZP1101_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 11-JUN-20 @ 09:23							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	199		5.0	mg/L		17-JUN-20	R5124140
Carbonate (CO3)	6.2		5.0	mg/L		17-JUN-20	R5124140
Dissolved Organic Carbon	0.56		0.50	mg/L		19-JUN-20	R5126554
Hydroxide (OH)	<5.0		5.0	mg/L		17-JUN-20	R5124140
Total Kjeldahl Nitrogen	0.48	DLM	0.10	mg/L		19-JUN-20	R5126301
Total Organic Carbon	<5.0	DLM	5.0	mg/L		18-JUN-20	R5125883
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-JUN-20	19-JUN-20	R5125856
Dissolved Metals Filtration Location	FIELD					19-JUN-20	R5125919
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-JUN-20	19-JUN-20	R5125791
Dissolved Mercury Filtration Location	FIELD					19-JUN-20	R5125711
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					19-JUN-20	R5125919
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-JUN-20	19-JUN-20	R5125856
Antimony (Sb)-Dissolved	0.00011		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Arsenic (As)-Dissolved	0.00101		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Barium (Ba)-Dissolved	0.513		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-JUN-20	19-JUN-20	R5125856
Boron (B)-Dissolved	0.021		0.010	mg/L	19-JUN-20	19-JUN-20	R5125856
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	19-JUN-20	19-JUN-20	R5125856
Calcium (Ca)-Dissolved	26.9		0.050	mg/L	19-JUN-20	19-JUN-20	R5125856
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	19-JUN-20	19-JUN-20	R5125856
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	19-JUN-20	19-JUN-20	R5125856
Iron (Fe)-Dissolved	0.010		0.010	mg/L	19-JUN-20	19-JUN-20	R5125856
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-JUN-20	19-JUN-20	R5125856
Lithium (Li)-Dissolved	0.0096		0.0010	mg/L	19-JUN-20	19-JUN-20	R5125856
Magnesium (Mg)-Dissolved	13.2		0.10	mg/L	19-JUN-20	19-JUN-20	R5125856
Manganese (Mn)-Dissolved	0.227		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Molybdenum (Mo)-Dissolved	0.0113		0.000050	mg/L	19-JUN-20	19-JUN-20	R5125856
Nickel (Ni)-Dissolved	0.00058		0.00050	mg/L	19-JUN-20	19-JUN-20	R5125856
Potassium (K)-Dissolved	0.744		0.050	mg/L	19-JUN-20	19-JUN-20	R5125856
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	19-JUN-20	19-JUN-20	R5125856
Silicon (Si)-Dissolved	3.29		0.050	mg/L	19-JUN-20	19-JUN-20	R5125856
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-JUN-20	19-JUN-20	R5125856
Sodium (Na)-Dissolved	18.9		0.050	mg/L	19-JUN-20	19-JUN-20	R5125856
Strontium (Sr)-Dissolved	0.202		0.00020	mg/L	19-JUN-20	19-JUN-20	R5125856
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	19-JUN-20	19-JUN-20	R5125856
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-JUN-20	19-JUN-20	R5125856
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-JUN-20	19-JUN-20	R5125856
Uranium (U)-Dissolved	0.00177		0.000010	mg/L	19-JUN-20	19-JUN-20	R5125856
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-JUN-20	19-JUN-20	R5125856
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	19-JUN-20	19-JUN-20	R5125856
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	122		0.50	mg/L		23-JUN-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.327		0.020	ug/L		22-JUN-20	R5130057
Total Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2460147-1 LC_PIZP1101_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 11-JUN-20 @ 09:23							
Matrix: WG							
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		18-JUN-20	R5124356
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	6.01		0.0030	mg/L		22-JUN-20	R5130057
Antimony (Sb)-Total	0.00029		0.00010	mg/L		22-JUN-20	R5130057
Arsenic (As)-Total	0.00289		0.00010	mg/L		22-JUN-20	R5130057
Barium (Ba)-Total	0.617		0.00010	mg/L		22-JUN-20	R5130057
Bismuth (Bi)-Total	0.000097		0.000050	mg/L		22-JUN-20	R5130057
Boron (B)-Total	0.029		0.010	mg/L		22-JUN-20	R5130057
Cadmium (Cd)-Total	0.826		0.0050	ug/L		22-JUN-20	R5130057
Calcium (Ca)-Total	46.6		0.050	mg/L		22-JUN-20	R5130057
Chromium (Cr)-Total	0.00855		0.00010	mg/L		22-JUN-20	R5130057
Cobalt (Co)-Total	3.01		0.10	ug/L		22-JUN-20	R5130057
Copper (Cu)-Total	0.0241		0.00050	mg/L		22-JUN-20	R5130057
Iron (Fe)-Total	7.11		0.010	mg/L		22-JUN-20	R5130057
Lead (Pb)-Total	0.00435		0.000050	mg/L		22-JUN-20	R5130057
Lithium (Li)-Total	0.0159		0.0010	mg/L		22-JUN-20	R5130057
Magnesium (Mg)-Total	18.6		0.10	mg/L		22-JUN-20	R5130057
Manganese (Mn)-Total	0.474		0.00010	mg/L		22-JUN-20	R5130057
Molybdenum (Mo)-Total	0.00967		0.000050	mg/L		22-JUN-20	R5130057
Nickel (Ni)-Total	0.0127		0.00050	mg/L		22-JUN-20	R5130057
Potassium (K)-Total	2.83		0.050	mg/L		22-JUN-20	R5130057
Selenium (Se)-Total	1.85		0.050	ug/L		22-JUN-20	R5130057
Silicon (Si)-Total	12.4		0.10	mg/L		22-JUN-20	R5130057
Silver (Ag)-Total	0.000359		0.000010	mg/L		22-JUN-20	R5130057
Sodium (Na)-Total	20.1		0.050	mg/L		22-JUN-20	R5130057
Strontium (Sr)-Total	0.226		0.00020	mg/L		22-JUN-20	R5130057
Thallium (Tl)-Total	0.000374		0.000010	mg/L		22-JUN-20	R5130057
Tin (Sn)-Total	0.00027		0.00010	mg/L		22-JUN-20	R5130057
Titanium (Ti)-Total	0.020		0.010	mg/L		22-JUN-20	R5130057
Uranium (U)-Total	0.00225		0.000010	mg/L		22-JUN-20	R5130057
Vanadium (V)-Total	0.0172		0.00050	mg/L		22-JUN-20	R5130057
Zinc (Zn)-Total	0.0525		0.0030	mg/L		22-JUN-20	R5130057
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.6		1.0	mg/L		16-JUN-20	R5121262
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	163		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Carbonate (as CaCO3)	10.4		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-20	R5124140
Alkalinity, Total (as CaCO3)	174		1.0	mg/L		17-JUN-20	R5124140
Ammonia, Total (as N)							
Ammonia as N	0.0618		0.0050	mg/L		18-JUN-20	R5125467
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-JUN-20	R5122937
Chloride in Water by IC							
Chloride (Cl)	0.63		0.50	mg/L		13-JUN-20	R5122937
Electrical Conductivity (EC)							
Conductivity (@ 25C)	297		2.0	uS/cm		17-JUN-20	R5124140
Fluoride in Water by IC							
Fluoride (F)	1.62		0.020	mg/L		13-JUN-20	R5122937
Ion Balance Calculation							
Cation - Anion Balance	-5.2			%		23-JUN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2460147-1 LC_PIZP1101_WG_Q2-2020_NP							
Sampled By: D. TYMSTRA on 11-JUN-20 @ 09:23							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	3.65			meq/L		23-JUN-20	
Cation Sum	3.29			meq/L		23-JUN-20	
Ion Balance Calculation							
Ion Balance	90.1		-100	%		23-JUN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-JUN-20	R5122937
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-JUN-20	R5122937
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0101		0.0010	mg/L		12-JUN-20	R5117045
Oxidation reduction potential by elect.							
ORP	230		-1000	mV		19-JUN-20	R5126276
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.361	DLHC	0.050	mg/L		18-JUN-20	R5125258
Sulfate in Water by IC							
Sulfate (SO4)	3.68		0.30	mg/L		13-JUN-20	R5122937
Total Dissolved Solids							
Total Dissolved Solids	334	DLHC	20	mg/L		18-JUN-20	R5126309
Total Suspended Solids							
Total Suspended Solids	207		1.0	mg/L		18-JUN-20	R5126273
Turbidity							
Turbidity	350		0.10	NTU		13-JUN-20	R5117247
pH							
pH	8.43		0.10	pH		17-JUN-20	R5124140

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

PIZP1101-Q2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2460147

Report Date: 21-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 Box 2003 15km North Hwy 43
 Sparwood BC V0B 2G0

Contact: Carla Froyman Parker

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5121262							
WG3343782-14	LCS							
Acidity (as CaCO3)			103.0		%		85-115	16-JUN-20
WG3343782-13	MB							
Acidity (as CaCO3)			1.3		mg/L		2	16-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5124140							
WG3344687-14	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	17-JUN-20
WG3344687-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5125856							
WG3345831-3	DUP	L2460147-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	19-JUN-20
WG3345831-2	LCS							
Beryllium (Be)-Dissolved			104.0		%		80-120	19-JUN-20
WG3345831-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-JUN-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5130057							
WG3347348-2	LCS							
Beryllium (Be)-Total			87.5		%		80-120	22-JUN-20
WG3347348-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	22-JUN-20
BIC-CL								
	Water							
Batch	R5124140							
WG3344687-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5126554							
WG3346550-2	LCS							
Dissolved Organic Carbon			96.6		%		80-120	19-JUN-20
WG3346550-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-JUN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2460147

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5125883							
WG3345812-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	19-JUN-20
CO3-CL	Water							
Batch	R5124140							
WG3344687-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-JUN-20
EC-L-PCT-CL	Water							
Batch	R5124140							
WG3344687-14 LCS								
Conductivity (@ 25C)			100.2		%		90-110	17-JUN-20
WG3344687-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUN-20
HG-D-CVAA-VA	Water							
Batch	R5125791							
WG3345562-2 LCS								
Mercury (Hg)-Dissolved			99.9		%		80-120	19-JUN-20
WG3345562-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-JUN-20
HG-T-CVAA-VA	Water							
Batch	R5124356							
WG3344774-2 LCS								
Mercury (Hg)-Total			101.2		%		80-120	18-JUN-20
WG3344774-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-JUN-20
MET-D-CCMS-VA	Water							
Batch	R5125856							
WG3345831-3 DUP		L2460147-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	19-JUN-20
Antimony (Sb)-Dissolved		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Arsenic (As)-Dissolved		0.00101	0.00111		mg/L	9.8	20	19-JUN-20
Barium (Ba)-Dissolved		0.513	0.521		mg/L	1.4	20	19-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-JUN-20
Boron (B)-Dissolved		0.021	0.022		mg/L	2.9	20	19-JUN-20
Cadmium (Cd)-Dissolved		<0.0000050	0.0000052	RPD-NA	mg/L	N/A	20	19-JUN-20
Calcium (Ca)-Dissolved		26.9	27.2		mg/L	1.0	20	19-JUN-20



Quality Control Report

Workorder: L2460147

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345831-3	DUP	L2460147-1						
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Cobalt (Co)-Dissolved		0.00021	0.00020		mg/L	5.1	20	19-JUN-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	19-JUN-20
Iron (Fe)-Dissolved		0.010	0.011		mg/L	2.7	20	19-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-JUN-20
Lithium (Li)-Dissolved		0.0096	0.0097		mg/L	1.5	20	19-JUN-20
Magnesium (Mg)-Dissolved		13.2	13.6		mg/L	2.6	20	19-JUN-20
Manganese (Mn)-Dissolved		0.227	0.230		mg/L	1.2	20	19-JUN-20
Molybdenum (Mo)-Dissolved		0.0113	0.0115		mg/L	1.8	20	19-JUN-20
Nickel (Ni)-Dissolved		0.00058	0.00058		mg/L	0.1	20	19-JUN-20
Potassium (K)-Dissolved		0.744	0.761		mg/L	2.3	20	19-JUN-20
Selenium (Se)-Dissolved		<0.000050	0.000053	RPD-NA	mg/L	N/A	20	19-JUN-20
Silicon (Si)-Dissolved		3.29	3.35		mg/L	1.7	20	19-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-JUN-20
Sodium (Na)-Dissolved		18.9	19.9		mg/L	4.8	20	19-JUN-20
Strontium (Sr)-Dissolved		0.202	0.202		mg/L	0.4	20	19-JUN-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-JUN-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-JUN-20
Uranium (U)-Dissolved		0.00177	0.00178		mg/L	0.5	20	19-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-JUN-20
Zinc (Zn)-Dissolved		<0.0010	0.0013	RPD-NA	mg/L	N/A	20	19-JUN-20
WG3345831-2	LCS							
Aluminum (Al)-Dissolved			102.2		%		80-120	19-JUN-20
Antimony (Sb)-Dissolved			100.3		%		80-120	19-JUN-20
Arsenic (As)-Dissolved			96.3		%		80-120	19-JUN-20
Barium (Ba)-Dissolved			105.3		%		80-120	19-JUN-20
Bismuth (Bi)-Dissolved			103.5		%		80-120	19-JUN-20
Boron (B)-Dissolved			95.6		%		80-120	19-JUN-20
Cadmium (Cd)-Dissolved			98.6		%		80-120	19-JUN-20
Calcium (Ca)-Dissolved			101.4		%		80-120	19-JUN-20
Chromium (Cr)-Dissolved			97.6		%		80-120	19-JUN-20
Cobalt (Co)-Dissolved			96.7		%		80-120	19-JUN-20
Copper (Cu)-Dissolved			95.7		%		80-120	19-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345831-2	LCS							
Iron (Fe)-Dissolved			91.3		%		80-120	19-JUN-20
Lead (Pb)-Dissolved			101.3		%		80-120	19-JUN-20
Lithium (Li)-Dissolved			103.9		%		80-120	19-JUN-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	19-JUN-20
Manganese (Mn)-Dissolved			104.1		%		80-120	19-JUN-20
Molybdenum (Mo)-Dissolved			102.7		%		80-120	19-JUN-20
Nickel (Ni)-Dissolved			97.7		%		80-120	19-JUN-20
Potassium (K)-Dissolved			99.8		%		80-120	19-JUN-20
Selenium (Se)-Dissolved			101.3		%		80-120	19-JUN-20
Silicon (Si)-Dissolved			100.9		%		60-140	19-JUN-20
Silver (Ag)-Dissolved			103.1		%		80-120	19-JUN-20
Sodium (Na)-Dissolved			103.0		%		80-120	19-JUN-20
Strontium (Sr)-Dissolved			98.6		%		80-120	19-JUN-20
Thallium (Tl)-Dissolved			101.1		%		80-120	19-JUN-20
Tin (Sn)-Dissolved			101.2		%		80-120	19-JUN-20
Titanium (Ti)-Dissolved			94.8		%		80-120	19-JUN-20
Uranium (U)-Dissolved			98.6		%		80-120	19-JUN-20
Vanadium (V)-Dissolved			99.7		%		80-120	19-JUN-20
Zinc (Zn)-Dissolved			101.3		%		80-120	19-JUN-20
WG3345831-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5125856							
WG3345831-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-JUN-20
MET-T-CCMS-VA								
	Water							
Batch	R5130057							
WG3347348-2	LCS							
Aluminum (Al)-Total			108.0		%		80-120	22-JUN-20
Antimony (Sb)-Total			98.2		%		80-120	22-JUN-20
Arsenic (As)-Total			97.6		%		80-120	22-JUN-20
Barium (Ba)-Total			99.5		%		80-120	22-JUN-20
Bismuth (Bi)-Total			92.9		%		80-120	22-JUN-20
Boron (B)-Total			85.7		%		80-120	22-JUN-20
Cadmium (Cd)-Total			94.6		%		80-120	22-JUN-20
Calcium (Ca)-Total			92.2		%		80-120	22-JUN-20
Chromium (Cr)-Total			99.2		%		80-120	22-JUN-20
Cobalt (Co)-Total			95.4		%		80-120	22-JUN-20
Copper (Cu)-Total			94.3		%		80-120	22-JUN-20
Iron (Fe)-Total			100.3		%		80-120	22-JUN-20
Lead (Pb)-Total			94.2		%		80-120	22-JUN-20
Lithium (Li)-Total			87.7		%		80-120	22-JUN-20
Magnesium (Mg)-Total			103.9		%		80-120	22-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5130057							
WG3347348-2	LCS							
Manganese (Mn)-Total			100.4		%		80-120	22-JUN-20
Molybdenum (Mo)-Total			89.3		%		80-120	22-JUN-20
Nickel (Ni)-Total			98.0		%		80-120	22-JUN-20
Potassium (K)-Total			103.9		%		80-120	22-JUN-20
Selenium (Se)-Total			96.8		%		80-120	22-JUN-20
Silicon (Si)-Total			96.8		%		80-120	22-JUN-20
Silver (Ag)-Total			91.9		%		80-120	22-JUN-20
Sodium (Na)-Total			104.0		%		80-120	22-JUN-20
Strontium (Sr)-Total			96.0		%		80-120	22-JUN-20
Thallium (Tl)-Total			96.0		%		80-120	22-JUN-20
Tin (Sn)-Total			93.7		%		80-120	22-JUN-20
Titanium (Ti)-Total			99.7		%		80-120	22-JUN-20
Uranium (U)-Total			90.5		%		80-120	22-JUN-20
Vanadium (V)-Total			99.1		%		80-120	22-JUN-20
Zinc (Zn)-Total			91.6		%		80-120	22-JUN-20
WG3347348-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	22-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	22-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	22-JUN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	22-JUN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	22-JUN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	22-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	22-JUN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	22-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	22-JUN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	22-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	22-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	22-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5130057							
WG3347348-1	MB							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	22-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	22-JUN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	22-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	22-JUN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	22-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	22-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	22-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	22-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	22-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	22-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	22-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5125467							
WG3345254-22	LCS							
Ammonia as N			101.3		%		85-115	18-JUN-20
WG3345254-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-JUN-20
OH-CL								
	Water							
Batch	R5124140							
WG3344687-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-JUN-20
ORP-CL								
	Water							
Batch	R5126276							
WG3346176-5	CRM	CL-ORP						
ORP			230		mV		210-230	19-JUN-20
P-T-L-COL-CL								
	Water							
Batch	R5125258							
WG3344886-18	LCS							
Phosphorus (P)-Total			99.2		%		80-120	18-JUN-20
WG3344886-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-JUN-20
PH-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5124140							
WG3344687-14	LCS							
pH			6.99		pH		6.9-7.1	17-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5117045							
WG3341227-4	LCS							
Orthophosphate-Dissolved (as P)			102.1		%		80-120	12-JUN-20
WG3341227-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5126309							
WG3344725-5	LCS							
Total Dissolved Solids			100.7		%		85-115	18-JUN-20
WG3344725-4	MB							
Total Dissolved Solids			<10		mg/L		10	18-JUN-20
TKN-L-F-CL	Water							
Batch	R5126301							
WG3346223-12	LCS							
Total Kjeldahl Nitrogen			101.3		%		75-125	19-JUN-20
WG3346223-16	LCS							
Total Kjeldahl Nitrogen			101.5		%		75-125	19-JUN-20
WG3346223-2	LCS							
Total Kjeldahl Nitrogen			106.5		%		75-125	19-JUN-20
WG3346223-20	LCS							
Total Kjeldahl Nitrogen			102.1		%		75-125	19-JUN-20
WG3346223-23	LCS							
Total Kjeldahl Nitrogen			102.5		%		75-125	19-JUN-20
WG3346223-4	LCS							
Total Kjeldahl Nitrogen			102.9		%		75-125	19-JUN-20
WG3346223-8	LCS							
Total Kjeldahl Nitrogen			101.6		%		75-125	19-JUN-20
WG3346223-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-19	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5126301							
WG3346223-19 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
WG3346223-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-20
TSS-L-CL								
	Water							
Batch	R5126273							
WG3344734-4 LCS								
Total Suspended Solids			89.2		%		85-115	18-JUN-20
WG3344734-3 MB								
Total Suspended Solids			<1.0		mg/L		1	18-JUN-20
TURBIDITY-CL								
	Water							
Batch	R5117247							
WG3341737-11 LCS								
Turbidity			99.96		%		85-115	13-JUN-20
WG3341737-10 MB								
Turbidity			<0.10		NTU		0.1	13-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-JUN-20 09:23	19-JUN-20 13:00	0.25	196	hours	EHTR-FM
pH	1	11-JUN-20 09:23	17-JUN-20 09:00	0.25	144	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2460147 were received on 12-JUN-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **PIZP1101-Q2** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Carla Froyman Parker			Lab Contact	Lyudmyla SHvets			Email 1:	carla.froymanparker@teck.com	x	x	
Email	carla.froymanparker@teck.com			Email	Lyudmyla.SHvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	Shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	dominique.nicholas@teck.com	x	x	
Postal Code	V0B 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada	PO number	VPO00680643	
Phone Number	250-425-8478			Phone Number	403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	Y	N	Y	Y	N	N						
								PRESERV.	H2SO4	H2SO4	HCl	HNO3	HNO3	NONE	NAHSO ₄	HCL				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-EPH	HG-T-CVAF-VA				
LC_PIZP1101_WG_Q2-2020_NP	LC_PIZP1101	WG		11-Jun	9:23	G	6		1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Samples are field filtered and preserved	D.Tymstra	11-Jun	<i>[Signature]</i>	06/12 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/>	D. Tymstra			June 11, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

17.4°



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 12-AUG-20
Report Date: 26-FEB-21 12:01 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2487756
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 09:59

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-1 LC_PIZP1105_WG_Q3-2020_N							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	485		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Dissolved Organic Carbon	1.00		0.50	mg/L		16-AUG-20	R5189963
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	4.47	DLM	0.50	mg/L		13-AUG-20	R5186978
Mercury (Hg)-Total	0.000119	DLM	0.000050	mg/L		15-AUG-20	R5189770
Total Organic Carbon	67	DLHC	10	mg/L		16-AUG-20	R5189963
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-AUG-20	14-AUG-20	R5187338
Dissolved Mercury Filtration Location	FIELD					14-AUG-20	R5188805
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	13-AUG-20	13-AUG-20	R5177010
EPH19-32	<0.25		0.25	mg/L	13-AUG-20	13-AUG-20	R5177010
Surrogate: 2-Bromobenzotrifluoride	96.3		60-140	%	13-AUG-20	13-AUG-20	R5177010
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		15-AUG-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	13-AUG-20	13-AUG-20	R5177010
Surrogate: 2-Bromobenzotrifluoride	96.3		60-140	%	13-AUG-20	13-AUG-20	R5177010
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-AUG-20	17-AUG-20	R5190481
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-AUG-20	17-AUG-20	R5190481
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Barium (Ba)-Dissolved	0.0991		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Boron (B)-Dissolved	0.019		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cadmium (Cd)-Dissolved	0.0604		0.0050	ug/L	16-AUG-20	17-AUG-20	R5190481
Calcium (Ca)-Dissolved	165		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-AUG-20	17-AUG-20	R5190481
Copper (Cu)-Dissolved	0.00183		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Lead (Pb)-Dissolved	0.000088		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Magnesium (Mg)-Dissolved	52.9		0.10	mg/L	16-AUG-20	17-AUG-20	R5190481
Manganese (Mn)-Dissolved	0.00594		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Molybdenum (Mo)-Dissolved	0.000233		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Nickel (Ni)-Dissolved	0.00084		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Potassium (K)-Dissolved	1.92		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Selenium (Se)-Dissolved	0.137		0.050	ug/L	16-AUG-20	17-AUG-20	R5190481
Silicon (Si)-Dissolved	4.86		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Sodium (Na)-Dissolved	14.4		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Strontium (Sr)-Dissolved	0.380		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Thallium (Tl)-Dissolved	0.000019		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-1 LC_PIZP1105_WG_Q3-2020_N							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Tin (Sn)-Dissolved	0.00040		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Uranium (U)-Dissolved	0.000484		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Zinc (Zn)-Dissolved	0.0054		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	631		0.50	mg/L		17-AUG-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	1.74		0.020	ug/L		14-AUG-20	R5189828
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	25.2		0.0030	mg/L		14-AUG-20	R5189828
Antimony (Sb)-Total	0.00186		0.00010	mg/L		14-AUG-20	R5189828
Arsenic (As)-Total	0.0176		0.00010	mg/L		14-AUG-20	R5189828
Barium (Ba)-Total	1.14		0.00010	mg/L		14-AUG-20	R5189828
Bismuth (Bi)-Total	0.000415		0.000050	mg/L		14-AUG-20	R5189828
Boron (B)-Total	0.041		0.010	mg/L		14-AUG-20	R5189828
Cadmium (Cd)-Total	5.11		0.0050	ug/L		14-AUG-20	R5189828
Calcium (Ca)-Total	458		0.050	mg/L		14-AUG-20	R5189828
Chromium (Cr)-Total	0.0479		0.00010	mg/L		14-AUG-20	R5189828
Cobalt (Co)-Total	23.5		0.10	ug/L		14-AUG-20	R5189828
Copper (Cu)-Total	0.0613		0.00050	mg/L		14-AUG-20	R5189828
Iron (Fe)-Total	59.6		0.010	mg/L		14-AUG-20	R5189828
Lead (Pb)-Total	0.0256		0.000050	mg/L		14-AUG-20	R5189828
Lithium (Li)-Total	0.0521		0.0010	mg/L		14-AUG-20	R5189828
Magnesium (Mg)-Total	110		0.10	mg/L		14-AUG-20	R5189828
Manganese (Mn)-Total	3.14		0.00010	mg/L		14-AUG-20	R5189828
Molybdenum (Mo)-Total	0.00325		0.000050	mg/L		14-AUG-20	R5189828
Nickel (Ni)-Total	0.0640		0.00050	mg/L		14-AUG-20	R5189828
Potassium (K)-Total	7.01		0.050	mg/L		14-AUG-20	R5189828
Selenium (Se)-Total	1.59		0.050	ug/L		14-AUG-20	R5189828
Silicon (Si)-Total	34.9		0.10	mg/L		14-AUG-20	R5189828
Silver (Ag)-Total	0.000869		0.000010	mg/L		14-AUG-20	R5189828
Sodium (Na)-Total	15.2		0.050	mg/L		14-AUG-20	R5189828
Strontium (Sr)-Total	0.845		0.00020	mg/L		14-AUG-20	R5189828
Thallium (Tl)-Total	0.00126		0.000010	mg/L		14-AUG-20	R5189828
Tin (Sn)-Total	0.00127		0.00010	mg/L		14-AUG-20	R5189828
Titanium (Ti)-Total	0.056		0.010	mg/L		14-AUG-20	R5189828
Uranium (U)-Total	0.00315		0.000010	mg/L		14-AUG-20	R5189828
Vanadium (V)-Total	0.0683		0.00050	mg/L		14-AUG-20	R5189828
Zinc (Zn)-Total	0.386		0.0030	mg/L		14-AUG-20	R5189828
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	142		1.0	mg/L		14-AUG-20	R5189582
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	397		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	397		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							
Ammonia as N	0.0518		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-1 LC_PIZP1105_WG_Q3-2020_N Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.78	DLHC	0.25	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	146	DLHC	2.5	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1160		2.0	uS/cm		14-AUG-20	R5189622
Fluoride in Water by IC							
Fluoride (F)	0.29	DLHC	0.10	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Cation - Anion Balance	-3.1			%		17-AUG-20	
Anion Sum	14.1			meq/L		17-AUG-20	
Cation Sum	13.3			meq/L		17-AUG-20	
Ion Balance Calculation							
Ion Balance	94.0		-100	%		17-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0068		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect.							
ORP	435		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	9.57	DLHC	0.50	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC							
Sulfate (SO4)	97.9	DLHC	1.5	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							
Total Dissolved Solids	850	DLHC	20	mg/L		17-AUG-20	R5191157
Total Suspended Solids							
Total Suspended Solids	11900	DLHC	15	mg/L		17-AUG-20	R5191091
Turbidity							
Turbidity	>4000		0.10	NTU		12-AUG-20	R5184202
pH							
pH	7.47		0.10	pH		14-AUG-20	R5189622
L2487756-2 LC_CC3_WG_Q3-2020 Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	483		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Dissolved Organic Carbon	0.80		0.50	mg/L		16-AUG-20	R5189963
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	0.50		0.25	mg/L		13-AUG-20	R5186978
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		15-AUG-20	R5189770
Total Organic Carbon	<2.5	DLM	2.5	mg/L		16-AUG-20	R5189963
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-AUG-20	14-AUG-20	R5187338
Dissolved Mercury Filtration Location	FIELD					14-AUG-20	R5188805
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-AUG-20	17-AUG-20	R5190481
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-2 LC_CC3_WG_Q3-2020							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-AUG-20	17-AUG-20	R5190481
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Barium (Ba)-Dissolved	0.0997		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Boron (B)-Dissolved	0.019		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cadmium (Cd)-Dissolved	0.0842		0.0050	ug/L	16-AUG-20	17-AUG-20	R5190481
Calcium (Ca)-Dissolved	164		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	16-AUG-20	17-AUG-20	R5190481
Copper (Cu)-Dissolved	0.00148		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Iron (Fe)-Dissolved	0.013		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Magnesium (Mg)-Dissolved	51.5		0.10	mg/L	16-AUG-20	17-AUG-20	R5190481
Manganese (Mn)-Dissolved	0.0290		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Molybdenum (Mo)-Dissolved	0.000268		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Nickel (Ni)-Dissolved	0.00134		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Potassium (K)-Dissolved	1.91		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Selenium (Se)-Dissolved	0.226		0.050	ug/L	16-AUG-20	17-AUG-20	R5190481
Silicon (Si)-Dissolved	4.96		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Sodium (Na)-Dissolved	14.4		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Strontium (Sr)-Dissolved	0.378		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Thallium (Tl)-Dissolved	0.000026		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Tin (Sn)-Dissolved	0.00022		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Uranium (U)-Dissolved	0.000449		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Zinc (Zn)-Dissolved	0.0067		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	621		0.50	mg/L		17-AUG-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.271		0.020	ug/L		14-AUG-20	R5189828
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	2.54		0.0030	mg/L		14-AUG-20	R5189828
Antimony (Sb)-Total	0.00057		0.00010	mg/L		14-AUG-20	R5189828
Arsenic (As)-Total	0.00241		0.00010	mg/L		14-AUG-20	R5189828
Barium (Ba)-Total	0.205		0.00010	mg/L		14-AUG-20	R5189828
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Boron (B)-Total	0.023		0.010	mg/L		14-AUG-20	R5189828
Cadmium (Cd)-Total	1.11		0.0050	ug/L		14-AUG-20	R5189828
Calcium (Ca)-Total	223		0.050	mg/L		14-AUG-20	R5189828
Chromium (Cr)-Total	0.00559		0.00010	mg/L		14-AUG-20	R5189828
Cobalt (Co)-Total	3.75		0.10	ug/L		14-AUG-20	R5189828
Copper (Cu)-Total	0.0103		0.00050	mg/L		14-AUG-20	R5189828
Iron (Fe)-Total	4.77		0.010	mg/L		14-AUG-20	R5189828
Lead (Pb)-Total	0.00447		0.000050	mg/L		14-AUG-20	R5189828
Lithium (Li)-Total	0.0186		0.0010	mg/L		14-AUG-20	R5189828
Magnesium (Mg)-Total	60.8		0.10	mg/L		14-AUG-20	R5189828

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-2 LC_CC3_WG_Q3-2020							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	0.609		0.00010	mg/L		14-AUG-20	R5189828
Molybdenum (Mo)-Total	0.000572		0.000050	mg/L		14-AUG-20	R5189828
Nickel (Ni)-Total	0.00849		0.00050	mg/L		14-AUG-20	R5189828
Potassium (K)-Total	2.46		0.050	mg/L		14-AUG-20	R5189828
Selenium (Se)-Total	0.334		0.050	ug/L		14-AUG-20	R5189828
Silicon (Si)-Total	7.83		0.10	mg/L		14-AUG-20	R5189828
Silver (Ag)-Total	0.000050		0.000010	mg/L		14-AUG-20	R5189828
Sodium (Na)-Total	14.2		0.050	mg/L		14-AUG-20	R5189828
Strontium (Sr)-Total	0.519		0.00020	mg/L		14-AUG-20	R5189828
Thallium (Tl)-Total	0.000189		0.000010	mg/L		14-AUG-20	R5189828
Tin (Sn)-Total	0.00032		0.00010	mg/L		14-AUG-20	R5189828
Titanium (Ti)-Total	0.018		0.010	mg/L		14-AUG-20	R5189828
Uranium (U)-Total	0.000997		0.000010	mg/L		14-AUG-20	R5189828
Vanadium (V)-Total	0.00884		0.00050	mg/L		14-AUG-20	R5189828
Zinc (Zn)-Total	0.0628		0.0030	mg/L		14-AUG-20	R5189828
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	137		1.0	mg/L		14-AUG-20	R5189582
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	396		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	396		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							
Ammonia as N	0.0221		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.69	DLHC	0.25	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	146	DLHC	2.5	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1160		2.0	uS/cm		14-AUG-20	R5189622
Fluoride in Water by IC							
Fluoride (F)	0.25	DLHC	0.10	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Cation - Anion Balance	-3.6			%		17-AUG-20	
Anion Sum	14.0			meq/L		17-AUG-20	
Cation Sum	13.1			meq/L		17-AUG-20	
Ion Balance Calculation							
Ion Balance	93.1		-100	%		17-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0069		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect.							
ORP	404		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	1.31	DLHC	0.10	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC							
Sulfate (SO4)	96.9	DLHC	1.5	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-2 LC_CC3_WG_Q3-2020 Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Total Dissolved Solids							
Total Dissolved Solids	845	DLHC	20	mg/L		17-AUG-20	R5191157
Total Suspended Solids							
Total Suspended Solids	3310	DLHC	5.0	mg/L		17-AUG-20	R5191091
Turbidity							
Turbidity	2660		0.10	NTU		12-AUG-20	R5184202
pH							
pH	7.46		0.10	pH		14-AUG-20	R5189622
L2487756-3 LC_MT3_WG_Q3-2020 Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189963
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		13-AUG-20	R5186978
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		15-AUG-20	R5189770
Total Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189963
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-AUG-20	14-AUG-20	R5187338
Dissolved Mercury Filtration Location	FIELD					14-AUG-20	R5188805
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-AUG-20	17-AUG-20	R5190481
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-AUG-20	R5189833
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5190540
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-AUG-20	17-AUG-20	R5190481
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Boron (B)-Dissolved	<0.010		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	16-AUG-20	17-AUG-20	R5190481
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-AUG-20	17-AUG-20	R5190481
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	18-AUG-20	18-AUG-20	R5191171
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	16-AUG-20	17-AUG-20	R5190481
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	16-AUG-20	17-AUG-20	R5190481
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	16-AUG-20	17-AUG-20	R5190481
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Potassium (K)-Dissolved	<0.050		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	16-AUG-20	17-AUG-20	R5190481
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	16-AUG-20	17-AUG-20	R5190481

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-3 LC_MT3_WG_Q3-2020							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	16-AUG-20	17-AUG-20	R5190481
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-AUG-20	17-AUG-20	R5190481
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-AUG-20	17-AUG-20	R5190481
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	16-AUG-20	17-AUG-20	R5190481
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-AUG-20	17-AUG-20	R5190481
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-AUG-20	18-AUG-20	R5191171
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		19-AUG-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		14-AUG-20	R5189828
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		14-AUG-20	R5189828
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Arsenic (As)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Barium (Ba)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Boron (B)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		14-AUG-20	R5189828
Calcium (Ca)-Total	<0.050		0.050	mg/L		19-AUG-20	R5191536
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Cobalt (Co)-Total	<0.10		0.10	ug/L		14-AUG-20	R5189828
Copper (Cu)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Iron (Fe)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Lead (Pb)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Lithium (Li)-Total	<0.0010		0.0010	mg/L		14-AUG-20	R5189828
Magnesium (Mg)-Total	<0.10		0.10	mg/L		14-AUG-20	R5189828
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		19-AUG-20	R5191536
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Potassium (K)-Total	<0.050		0.050	mg/L		14-AUG-20	R5189828
Selenium (Se)-Total	<0.050		0.050	ug/L		14-AUG-20	R5189828
Silicon (Si)-Total	<0.10		0.10	mg/L		14-AUG-20	R5189828
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Sodium (Na)-Total	<0.050		0.050	mg/L		14-AUG-20	R5189828
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		14-AUG-20	R5189828
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Uranium (U)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		14-AUG-20	R5189828
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189582
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-3 LC_MT3_WG_Q3-2020 Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Ammonia, Total (as N) Ammonia as N	0.0150		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level) Bromide (Br)	<0.050		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC Chloride (Cl)	<0.50		0.50	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC) Conductivity (@ 25C)	<2.0		2.0	uS/cm		14-AUG-20	R5189622
Fluoride in Water by IC Fluoride (F)	<0.020		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation Cation - Anion Balance	0.0			%		19-AUG-20	
Anion Sum	<0.10			meq/L		19-AUG-20	
Cation Sum	<0.10			meq/L		19-AUG-20	
Ion Balance Calculation Ion Balance	0.0		-100	%		19-AUG-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	<0.0050		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect. ORP	421		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		17-AUG-20	R5191157
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		17-AUG-20	R5191091
Turbidity Turbidity	<0.10		0.10	NTU		12-AUG-20	R5184202
pH pH	5.46		0.10	pH		14-AUG-20	R5189622
L2487756-4 LC_RD2_WG_Q3-2020 Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		13-AUG-20	R5186978
Total Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189963
Total Metals in Water Hardness Hardness (as CaCO3)	<0.50		0.50	mg/L		19-AUG-20	
Total Be (Low) in Water by CRC ICPMS Beryllium (Be)-Total	<0.020		0.020	ug/L		14-AUG-20	R5189828
Total Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		15-AUG-20	R5189770

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-4 LC_RD2_WG_Q3-2020							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		14-AUG-20	R5189828
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Arsenic (As)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Barium (Ba)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Boron (B)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		14-AUG-20	R5189828
Calcium (Ca)-Total	<0.050		0.050	mg/L		14-AUG-20	R5189828
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Cobalt (Co)-Total	<0.10		0.10	ug/L		14-AUG-20	R5189828
Copper (Cu)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Iron (Fe)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Lead (Pb)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Lithium (Li)-Total	<0.0010		0.0010	mg/L		14-AUG-20	R5189828
Magnesium (Mg)-Total	<0.10		0.10	mg/L		14-AUG-20	R5189828
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		14-AUG-20	R5189828
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Potassium (K)-Total	<0.050		0.050	mg/L		14-AUG-20	R5189828
Selenium (Se)-Total	<0.050		0.050	ug/L		14-AUG-20	R5189828
Silicon (Si)-Total	<0.10		0.10	mg/L		14-AUG-20	R5189828
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Sodium (Na)-Total	<0.050		0.050	mg/L		14-AUG-20	R5189828
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		14-AUG-20	R5189828
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-AUG-20	R5189828
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-AUG-20	R5189828
Uranium (U)-Total	<0.000010		0.000010	mg/L		14-AUG-20	R5189828
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-AUG-20	R5189828
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		14-AUG-20	R5189828
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189582
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		13-AUG-20	R5189702
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					18-AUG-20	R5191029
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		18-AUG-20	R5191471
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		18-AUG-20	R5191471
Potassium (K)-Dissolved	<0.050		0.050	mg/L		18-AUG-20	R5191471
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		18-AUG-20	R5191471
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		14-AUG-20	R5189622

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487756-4 LC_RD2_WG_Q3-2020							
Sampled By: S.FOSSEN/D.TYMSTRA on 11-AUG-20 @ 14:00							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		19-AUG-20	
Anion Sum	<0.10			meq/L		19-AUG-20	
Cation Sum	<0.10			meq/L		19-AUG-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		19-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect.							
ORP	459		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		17-AUG-20	R5191157
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-AUG-20	R5191091
Turbidity							
Turbidity	<0.10		0.10	NTU		12-AUG-20	R5184202
pH							
pH	5.42		0.10	pH		14-AUG-20	R5189622

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
		Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).	
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
		Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2487756

Report Date: 26-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5189582							
WG3384248-8	LCS							
Acidity (as CaCO3)			96.9		%		85-115	14-AUG-20
WG3384248-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	14-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5189622							
WG3384293-17	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	14-AUG-20
WG3384293-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5190481							
WG3384518-2	LCS							
Beryllium (Be)-Dissolved			98.6		%		80-120	17-AUG-20
WG3384518-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5189828							
WG3383155-2	LCS							
Beryllium (Be)-Total			90.0		%		80-120	14-AUG-20
WG3383155-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-AUG-20
BIC-CL								
	Water							
Batch	R5189622							
WG3384293-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-2	LCS							
Bromide (Br)			103.7		%		85-115	13-AUG-20
WG3384396-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5189963							
WG3384741-6	LCS							
Dissolved Organic Carbon			100.7		%		80-120	16-AUG-20
WG3384741-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5189963							
WG3384741-6	LCS							
Total Organic Carbon			99.6		%		80-120	16-AUG-20
WG3384741-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
CL-IC-N-CL	Water							
Batch	R5189702							
WG3384396-2	LCS							
Chloride (Cl)			102.4		%		90-110	13-AUG-20
WG3384396-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
CO3-CL	Water							
Batch	R5189622							
WG3384293-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-AUG-20
EC-L-PCT-CL	Water							
Batch	R5189622							
WG3384293-17	LCS							
Conductivity (@ 25C)			96.8		%		90-110	14-AUG-20
WG3384293-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-AUG-20
F-IC-N-CL	Water							
Batch	R5189702							
WG3384396-2	LCS							
Fluoride (F)			101.0		%		90-110	13-AUG-20
WG3384396-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA Water								
Batch	R5187338							
WG3383765-2	LCS							
Mercury (Hg)-Dissolved			99.1		%		80-120	14-AUG-20
WG3383765-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-AUG-20
HG-T-CVAA-VA Water								
Batch	R5189770							
WG3384406-2	LCS							
Mercury (Hg)-Total			100.8		%		80-120	15-AUG-20
WG3384406-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-AUG-20
MET-D-CCMS-CL Water								
Batch	R5191471							
WG3385993-6	LCS	TMRM						
Calcium (Ca)-Dissolved			97.6		%		80-120	18-AUG-20
Magnesium (Mg)-Dissolved			99.2		%		80-120	18-AUG-20
Potassium (K)-Dissolved			109.3		%		80-120	18-AUG-20
Sodium (Na)-Dissolved			98.3		%		80-120	18-AUG-20
WG3385993-5	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
MET-D-CCMS-VA Water								
Batch	R5190481							
WG3384518-2	LCS							
Aluminum (Al)-Dissolved			105.5		%		80-120	17-AUG-20
Antimony (Sb)-Dissolved			105.1		%		80-120	17-AUG-20
Arsenic (As)-Dissolved			102.6		%		80-120	17-AUG-20
Barium (Ba)-Dissolved			105.4		%		80-120	17-AUG-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	17-AUG-20
Boron (B)-Dissolved			92.4		%		80-120	17-AUG-20
Cadmium (Cd)-Dissolved			102.2		%		80-120	17-AUG-20
Calcium (Ca)-Dissolved			101.8		%		80-120	17-AUG-20
Chromium (Cr)-Dissolved			103.5		%		80-120	17-AUG-20
Cobalt (Co)-Dissolved			104.7		%		80-120	17-AUG-20
Copper (Cu)-Dissolved			104.5		%		80-120	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384518-2	LCS							
Iron (Fe)-Dissolved			108.4		%		80-120	17-AUG-20
Lead (Pb)-Dissolved			104.7		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			98.3		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			103.1		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			106.3		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			99.7		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			106.5		%		80-120	17-AUG-20
Potassium (K)-Dissolved			105.8		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			108.0		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			106.1		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			103.3		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			108.0		%		80-120	17-AUG-20
Strontium (Sr)-Dissolved			102.6		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			106.5		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			101.8		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			102.7		%		80-120	17-AUG-20
Uranium (U)-Dissolved			109.9		%		80-120	17-AUG-20
Vanadium (V)-Dissolved			104.2		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			101.5		%		80-120	17-AUG-20
WG3384518-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384518-1	MB	NP						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Batch	R5191171							
WG3385412-2	LCS							
Aluminum (Al)-Dissolved			92.0		%		80-120	18-AUG-20
Antimony (Sb)-Dissolved			99.5		%		80-120	18-AUG-20
Arsenic (As)-Dissolved			92.4		%		80-120	18-AUG-20
Barium (Ba)-Dissolved			97.8		%		80-120	18-AUG-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	18-AUG-20
Boron (B)-Dissolved			98.3		%		80-120	18-AUG-20
Cadmium (Cd)-Dissolved			99.7		%		80-120	18-AUG-20
Calcium (Ca)-Dissolved			99.97		%		80-120	18-AUG-20
Chromium (Cr)-Dissolved			95.6		%		80-120	18-AUG-20
Cobalt (Co)-Dissolved			95.9		%		80-120	18-AUG-20
Copper (Cu)-Dissolved			93.9		%		80-120	18-AUG-20
Iron (Fe)-Dissolved			94.4		%		80-120	18-AUG-20
Lead (Pb)-Dissolved			97.8		%		80-120	18-AUG-20
Lithium (Li)-Dissolved			98.2		%		80-120	18-AUG-20
Magnesium (Mg)-Dissolved			95.1		%		80-120	18-AUG-20
Manganese (Mn)-Dissolved			97.2		%		80-120	18-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385412-2	LCS							
Molybdenum (Mo)-Dissolved			97.3		%		80-120	18-AUG-20
Nickel (Ni)-Dissolved			94.4		%		80-120	18-AUG-20
Potassium (K)-Dissolved			96.4		%		80-120	18-AUG-20
Selenium (Se)-Dissolved			99.7		%		80-120	18-AUG-20
Silicon (Si)-Dissolved			102.3		%		60-140	18-AUG-20
Silver (Ag)-Dissolved			96.2		%		80-120	18-AUG-20
Sodium (Na)-Dissolved			96.6		%		80-120	18-AUG-20
Strontium (Sr)-Dissolved			99.6		%		80-120	18-AUG-20
Thallium (Tl)-Dissolved			98.2		%		80-120	18-AUG-20
Tin (Sn)-Dissolved			98.0		%		80-120	18-AUG-20
Titanium (Ti)-Dissolved			95.3		%		80-120	18-AUG-20
Uranium (U)-Dissolved			93.8		%		80-120	18-AUG-20
Vanadium (V)-Dissolved			95.6		%		80-120	18-AUG-20
Zinc (Zn)-Dissolved			94.9		%		80-120	18-AUG-20
WG3385412-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385412-1	MB	NP						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5189828							
WG3383155-2	LCS							
Aluminum (Al)-Total			100.0		%		80-120	14-AUG-20
Antimony (Sb)-Total			108.0		%		80-120	14-AUG-20
Arsenic (As)-Total			96.5		%		80-120	14-AUG-20
Barium (Ba)-Total			97.4		%		80-120	14-AUG-20
Bismuth (Bi)-Total			94.3		%		80-120	14-AUG-20
Boron (B)-Total			92.1		%		80-120	14-AUG-20
Cadmium (Cd)-Total			99.4		%		80-120	14-AUG-20
Calcium (Ca)-Total			96.2		%		80-120	14-AUG-20
Chromium (Cr)-Total			100.5		%		80-120	14-AUG-20
Cobalt (Co)-Total			98.7		%		80-120	14-AUG-20
Copper (Cu)-Total			99.8		%		80-120	14-AUG-20
Iron (Fe)-Total			103.1		%		80-120	14-AUG-20
Lead (Pb)-Total			101.0		%		80-120	14-AUG-20
Lithium (Li)-Total			86.9		%		80-120	14-AUG-20
Magnesium (Mg)-Total			99.9		%		80-120	14-AUG-20
Manganese (Mn)-Total			96.3		%		80-120	14-AUG-20
Molybdenum (Mo)-Total			94.3		%		80-120	14-AUG-20
Nickel (Ni)-Total			100.9		%		80-120	14-AUG-20
Potassium (K)-Total			96.6		%		80-120	14-AUG-20
Selenium (Se)-Total			96.0		%		80-120	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5189828							
WG3383155-2 LCS								
Silicon (Si)-Total			98.8		%		80-120	14-AUG-20
Silver (Ag)-Total			103.1		%		80-120	14-AUG-20
Sodium (Na)-Total			98.1		%		80-120	14-AUG-20
Strontium (Sr)-Total			104.9		%		80-120	14-AUG-20
Thallium (Tl)-Total			95.8		%		80-120	14-AUG-20
Tin (Sn)-Total			97.4		%		80-120	14-AUG-20
Titanium (Ti)-Total			96.1		%		80-120	14-AUG-20
Uranium (U)-Total			102.1		%		80-120	14-AUG-20
Vanadium (V)-Total			103.8		%		80-120	14-AUG-20
Zinc (Zn)-Total			97.8		%		80-120	14-AUG-20
WG3383155-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	14-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5189828							
WG3383155-1	MB							
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5190500							
WG3384081-23	DUP	L2487756-4						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384081-22	LCS							
Ammonia as N			100.5		%		85-115	14-AUG-20
WG3384081-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
WG3384081-24	MS	L2487756-4						
Ammonia as N			114.4		%		75-125	14-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-2	LCS							
Nitrite (as N)			100.2		%		90-110	13-AUG-20
WG3384396-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
NO3-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-2	LCS							
Nitrate (as N)			103.2		%		90-110	13-AUG-20
WG3384396-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
OH-CL								
	Water							
Batch	R5189622							
WG3384293-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-AUG-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5189407							
WG3383539-3	CRM	CL-ORP						
ORP			218		mV		210-230	14-AUG-20
WG3383539-4	DUP	L2487756-4						
ORP		459	465	J	mV	5.6	15	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5189342							
WG3383701-30	LCS							
Phosphorus (P)-Total			102.5		%		80-120	14-AUG-20
WG3383701-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-AUG-20
PH-CL	Water							
Batch	R5189622							
WG3384293-17	LCS							
pH			7.01		pH		6.9-7.1	14-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5184087							
WG3382006-22	LCS							
Orthophosphate-Dissolved (as P)			104.3		%		80-120	12-AUG-20
WG3382006-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-AUG-20
SO4-IC-N-CL	Water							
Batch	R5189702							
WG3384396-2	LCS							
Sulfate (SO4)			101.1		%		90-110	13-AUG-20
WG3384396-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191157							
WG3384691-14	LCS							
Total Dissolved Solids			105.9		%		85-115	17-AUG-20
WG3384691-13	MB							
Total Dissolved Solids			<10		mg/L		10	17-AUG-20
TEH-WATER-VA-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL								
	Water							
Batch	R5177010							
WG3382502-2	LCS							
TEH (C10-C30)			82.6		%		70-130	13-AUG-20
WG3382502-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	13-AUG-20
Surrogate: 2-Bromobenzotrifluoride			98.3		%		60-140	13-AUG-20
TKN-L-F-CL								
	Water							
Batch	R5186978							
WG3383168-3	DUP	L2487756-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3383168-12	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	13-AUG-20
WG3383168-15	LCS							
Total Kjeldahl Nitrogen			93.4		%		75-125	13-AUG-20
WG3383168-19	LCS							
Total Kjeldahl Nitrogen			91.9		%		75-125	13-AUG-20
WG3383168-2	LCS							
Total Kjeldahl Nitrogen			94.0		%		75-125	13-AUG-20
WG3383168-26	LCS							
Total Kjeldahl Nitrogen			90.2		%		75-125	13-AUG-20
WG3383168-8	LCS							
Total Kjeldahl Nitrogen			94.1		%		75-125	13-AUG-20
WG3383168-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-25	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-4	MS	L2487756-4						
Total Kjeldahl Nitrogen			105.2		%		70-130	13-AUG-20
TSS-L-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5191091							
WG3384690-8	LCS							
Total Suspended Solids			106.6		%		85-115	17-AUG-20
WG3384690-7	MB							
Total Suspended Solids			<1.0		mg/L		1	17-AUG-20
TURBIDITY-CL	Water							
Batch	R5184202							
WG3382222-14	LCS							
Turbidity			98.0		%		85-115	12-AUG-20
WG3382222-13	MB							
Turbidity			<0.10		NTU		0.1	12-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-AUG-20 14:00	14-AUG-20 08:30	0.25	66	hours	EHTR-FM
	2	11-AUG-20 14:00	14-AUG-20 08:30	0.25	66	hours	EHTR-FM
	3	11-AUG-20 14:00	14-AUG-20 08:30	0.25	66	hours	EHTR-FM
	4	11-AUG-20 14:00	14-AUG-20 08:30	0.25	66	hours	EHTR-FM
pH	1	11-AUG-20 14:00	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	2	11-AUG-20 14:00	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	3	11-AUG-20 14:00	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	4	11-AUG-20 14:00	14-AUG-20 13:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

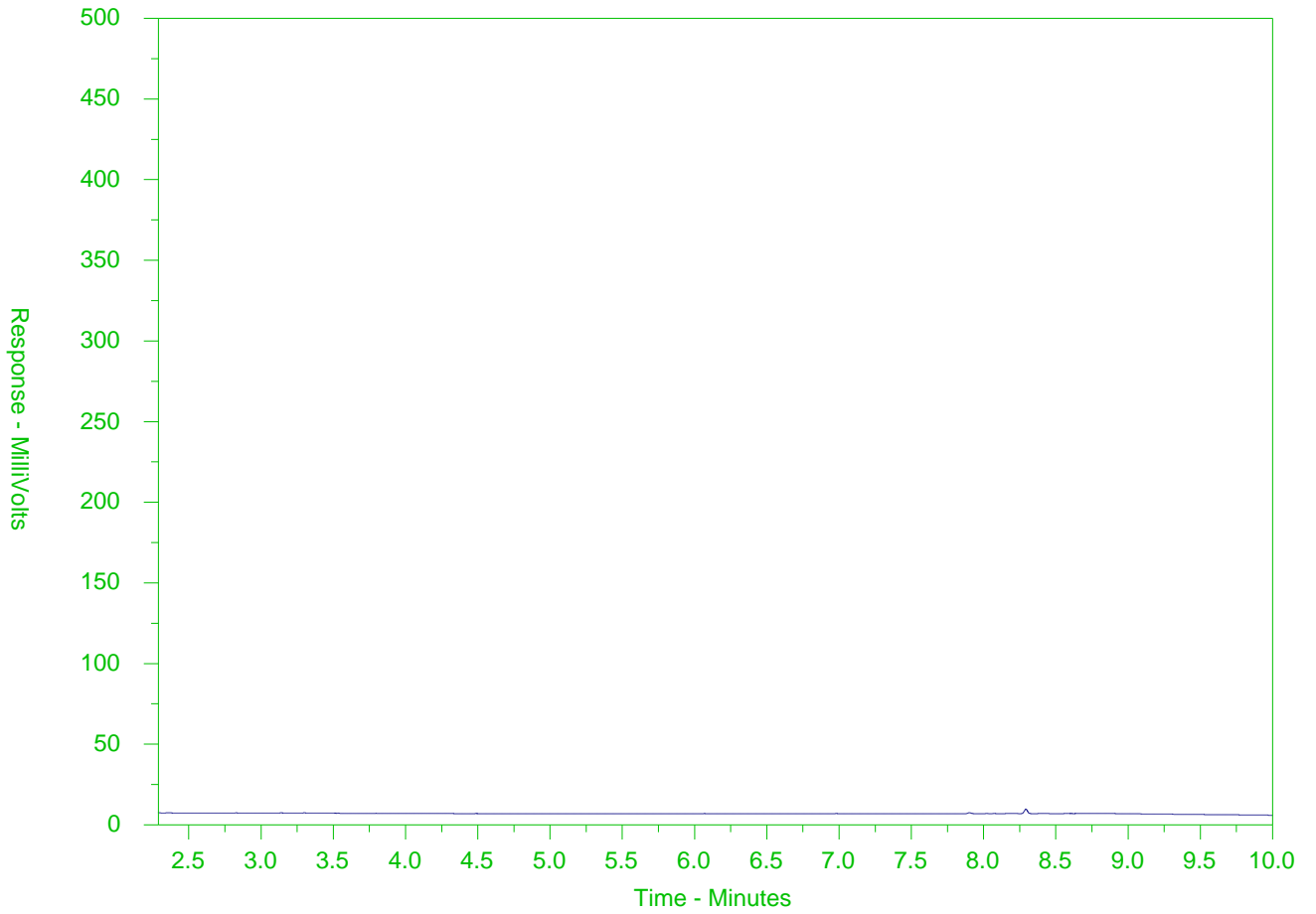
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2487756 were received on 12-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Sample ID: L2487756-1
 Client Sample ID: LC_PIZP1105_WG_Q3-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →	← Diesel/ Jet Fuels →		
		← Motor Oils/ Lube Oils/ Grease →	

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	LC_WG_PIZP1105	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets	Email 1:	chris.blurton@teck.com x x
Email	chris.blurton@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	teckcoal@equisonline.com x x
Address	Box 2003	Address	2559 29 Street NE	Email 3:	drake.tymstra@teck.com x x
	15km North Hwy 43			Email 4:	shanise.fossen@teck.com x x
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	PO number	VPO00680643

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2487756-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T				
LC_PIZP1105_WG_Q3-2020_N	LC_PIZP1105	WG	No	8/11/2020	14:00	G	7		1	1	1	1	1	1	1	1				
LC_CC3_WG_Q3-2020	LC_PIZP1105	WG	No	8/11/2020	14:00	G	7		1	1	1	1	1	1	1	1				
LC_MT3_WG_Q3-2020	LC_PIZP1105	WG	No	8/11/2020	14:00	G	7		1	1	1	1	1	1	1	1				
LC_RD2_WG_Q3-2020	LC_PIZP1105	WG	No	8/11/2020	14:00	G	4				1		1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	11-Aug	<i>[Signature]</i>	8/11/2020

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	S. Fossen/D. Tymstra	Mobile #		
Sampler's Signature	S Fossen	Date/Time	August 11, 2020	10 ⁰



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 13-AUG-20
Report Date: 09-FEB-21 11:58 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2488183
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_WG_PIZP1103
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:02

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488183-1 LC_PIZP1103_WG_Q3-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 12-AUG-20 @ 13:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	506		5.0	mg/L		17-AUG-20	R5190218
Carbonate (CO3)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Dissolved Organic Carbon	1.99		0.50	mg/L		17-AUG-20	R5190891
Hydroxide (OH)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Total Kjeldahl Nitrogen	0.290		0.050	mg/L		14-AUG-20	R5188598
Total Organic Carbon	1.88		0.50	mg/L		17-AUG-20	R5190891
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-AUG-20	18-AUG-20	R5191171
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5190540
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-AUG-20	18-AUG-20	R5190571
Dissolved Mercury Filtration Location	FIELD					18-AUG-20	R5191124
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5190540
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-AUG-20	18-AUG-20	R5191171
Antimony (Sb)-Dissolved	0.00014		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Arsenic (As)-Dissolved	0.00081		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Barium (Ba)-Dissolved	0.0708		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-AUG-20	18-AUG-20	R5191171
Boron (B)-Dissolved	0.514		0.010	mg/L	18-AUG-20	18-AUG-20	R5191171
Cadmium (Cd)-Dissolved	0.0067		0.0050	ug/L	18-AUG-20	18-AUG-20	R5191171
Calcium (Ca)-Dissolved	29.1		0.050	mg/L	18-AUG-20	18-AUG-20	R5191171
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Cobalt (Co)-Dissolved	0.47		0.10	ug/L	18-AUG-20	18-AUG-20	R5191171
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-AUG-20	18-AUG-20	R5191171
Iron (Fe)-Dissolved	0.229		0.010	mg/L	18-AUG-20	18-AUG-20	R5191171
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-AUG-20	18-AUG-20	R5191171
Lithium (Li)-Dissolved	0.110		0.0010	mg/L	18-AUG-20	18-AUG-20	R5191171
Magnesium (Mg)-Dissolved	15.1		0.10	mg/L	18-AUG-20	18-AUG-20	R5191171
Manganese (Mn)-Dissolved	0.547		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Molybdenum (Mo)-Dissolved	0.0167		0.000050	mg/L	18-AUG-20	18-AUG-20	R5191171
Nickel (Ni)-Dissolved	0.00100		0.00050	mg/L	18-AUG-20	18-AUG-20	R5191171
Potassium (K)-Dissolved	1.58		0.050	mg/L	18-AUG-20	18-AUG-20	R5191171
Selenium (Se)-Dissolved	0.487	DTSE	0.050	ug/L	18-AUG-20	18-AUG-20	R5191171
Silicon (Si)-Dissolved	4.35		0.050	mg/L	18-AUG-20	18-AUG-20	R5191171
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-AUG-20	18-AUG-20	R5191171
Sodium (Na)-Dissolved	125		0.050	mg/L	18-AUG-20	18-AUG-20	R5191171
Strontium (Sr)-Dissolved	0.808		0.00020	mg/L	18-AUG-20	18-AUG-20	R5191171
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-AUG-20	18-AUG-20	R5191171
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	18-AUG-20	R5191171
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-AUG-20	18-AUG-20	R5191171
Uranium (U)-Dissolved	0.00178		0.000010	mg/L	18-AUG-20	18-AUG-20	R5191171
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-AUG-20	18-AUG-20	R5191171
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-AUG-20	18-AUG-20	R5191171
Hardness							
Hardness (as CaCO3)	135		0.50	mg/L		18-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-AUG-20	R5191171
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488183-1 LC_PIZP1103_WG_Q3-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 12-AUG-20 @ 13:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.126		0.0030	mg/L		18-AUG-20	R5191171
Antimony (Sb)-Total	0.00023		0.00010	mg/L		18-AUG-20	R5191171
Arsenic (As)-Total	0.00101		0.00010	mg/L		18-AUG-20	R5191171
Barium (Ba)-Total	0.0696		0.00010	mg/L		18-AUG-20	R5191171
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-AUG-20	R5191171
Boron (B)-Total	0.513		0.010	mg/L		18-AUG-20	R5191171
Cadmium (Cd)-Total	<0.030	DLM	0.030	ug/L		18-AUG-20	R5191171
Calcium (Ca)-Total	29.2		0.050	mg/L		18-AUG-20	R5191171
Chromium (Cr)-Total	0.00033		0.00010	mg/L		18-AUG-20	R5191171
Cobalt (Co)-Total	0.57		0.10	ug/L		18-AUG-20	R5191171
Copper (Cu)-Total	0.00088		0.00050	mg/L		18-AUG-20	R5191171
Iron (Fe)-Total	0.415		0.010	mg/L		18-AUG-20	R5191171
Lead (Pb)-Total	0.000200		0.000050	mg/L		18-AUG-20	R5191171
Lithium (Li)-Total	0.112		0.0010	mg/L		18-AUG-20	R5191171
Magnesium (Mg)-Total	15.4		0.10	mg/L		18-AUG-20	R5191171
Manganese (Mn)-Total	0.548		0.00010	mg/L		18-AUG-20	R5191171
Molybdenum (Mo)-Total	0.0163		0.000050	mg/L		18-AUG-20	R5191171
Nickel (Ni)-Total	0.00195		0.00050	mg/L		18-AUG-20	R5191171
Potassium (K)-Total	1.55		0.050	mg/L		18-AUG-20	R5191171
Selenium (Se)-Total	<0.050		0.050	ug/L		18-AUG-20	R5191171
Silicon (Si)-Total	4.63		0.10	mg/L		18-AUG-20	R5191171
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-AUG-20	R5191171
Sodium (Na)-Total	124		0.050	mg/L		18-AUG-20	R5191171
Strontium (Sr)-Total	0.816		0.00020	mg/L		18-AUG-20	R5191171
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		18-AUG-20	R5191171
Tin (Sn)-Total	0.00020		0.00010	mg/L		18-AUG-20	R5191171
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-AUG-20	R5191171
Uranium (U)-Total	0.00170		0.000010	mg/L		18-AUG-20	R5191171
Vanadium (V)-Total	0.00096		0.00050	mg/L		18-AUG-20	R5191171
Zinc (Zn)-Total	0.0067		0.0030	mg/L		18-AUG-20	R5191171
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	7.5		1.0	mg/L		17-AUG-20	R5190618
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	414		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Total (as CaCO3)	414		1.0	mg/L		17-AUG-20	R5190218
Ammonia, Total (as N)							
Ammonia as N	0.136		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.059		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	3.25		0.50	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC)							
Conductivity (@ 25C)	684		2.0	uS/cm		17-AUG-20	R5190218
Fluoride in Water by IC							
Fluoride (F)	0.372		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Ion Balance	92.3		-100	%		18-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-4.0			%		18-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488183-1 LC_PIZP1103_WG_Q3-2020_NP Sampled By: S. Fossen/D. Tymstra on 12-AUG-20 @ 13:00 Matrix: WG							
Ion Balance Calculation							
Anion Sum	8.89			meq/L		18-AUG-20	
Cation Sum	8.21			meq/L		18-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0320		0.0010	mg/L		13-AUG-20	R5186820
Oxidation redution potential by elect.							
ORP	398		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0762		0.0020	mg/L		17-AUG-20	R5190317
Sulfate in Water by IC							
Sulfate (SO4)	23.8		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							
Total Dissolved Solids	456	DLHC	20	mg/L		18-AUG-20	R5191924
Total Suspended Solids							
Total Suspended Solids	9.0		1.0	mg/L		18-AUG-20	R5191850
Turbidity							
Turbidity	10.3		0.10	NTU		13-AUG-20	R5187018
pH							
pH	7.82		0.10	pH		17-AUG-20	R5190218

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_WG_PIZP1103

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2488183

Report Date: 09-FEB-21

Page 1 of 11

Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5190618							
WG3385506-2	LCS							
Acidity (as CaCO3)			104.2		%		85-115	17-AUG-20
WG3385506-1	MB							
Acidity (as CaCO3)			1.5		mg/L		2	17-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5190218							
WG3385041-11	LCS							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	17-AUG-20
WG3385041-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5191171							
WG3385412-2	LCS							
Beryllium (Be)-Dissolved			96.6		%		80-120	18-AUG-20
WG3385412-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5191171							
WG3385409-2	LCS							
Beryllium (Be)-Total			102.5		%		80-120	18-AUG-20
WG3385409-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	18-AUG-20
BIC-CL								
	Water							
Batch	R5190218							
WG3385041-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-10	LCS							
Bromide (Br)			98.7		%		85-115	13-AUG-20
WG3384396-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5190891							
WG3385656-6	LCS							
Dissolved Organic Carbon			101.9		%		80-120	17-AUG-20
WG3385656-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5190891							
WG3385656-6	LCS							
Total Organic Carbon			94.7		%		80-120	17-AUG-20
WG3385656-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
CL-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Chloride (Cl)			99.9		%		90-110	13-AUG-20
WG3384396-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
CO3-CL	Water							
Batch	R5190218							
WG3385041-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	17-AUG-20
EC-L-PCT-CL	Water							
Batch	R5190218							
WG3385041-11	LCS							
Conductivity (@ 25C)			98.4		%		90-110	17-AUG-20
WG3385041-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-AUG-20
F-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Fluoride (F)			106.0		%		90-110	13-AUG-20
WG3384396-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5190571							
WG3386023-14	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	18-AUG-20
WG3386023-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-AUG-20
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385412-2	LCS							
Aluminum (Al)-Dissolved			92.0		%		80-120	18-AUG-20
Antimony (Sb)-Dissolved			99.5		%		80-120	18-AUG-20
Arsenic (As)-Dissolved			92.4		%		80-120	18-AUG-20
Barium (Ba)-Dissolved			97.8		%		80-120	18-AUG-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	18-AUG-20
Boron (B)-Dissolved			98.3		%		80-120	18-AUG-20
Cadmium (Cd)-Dissolved			99.7		%		80-120	18-AUG-20
Calcium (Ca)-Dissolved			99.97		%		80-120	18-AUG-20
Chromium (Cr)-Dissolved			95.6		%		80-120	18-AUG-20
Cobalt (Co)-Dissolved			95.9		%		80-120	18-AUG-20
Copper (Cu)-Dissolved			93.9		%		80-120	18-AUG-20
Iron (Fe)-Dissolved			94.4		%		80-120	18-AUG-20
Lead (Pb)-Dissolved			97.8		%		80-120	18-AUG-20
Lithium (Li)-Dissolved			98.2		%		80-120	18-AUG-20
Magnesium (Mg)-Dissolved			95.1		%		80-120	18-AUG-20
Manganese (Mn)-Dissolved			97.2		%		80-120	18-AUG-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	18-AUG-20
Nickel (Ni)-Dissolved			94.4		%		80-120	18-AUG-20
Potassium (K)-Dissolved			96.4		%		80-120	18-AUG-20
Selenium (Se)-Dissolved			99.7		%		80-120	18-AUG-20
Silicon (Si)-Dissolved			102.3		%		60-140	18-AUG-20
Silver (Ag)-Dissolved			96.2		%		80-120	18-AUG-20
Sodium (Na)-Dissolved			96.6		%		80-120	18-AUG-20
Strontium (Sr)-Dissolved			99.6		%		80-120	18-AUG-20
Thallium (Tl)-Dissolved			98.2		%		80-120	18-AUG-20
Tin (Sn)-Dissolved			98.0		%		80-120	18-AUG-20
Titanium (Ti)-Dissolved			95.3		%		80-120	18-AUG-20
Uranium (U)-Dissolved			93.8		%		80-120	18-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385412-2	LCS							
Vanadium (V)-Dissolved			95.6		%		80-120	18-AUG-20
Zinc (Zn)-Dissolved			94.9		%		80-120	18-AUG-20
WG3385412-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5191171							
WG3385409-2	LCS							
Aluminum (Al)-Total			99.2		%		80-120	18-AUG-20
Antimony (Sb)-Total			107.4		%		80-120	18-AUG-20
Arsenic (As)-Total			96.0		%		80-120	18-AUG-20
Barium (Ba)-Total			102.8		%		80-120	18-AUG-20
Bismuth (Bi)-Total			100.5		%		80-120	18-AUG-20
Boron (B)-Total			102.5		%		80-120	18-AUG-20
Cadmium (Cd)-Total			103.1		%		80-120	18-AUG-20
Calcium (Ca)-Total			107.1		%		80-120	18-AUG-20
Chromium (Cr)-Total			99.6		%		80-120	18-AUG-20
Cobalt (Co)-Total			98.9		%		80-120	18-AUG-20
Copper (Cu)-Total			97.4		%		80-120	18-AUG-20
Iron (Fe)-Total			100.0		%		80-120	18-AUG-20
Lead (Pb)-Total			100.5		%		80-120	18-AUG-20
Lithium (Li)-Total			104.6		%		80-120	18-AUG-20
Magnesium (Mg)-Total			98.7		%		80-120	18-AUG-20
Manganese (Mn)-Total			103.1		%		80-120	18-AUG-20
Molybdenum (Mo)-Total			104.5		%		80-120	18-AUG-20
Nickel (Ni)-Total			98.2		%		80-120	18-AUG-20
Potassium (K)-Total			98.8		%		80-120	18-AUG-20
Selenium (Se)-Total			103.7		%		80-120	18-AUG-20
Silicon (Si)-Total			108.6		%		80-120	18-AUG-20
Silver (Ag)-Total			102.0		%		80-120	18-AUG-20
Sodium (Na)-Total			100.5		%		80-120	18-AUG-20
Strontium (Sr)-Total			107.7		%		80-120	18-AUG-20
Thallium (Tl)-Total			100.4		%		80-120	18-AUG-20
Tin (Sn)-Total			101.6		%		80-120	18-AUG-20
Titanium (Ti)-Total			98.3		%		80-120	18-AUG-20
Uranium (U)-Total			97.7		%		80-120	18-AUG-20
Vanadium (V)-Total			99.7		%		80-120	18-AUG-20
Zinc (Zn)-Total			96.5		%		80-120	18-AUG-20
WG3385409-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	18-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5191171							
WG3385409-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	18-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	18-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	18-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	18-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	18-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	18-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	18-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	18-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	18-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	18-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	18-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-AUG-20
NH3-L-F-CL		Water						
Batch	R5190500							
WG3384081-10	LCS							
Ammonia as N			101.7		%		85-115	14-AUG-20
WG3384081-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Nitrite (as N)			97.5		%		90-110	13-AUG-20
WG3384396-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Nitrate (as N)			100.8		%		90-110	13-AUG-20
WG3384396-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
OH-CL	Water							
Batch	R5190218							
WG3385041-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-AUG-20
ORP-CL	Water							
Batch	R5189407							
WG3383539-5	CRM	CL-ORP						
ORP			226		mV		210-230	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5190317							
WG3385016-14	LCS							
Phosphorus (P)-Total			105.6		%		80-120	17-AUG-20
WG3385016-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-AUG-20
PH-CL	Water							
Batch	R5190218							
WG3385041-11	LCS							
pH			7.00		pH		6.9-7.1	17-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-6	LCS							
Orthophosphate-Dissolved (as P)			98.5		%		80-120	13-AUG-20
WG3382949-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Sulfate (SO4)			98.4		%		90-110	13-AUG-20
WG3384396-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191924							
WG3385511-2	LCS							
Total Dissolved Solids			97.6		%		85-115	18-AUG-20
WG3385511-1	MB							
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
TKN-L-F-CL	Water							
Batch	R5188598							
WG3383662-10	LCS							
Total Kjeldahl Nitrogen			93.9		%		75-125	14-AUG-20
WG3383662-12	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	14-AUG-20
WG3383662-2	LCS							
Total Kjeldahl Nitrogen			96.3		%		75-125	14-AUG-20
WG3383662-6	LCS							
Total Kjeldahl Nitrogen			95.9		%		75-125	14-AUG-20
WG3383662-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
TSS-L-CL	Water							
Batch	R5191850							
WG3385510-2	LCS							
Total Suspended Solids			88.4		%		85-115	18-AUG-20
WG3385510-1	MB							
Total Suspended Solids			<1.0		mg/L		1	18-AUG-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5187018							
WG3383089-2	LCS							
Turbidity			98.0		%		85-115	13-AUG-20
WG3383089-1	MB							
Turbidity			<0.10		NTU		0.1	13-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-AUG-20 13:00	14-AUG-20 08:00	0.25	43	hours	EHTR-FM
pH	1	12-AUG-20 13:00	17-AUG-20 13:00	0.25	120	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2488183 were received on 13-AUG-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	LC_WG_PIZP1103	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets	Email 1:	chris.blurton@teck.com x x x
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Address	Box 2003	Address	2559 29 Street.NE	Email 3:	drake.tymstra@teck.com x x x
	15km North Hwy 43			Email 4:	shanise.fossen@teck.com x x x
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Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	PO number	VPO00680643

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filter	N	Y	Y	N	Y	N	N	N	N	Filter	F: Field, L: Lab, FL: Field & Lab, N: None
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfite-T			
LC_PIZP1103_WG_Q3-2020_NP	LC_PIZP1103	WG	No	8/12/2020	13:00	G	7		1	1		1	1	1	1				



L2488183-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	12-Aug	<i>[Signature]</i>	8/13/2020

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	S. Fossen/D. Tymstra	Mobile #		
Sampler's Signature	S Fossen	Date/Time	August 12, 2020	

[Handwritten mark]



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 19-AUG-20
Report Date: 26-FEB-21 12:04 (MT)
Version: FINAL REV. 4

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2491520
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_WG_PIZP1101
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:03

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491520-1 LC_PIZP1101_WG_Q3-2020_N							
Sampled By: S. Fossen/D. Tymstra on 18-AUG-20 @ 15:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	200		5.0	mg/L		21-AUG-20	R5198082
Carbonate (CO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-AUG-20	R5197788
Hydroxide (OH)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Total Kjeldahl Nitrogen	1.26	DLM	0.25	mg/L		20-AUG-20	R5195197
Total Organic Carbon	<5.0	DLM	5.0	mg/L		22-AUG-20	R5197788
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	21-AUG-20	21-AUG-20	R5197818
EPH19-32	<0.25		0.25	mg/L	21-AUG-20	21-AUG-20	R5197818
Surrogate: 2-Bromobenzotrifluoride	100.2		60-140	%	21-AUG-20	21-AUG-20	R5197818
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		23-AUG-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	21-AUG-20	21-AUG-20	R5197818
Surrogate: 2-Bromobenzotrifluoride	100.2		60-140	%	21-AUG-20	21-AUG-20	R5197818
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-AUG-20	23-AUG-20	R5199384
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					25-AUG-20	R5200175
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Aluminum (Al)-Dissolved	0.0038		0.0030	mg/L	21-AUG-20	23-AUG-20	R5199384
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Arsenic (As)-Dissolved	0.00125		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Barium (Ba)-Dissolved	0.501		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Boron (B)-Dissolved	0.022		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	21-AUG-20	23-AUG-20	R5199384
Calcium (Ca)-Dissolved	28.0		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	21-AUG-20	23-AUG-20	R5199384
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Iron (Fe)-Dissolved	0.062		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Lithium (Li)-Dissolved	0.0101		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Magnesium (Mg)-Dissolved	12.9		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Manganese (Mn)-Dissolved	0.214		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Molybdenum (Mo)-Dissolved	0.0205		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Potassium (K)-Dissolved	0.763		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	21-AUG-20	23-AUG-20	R5199384
Silicon (Si)-Dissolved	3.72		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Sodium (Na)-Dissolved	23.2		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Strontium (Sr)-Dissolved	0.219		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491520-1 LC_PIZP1101_WG_Q3-2020_N							
Sampled By: S. Fossen/D. Tymstra on 18-AUG-20 @ 15:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Uranium (U)-Dissolved	0.00165		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Hardness							
Hardness (as CaCO3)	123		0.50	mg/L		25-AUG-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.565		0.020	ug/L		25-AUG-20	R5199657
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000405		0.0000050	mg/L		25-AUG-20	R5199559
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	10.5		0.0030	mg/L		25-AUG-20	R5199657
Antimony (Sb)-Total	0.00035		0.00010	mg/L		25-AUG-20	R5199657
Arsenic (As)-Total	0.00404		0.00010	mg/L		25-AUG-20	R5199657
Barium (Ba)-Total	0.688		0.00010	mg/L		25-AUG-20	R5199657
Bismuth (Bi)-Total	0.000182		0.000050	mg/L		25-AUG-20	R5199657
Boron (B)-Total	0.037		0.010	mg/L		25-AUG-20	R5199657
Cadmium (Cd)-Total	1.41		0.0050	ug/L		25-AUG-20	R5199657
Calcium (Ca)-Total	63.8		0.050	mg/L		25-AUG-20	R5199657
Chromium (Cr)-Total	0.0153		0.00010	mg/L		25-AUG-20	R5199657
Cobalt (Co)-Total	5.18		0.10	ug/L		25-AUG-20	R5199657
Copper (Cu)-Total	0.0414		0.00050	mg/L		25-AUG-20	R5199657
Iron (Fe)-Total	11.8		0.010	mg/L		25-AUG-20	R5199657
Lead (Pb)-Total	0.00863		0.000050	mg/L		25-AUG-20	R5199657
Lithium (Li)-Total	0.0190		0.0010	mg/L		25-AUG-20	R5199657
Magnesium (Mg)-Total	21.4		0.10	mg/L		25-AUG-20	R5199657
Manganese (Mn)-Total	0.641		0.00010	mg/L		25-AUG-20	R5199657
Molybdenum (Mo)-Total	0.0163		0.000050	mg/L		25-AUG-20	R5199657
Nickel (Ni)-Total	0.0206		0.00050	mg/L		25-AUG-20	R5199657
Potassium (K)-Total	4.05		0.050	mg/L		25-AUG-20	R5199657
Selenium (Se)-Total	3.65		0.050	ug/L		25-AUG-20	R5199657
Silicon (Si)-Total	19.5		0.10	mg/L		25-AUG-20	R5199657
Silver (Ag)-Total	0.000569		0.000010	mg/L		25-AUG-20	R5199657
Sodium (Na)-Total	21.4		0.050	mg/L		25-AUG-20	R5199657
Strontium (Sr)-Total	0.275		0.00020	mg/L		25-AUG-20	R5199657
Thallium (Tl)-Total	0.000658		0.000010	mg/L		25-AUG-20	R5199657
Tin (Sn)-Total	0.00033		0.00010	mg/L		25-AUG-20	R5199657
Titanium (Ti)-Total	0.041		0.010	mg/L		25-AUG-20	R5199657
Uranium (U)-Total	0.00273		0.000010	mg/L		25-AUG-20	R5199657
Vanadium (V)-Total	0.0290		0.00050	mg/L		25-AUG-20	R5199657
Zinc (Zn)-Total	0.0987		0.0030	mg/L		25-AUG-20	R5199657
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5197957
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	164		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Carbonate (as CaCO3)	4.6		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Total (as CaCO3)	169		1.0	mg/L		21-AUG-20	R5198082
Ammonia, Total (as N)							
Ammonia as N	0.0663		0.0050	mg/L		20-AUG-20	R5195104

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491520-1 LC_PIZP1101_WG_Q3-2020_N							
Sampled By: S. Fossen/D. Tymstra on 18-AUG-20 @ 15:00							
Matrix: WG							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-AUG-20	R5197601
Chloride in Water by IC							
Chloride (Cl)	0.83		0.50	mg/L		21-AUG-20	R5197601
Electrical Conductivity (EC)							
Conductivity (@ 25C)	297		2.0	uS/cm		21-AUG-20	R5198082
Fluoride in Water by IC							
Fluoride (F)	1.88		0.020	mg/L		21-AUG-20	R5197601
Ion Balance Calculation							
Ion Balance	97.5		-100	%		25-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.2			%		25-AUG-20	
Anion Sum	3.59			meq/L		25-AUG-20	
Cation Sum	3.51			meq/L		25-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0580		0.0050	mg/L		21-AUG-20	R5197601
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-AUG-20	R5197601
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0094		0.0010	mg/L		20-AUG-20	R5194040
Oxidation redution potential by elect.							
ORP	342		-1000	mV		20-AUG-20	R5194198
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.568	DLHC	0.050	mg/L		21-AUG-20	R5195438
Sulfate in Water by IC							
Sulfate (SO4)	4.44		0.30	mg/L		21-AUG-20	R5197601
Total Dissolved Solids							
Total Dissolved Solids	370	DLHC	20	mg/L		21-AUG-20	R5199245
Total Suspended Solids							
Total Suspended Solids	317		1.0	mg/L		21-AUG-20	R5199211
Turbidity							
Turbidity	638		0.10	NTU		20-AUG-20	R5194236
pH							
pH	8.40		0.10	pH		21-AUG-20	R5198082

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_WG_PIZP1101

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
 < - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2491520

Report Date: 26-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5197957							
WG3389516-2	LCS							
Acidity (as CaCO3)			102.8		%		85-115	21-AUG-20
WG3389516-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	21-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5198082							
WG3389563-8	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	21-AUG-20
WG3389563-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-2	LCS							
Beryllium (Be)-Dissolved			105.4		%		80-120	23-AUG-20
WG3388960-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5199657							
WG3389303-2	LCS							
Beryllium (Be)-Total			93.3		%		80-120	25-AUG-20
WG3389303-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	25-AUG-20
BIC-CL								
	Water							
Batch	R5198082							
WG3389563-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-2	LCS							
Bromide (Br)			97.3		%		85-115	21-AUG-20
WG3389325-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5197788							
WG3389381-2	LCS							
Dissolved Organic Carbon			104.4		%		80-120	22-AUG-20
WG3389381-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5197788							
WG3389381-2	LCS							
Total Organic Carbon			112.2		%		80-120	22-AUG-20
WG3389381-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-AUG-20
CL-IC-N-CL	Water							
Batch	R5197601							
WG3389325-2	LCS							
Chloride (Cl)			100.0		%		90-110	21-AUG-20
WG3389325-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-20
CO3-CL	Water							
Batch	R5198082							
WG3389563-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-20
EC-L-PCT-CL	Water							
Batch	R5198082							
WG3389563-8	LCS							
Conductivity (@ 25C)			97.5		%		90-110	21-AUG-20
WG3389563-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-20
F-IC-N-CL	Water							
Batch	R5197601							
WG3389325-2	LCS							
Fluoride (F)			106.0		%		90-110	21-AUG-20
WG3389325-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5200454							
WG3391198-6	LCS							
Mercury (Hg)-Dissolved			90.0		%		80-120	26-AUG-20
WG3391198-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-AUG-20
WG3391198-10	MS	L2491520-1						
Mercury (Hg)-Dissolved			95.2		%		70-130	26-AUG-20
HG-T-CVAA-VA								
Water								
Batch	R5199559							
WG3390394-2	LCS							
Mercury (Hg)-Total			97.3		%		80-120	25-AUG-20
WG3390394-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	25-AUG-20
WG3390394-4	MS	L2491520-1						
Mercury (Hg)-Total			97.3		%		70-130	25-AUG-20
MET-D-CCMS-VA								
Water								
Batch	R5199384							
WG3388960-2	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	23-AUG-20
Antimony (Sb)-Dissolved			112.9		%		80-120	23-AUG-20
Arsenic (As)-Dissolved			101.9		%		80-120	23-AUG-20
Barium (Ba)-Dissolved			108.3		%		80-120	23-AUG-20
Bismuth (Bi)-Dissolved			107.3		%		80-120	23-AUG-20
Boron (B)-Dissolved			104.4		%		80-120	23-AUG-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	23-AUG-20
Calcium (Ca)-Dissolved			104.4		%		80-120	23-AUG-20
Chromium (Cr)-Dissolved			105.3		%		80-120	23-AUG-20
Cobalt (Co)-Dissolved			102.6		%		80-120	23-AUG-20
Copper (Cu)-Dissolved			101.7		%		80-120	23-AUG-20
Iron (Fe)-Dissolved			98.7		%		80-120	23-AUG-20
Lead (Pb)-Dissolved			102.7		%		80-120	23-AUG-20
Lithium (Li)-Dissolved			105.8		%		80-120	23-AUG-20
Magnesium (Mg)-Dissolved			100.1		%		80-120	23-AUG-20
Manganese (Mn)-Dissolved			101.8		%		80-120	23-AUG-20
Molybdenum (Mo)-Dissolved			111.1		%		80-120	23-AUG-20
Nickel (Ni)-Dissolved			103.0		%		80-120	23-AUG-20
Potassium (K)-Dissolved			105.3		%		80-120	23-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-2	LCS							
Selenium (Se)-Dissolved			102.9		%		80-120	23-AUG-20
Silicon (Si)-Dissolved			107.7		%		60-140	23-AUG-20
Silver (Ag)-Dissolved			107.8		%		80-120	23-AUG-20
Sodium (Na)-Dissolved			109.6		%		80-120	23-AUG-20
Strontium (Sr)-Dissolved			111.2		%		80-120	23-AUG-20
Thallium (Tl)-Dissolved			104.9		%		80-120	23-AUG-20
Tin (Sn)-Dissolved			100.7		%		80-120	23-AUG-20
Titanium (Ti)-Dissolved			101.3		%		80-120	23-AUG-20
Uranium (U)-Dissolved			102.7		%		80-120	23-AUG-20
Vanadium (V)-Dissolved			102.8		%		80-120	23-AUG-20
Zinc (Zn)-Dissolved			99.1		%		80-120	23-AUG-20
WG3388960-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5199657							
WG3389303-2	LCS							
Aluminum (Al)-Total			99.9		%		80-120	25-AUG-20
Antimony (Sb)-Total			109.1		%		80-120	25-AUG-20
Arsenic (As)-Total			95.2		%		80-120	25-AUG-20
Barium (Ba)-Total			100.4		%		80-120	25-AUG-20
Bismuth (Bi)-Total			101.9		%		80-120	25-AUG-20
Boron (B)-Total			98.0		%		80-120	25-AUG-20
Cadmium (Cd)-Total			99.6		%		80-120	25-AUG-20
Calcium (Ca)-Total			97.7		%		80-120	25-AUG-20
Chromium (Cr)-Total			102.9		%		80-120	25-AUG-20
Cobalt (Co)-Total			98.5		%		80-120	25-AUG-20
Copper (Cu)-Total			97.3		%		80-120	25-AUG-20
Iron (Fe)-Total			98.4		%		80-120	25-AUG-20
Lead (Pb)-Total			104.7		%		80-120	25-AUG-20
Lithium (Li)-Total			90.2		%		80-120	25-AUG-20
Magnesium (Mg)-Total			96.6		%		80-120	25-AUG-20
Manganese (Mn)-Total			105.5		%		80-120	25-AUG-20
Molybdenum (Mo)-Total			105.1		%		80-120	25-AUG-20
Nickel (Ni)-Total			98.5		%		80-120	25-AUG-20
Potassium (K)-Total			97.4		%		80-120	25-AUG-20
Selenium (Se)-Total			103.0		%		80-120	25-AUG-20
Silicon (Si)-Total			103.9		%		80-120	25-AUG-20
Silver (Ag)-Total			106.2		%		80-120	25-AUG-20
Sodium (Na)-Total			104.6		%		80-120	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5199657							
WG3389303-2	LCS							
Strontium (Sr)-Total			110.2		%		80-120	25-AUG-20
Thallium (Tl)-Total			106.6		%		80-120	25-AUG-20
Tin (Sn)-Total			101.4		%		80-120	25-AUG-20
Titanium (Ti)-Total			94.0		%		80-120	25-AUG-20
Uranium (U)-Total			108.4		%		80-120	25-AUG-20
Vanadium (V)-Total			100.2		%		80-120	25-AUG-20
Zinc (Zn)-Total			101.1		%		80-120	25-AUG-20
WG3389303-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	25-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	25-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	25-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	25-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	25-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	25-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Batch R5199657								
WG3389303-1 MB								
	Titanium (Ti)-Total		<0.00030		mg/L		0.0003	25-AUG-20
	Uranium (U)-Total		<0.000010		mg/L		0.00001	25-AUG-20
	Vanadium (V)-Total		<0.00050		mg/L		0.0005	25-AUG-20
	Zinc (Zn)-Total		<0.0030		mg/L		0.003	25-AUG-20
NH3-L-F-CL								
Batch R5195104								
WG3387847-30 LCS								
	Ammonia as N		91.0		%		85-115	20-AUG-20
WG3387847-29 MB								
	Ammonia as N		<0.0050		mg/L		0.005	20-AUG-20
NO2-L-IC-N-CL								
Batch R5197601								
WG3389325-2 LCS								
	Nitrite (as N)		97.9		%		90-110	21-AUG-20
WG3389325-1 MB								
	Nitrite (as N)		<0.0010		mg/L		0.001	21-AUG-20
NO3-L-IC-N-CL								
Batch R5197601								
WG3389325-2 LCS								
	Nitrate (as N)		103.4		%		90-110	21-AUG-20
WG3389325-1 MB								
	Nitrate (as N)		<0.0050		mg/L		0.005	21-AUG-20
OH-CL								
Batch R5198082								
WG3389563-7 MB								
	Hydroxide (OH)		<5.0		mg/L		5	21-AUG-20
ORP-CL								
Batch R5194198								
WG3388065-2 CRM		CL-ORP						
	ORP		221		mV		210-230	20-AUG-20
WG3388065-1 DUP		L2491520-1						
	ORP	342	342	J	mV	0.6	15	20-AUG-20
P-T-L-COL-CL								
Batch R5194198								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5195438							
WG3388546-22	LCS							
Phosphorus (P)-Total			100.7		%		80-120	21-AUG-20
WG3388546-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-AUG-20
PH-CL	Water							
Batch	R5198082							
WG3389563-8	LCS							
pH			6.97		pH		6.9-7.1	21-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5194040							
WG3387794-2	LCS							
Orthophosphate-Dissolved (as P)			98.7		%		80-120	20-AUG-20
WG3387794-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-20
SO4-IC-N-CL	Water							
Batch	R5197601							
WG3389325-2	LCS							
Sulfate (SO4)			102.1		%		90-110	21-AUG-20
WG3389325-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5199245							
WG3388739-2	LCS							
Total Dissolved Solids			102.7		%		85-115	21-AUG-20
WG3388739-1	MB							
Total Dissolved Solids			<10		mg/L		10	21-AUG-20
TEH-BC-VA-CL	Water							
Batch	R5197818							
WG3388215-2	LCS							
EPH10-19			93.6		%		70-130	21-AUG-20
EPH19-32			88.6		%		70-130	21-AUG-20
WG3388215-1	MB							
EPH10-19			<0.25		mg/L		0.25	21-AUG-20
EPH19-32			<0.25		mg/L		0.25	21-AUG-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	21-AUG-20
TEH-WATER-VA-CL	Water							



Quality Control Report

Workorder: L2491520

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL								
	Water							
Batch	R5197818							
WG3388215-2	LCS							
TEH (C10-C30)			92.1		%		70-130	21-AUG-20
WG3388215-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	21-AUG-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	21-AUG-20
TKN-L-F-CL								
	Water							
Batch	R5195197							
WG3388365-10	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	21-AUG-20
WG3388365-2	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	20-AUG-20
WG3388365-4	LCS							
Total Kjeldahl Nitrogen			89.7		%		75-125	20-AUG-20
WG3388365-6	LCS							
Total Kjeldahl Nitrogen			102.6		%		75-125	20-AUG-20
WG3388365-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-AUG-20
TSS-L-CL								
	Water							
Batch	R5199211							
WG3388738-2	LCS							
Total Suspended Solids			106.3		%		85-115	21-AUG-20
WG3388738-1	MB							
Total Suspended Solids			<1.0		mg/L		1	21-AUG-20
TURBIDITY-CL								
	Water							
Batch	R5194236							
WG3387916-3	DUP	L2491520-1						
Turbidity		638	668		NTU	4.6	15	20-AUG-20
WG3387916-2	LCS							
Turbidity			96.0		%		85-115	20-AUG-20
WG3387916-1	MB							
Turbidity			<0.10		NTU		0.1	20-AUG-20

Quality Control Report

Workorder: L2491520

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

Workorder: L2491520

Report Date: 26-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	18-AUG-20 15:00	20-AUG-20 20:28	0.25	54	hours	EHTR-FM
pH	1	18-AUG-20 15:00	21-AUG-20 13:00	0.25	70	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

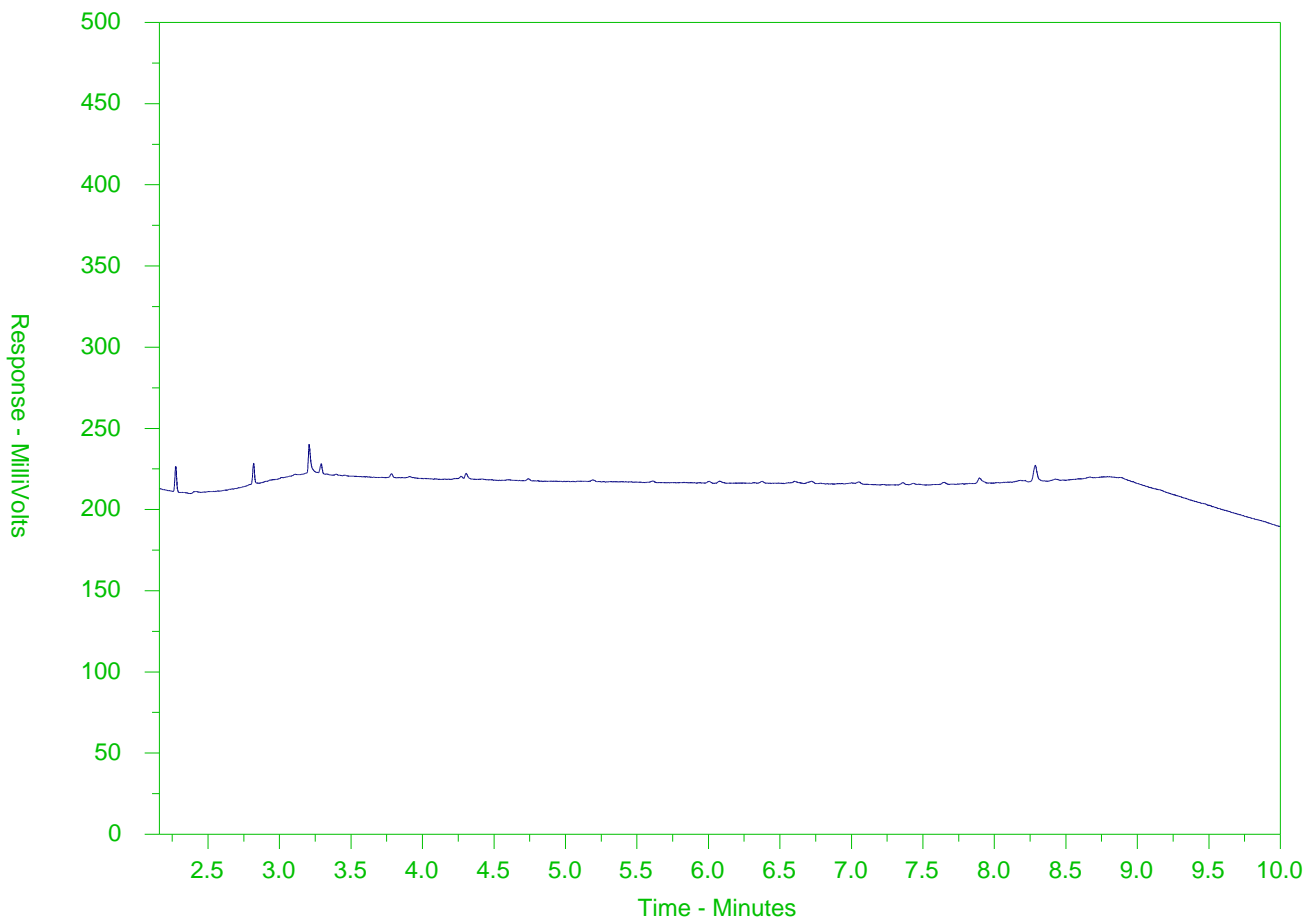
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2491520 were received on 19-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Sample ID: L2491520-1
 Client Sample ID: LC_PIZP1101_WG_Q3-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	LC_WG_PIZP1101	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets		Email 1: chris.blurton@teck.com x
Email	chris.blurton@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2: teckcoal@equisonline.com x
Address	Box 2003	Address	2559 29 Street NE		Email 3: drake.tymstra@teck.com x
	15km North Hwy 43				Email 4: shanise.fossen@teck.com x
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794		PO number
					VPO00680643

SAMPLE DETAILS Filtered - P: Field, L: Lab, FL: Field & Lab, N: None



L2491520-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED																
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH								
LC_PIZP1101_WG_Q3-2020_N	LC_PIZP1101	WG	No	8/18/2020	15:00	G	9	1	1	1	1	1	1	1	1	2								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
PLEASE PURCHASE THE FOLLOWING... ...ALS	D.Tymstra/S. Fossen	18-Aug	<i>[Signature]</i>	8/18 9:00

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	S. Fossen/D. Tymstra	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	S Fossen	Date/Time	August 18, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 25-AUG-20
Report Date: 26-FEB-21 12:27 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2493638
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_WG_PIZP1104
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:04

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2493638-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493638-1 LC_PIZP1104_WG_Q3-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 24-AUG-20 @ 14:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	292		5.0	mg/L		27-AUG-20	R5202821
Carbonate (CO3)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Hydroxide (OH)	<5.0		5.0	mg/L		27-AUG-20	R5202821
Total Kjeldahl Nitrogen	0.287		0.050	mg/L		30-AUG-20	R5201208
Total Organic Carbon	<0.50		0.50	mg/L		27-AUG-20	R5203377
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-20	28-AUG-20	R5204350
Dissolved Metals Filtration Location	FIELD					27-AUG-20	R5203183
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-AUG-20	31-AUG-20	R5206296
Dissolved Mercury Filtration Location	FIELD					30-AUG-20	R5204395
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-AUG-20	R5203183
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-20	28-AUG-20	R5204350
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Barium (Ba)-Dissolved	0.243		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-20	28-AUG-20	R5204350
Boron (B)-Dissolved	0.027		0.010	mg/L	27-AUG-20	28-AUG-20	R5204350
Cadmium (Cd)-Dissolved	0.0200		0.0050	ug/L	27-AUG-20	28-AUG-20	R5204350
Calcium (Ca)-Dissolved	156		0.050	mg/L	27-AUG-20	28-AUG-20	R5204350
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Cobalt (Co)-Dissolved	0.41		0.10	ug/L	27-AUG-20	28-AUG-20	R5204350
Copper (Cu)-Dissolved	0.00055		0.00020	mg/L	27-AUG-20	28-AUG-20	R5204350
Iron (Fe)-Dissolved	0.188		0.010	mg/L	27-AUG-20	28-AUG-20	R5204350
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-20	28-AUG-20	R5204350
Lithium (Li)-Dissolved	0.0265		0.0010	mg/L	27-AUG-20	28-AUG-20	R5204350
Magnesium (Mg)-Dissolved	49.3		0.10	mg/L	27-AUG-20	28-AUG-20	R5204350
Manganese (Mn)-Dissolved	0.194		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Molybdenum (Mo)-Dissolved	0.00181		0.000050	mg/L	27-AUG-20	28-AUG-20	R5204350
Nickel (Ni)-Dissolved	0.00113		0.00050	mg/L	27-AUG-20	28-AUG-20	R5204350
Potassium (K)-Dissolved	3.31		0.050	mg/L	27-AUG-20	28-AUG-20	R5204350
Selenium (Se)-Dissolved	0.161		0.050	ug/L	27-AUG-20	28-AUG-20	R5204350
Silicon (Si)-Dissolved	4.10		0.050	mg/L	27-AUG-20	28-AUG-20	R5204350
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-20	28-AUG-20	R5204350
Sodium (Na)-Dissolved	18.5		0.050	mg/L	27-AUG-20	28-AUG-20	R5204350
Strontium (Sr)-Dissolved	0.565		0.00020	mg/L	27-AUG-20	28-AUG-20	R5204350
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-20	28-AUG-20	R5204350
Tin (Sn)-Dissolved	0.00016		0.00010	mg/L	27-AUG-20	28-AUG-20	R5204350
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-20	28-AUG-20	R5204350
Uranium (U)-Dissolved	0.00271		0.000010	mg/L	27-AUG-20	28-AUG-20	R5204350
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-20	28-AUG-20	R5204350
Zinc (Zn)-Dissolved	0.0029		0.0010	mg/L	27-AUG-20	28-AUG-20	R5204350
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	592		0.50	mg/L		31-AUG-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.047		0.020	ug/L		29-AUG-20	R5203957
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493638-1 LC_PIZP1104_WG_Q3-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 24-AUG-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.416		0.0030	mg/L		29-AUG-20	R5203957
Antimony (Sb)-Total	0.00011		0.00010	mg/L		29-AUG-20	R5203957
Arsenic (As)-Total	0.00072		0.00010	mg/L		29-AUG-20	R5203957
Barium (Ba)-Total	0.216		0.00010	mg/L		29-AUG-20	R5203957
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-AUG-20	R5203957
Boron (B)-Total	0.029		0.010	mg/L		29-AUG-20	R5203957
Cadmium (Cd)-Total	0.111		0.0050	ug/L		29-AUG-20	R5203957
Calcium (Ca)-Total	148		0.050	mg/L		29-AUG-20	R5203957
Chromium (Cr)-Total	0.00125		0.00010	mg/L		29-AUG-20	R5203957
Cobalt (Co)-Total	0.76		0.10	ug/L		29-AUG-20	R5203957
Copper (Cu)-Total	0.00178		0.00050	mg/L		29-AUG-20	R5203957
Iron (Fe)-Total	1.37		0.010	mg/L		29-AUG-20	R5203957
Lead (Pb)-Total	0.000595		0.000050	mg/L		29-AUG-20	R5203957
Lithium (Li)-Total	0.0279		0.0010	mg/L		29-AUG-20	R5203957
Magnesium (Mg)-Total	46.8		0.10	mg/L		29-AUG-20	R5203957
Manganese (Mn)-Total	0.223		0.00010	mg/L		29-AUG-20	R5203957
Molybdenum (Mo)-Total	0.00160		0.000050	mg/L		29-AUG-20	R5203957
Nickel (Ni)-Total	0.00235		0.00050	mg/L		29-AUG-20	R5203957
Potassium (K)-Total	3.26		0.050	mg/L		29-AUG-20	R5203957
Selenium (Se)-Total	0.209		0.050	ug/L		29-AUG-20	R5203957
Silicon (Si)-Total	5.05		0.10	mg/L		29-AUG-20	R5203957
Silver (Ag)-Total	0.000020		0.000010	mg/L		31-AUG-20	R5206238
Sodium (Na)-Total	16.5		0.050	mg/L		29-AUG-20	R5203957
Strontium (Sr)-Total	0.518		0.00020	mg/L		29-AUG-20	R5203957
Thallium (Tl)-Total	0.000034		0.000010	mg/L		29-AUG-20	R5203957
Tin (Sn)-Total	0.00016		0.00010	mg/L		29-AUG-20	R5203957
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-AUG-20	R5203957
Uranium (U)-Total	0.00273		0.000010	mg/L		29-AUG-20	R5203957
Vanadium (V)-Total	0.00183		0.00050	mg/L		29-AUG-20	R5203957
Zinc (Zn)-Total	0.0084		0.0030	mg/L		29-AUG-20	R5203957
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.0		1.0	mg/L		25-AUG-20	R5201484
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	239		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-20	R5202821
Alkalinity, Total (as CaCO3)	239		1.0	mg/L		27-AUG-20	R5202821
Ammonia, Total (as N)							
Ammonia as N	0.0057		0.0050	mg/L		26-AUG-20	R5201917
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.74	DLHC	0.25	mg/L		27-AUG-20	R5203451
Chloride in Water by IC							
Chloride (Cl)	231	DLHC	2.5	mg/L		27-AUG-20	R5203451
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1170		2.0	uS/cm		27-AUG-20	R5202821
Fluoride in Water by IC							
Fluoride (F)	0.29	DLHC	0.10	mg/L		27-AUG-20	R5203451
Ion Balance Calculation							
Cation - Anion Balance	-1.2			%		31-AUG-20	
Anion Sum	13.0			meq/L		31-AUG-20	
Cation Sum	12.7			meq/L		31-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493638-1 LC_PIZP1104_WG_Q3-2020_NP Sampled By: S. Fossen/D. Tymstra on 24-AUG-20 @ 14:00 Matrix: WG							
Ion Balance Calculation							
Ion Balance	97.7		-100	%		31-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.396	DLHC	0.025	mg/L		27-AUG-20	R5203451
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		27-AUG-20	R5203451
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		25-AUG-20	R5200140
Oxidation redution potential by elect.							
ORP	291		-1000	mV		26-AUG-20	R5202309
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0647		0.0020	mg/L		28-AUG-20	R5203597
Sulfate in Water by IC							
Sulfate (SO4)	80.9	DLHC	1.5	mg/L		27-AUG-20	R5203451
Total Dissolved Solids							
Total Dissolved Solids	893	DLHC	20	mg/L		28-AUG-20	R5204050
Total Suspended Solids							
Total Suspended Solids	59.6		1.0	mg/L		28-AUG-20	R5203930
Turbidity							
Turbidity	30.9		0.10	NTU		25-AUG-20	R5200137
pH							
pH	7.86		0.10	pH		27-AUG-20	R5202821

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_WG_PIZP1104

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2493638

Report Date: 26-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0
 Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5201484							
WG3391754-3	DUP	L2493638-1						
Acidity (as CaCO3)		5.0	5.2		mg/L	4.3	20	25-AUG-20
WG3391754-2	LCS							
Acidity (as CaCO3)			97.7		%		85-115	25-AUG-20
WG3391754-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	25-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5202821							
WG3392774-5	LCS							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	27-AUG-20
WG3392774-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5204350							
WG3393114-2	LCS							
Beryllium (Be)-Dissolved			97.3		%		80-120	28-AUG-20
WG3393114-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5203957							
WG3392263-2	LCS							
Beryllium (Be)-Total			91.3		%		80-120	29-AUG-20
WG3392263-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5203451							
WG3393488-2	LCS							
Bromide (Br)			105.1		%		85-115	27-AUG-20
WG3393488-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5203377							
WG3393397-2	LCS							
Dissolved Organic Carbon			105.6		%		80-120	27-AUG-20
WG3393397-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5203377							
WG3393397-2	LCS							
Total Organic Carbon			105.0		%		80-120	27-AUG-20
WG3393397-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-AUG-20
CL-IC-N-CL	Water							
Batch	R5203451							
WG3393488-2	LCS							
Chloride (Cl)			104.4		%		90-110	27-AUG-20
WG3393488-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	27-AUG-20
EC-L-PCT-CL	Water							
Batch	R5202821							
WG3392774-5	LCS							
Conductivity (@ 25C)			95.6		%		90-110	27-AUG-20
WG3392774-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-20
F-IC-N-CL	Water							
Batch	R5203451							
WG3393488-2	LCS							
Fluoride (F)			101.1		%		90-110	27-AUG-20
WG3393488-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	27-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5206296							
WG3394402-2	LCS							
Mercury (Hg)-Dissolved			99.4		%		80-120	31-AUG-20
WG3394402-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-AUG-20
MET-D-CCMS-VA	Water							
Batch	R5204350							
WG3393114-2	LCS							
Aluminum (Al)-Dissolved			99.8		%		80-120	28-AUG-20
Antimony (Sb)-Dissolved			97.4		%		80-120	28-AUG-20
Arsenic (As)-Dissolved			99.0		%		80-120	28-AUG-20
Barium (Ba)-Dissolved			105.6		%		80-120	28-AUG-20
Bismuth (Bi)-Dissolved			103.6		%		80-120	28-AUG-20
Boron (B)-Dissolved			95.0		%		80-120	28-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5204350							
WG3393114-2	LCS							
Cadmium (Cd)-Dissolved			100.2		%		80-120	28-AUG-20
Calcium (Ca)-Dissolved			101.7		%		80-120	28-AUG-20
Chromium (Cr)-Dissolved			102.8		%		80-120	28-AUG-20
Cobalt (Co)-Dissolved			100.0		%		80-120	28-AUG-20
Copper (Cu)-Dissolved			96.5		%		80-120	28-AUG-20
Iron (Fe)-Dissolved			97.8		%		80-120	28-AUG-20
Lead (Pb)-Dissolved			102.0		%		80-120	28-AUG-20
Lithium (Li)-Dissolved			97.6		%		80-120	28-AUG-20
Magnesium (Mg)-Dissolved			96.8		%		80-120	28-AUG-20
Manganese (Mn)-Dissolved			103.4		%		80-120	28-AUG-20
Molybdenum (Mo)-Dissolved			105.3		%		80-120	28-AUG-20
Nickel (Ni)-Dissolved			99.8		%		80-120	28-AUG-20
Potassium (K)-Dissolved			101.9		%		80-120	28-AUG-20
Selenium (Se)-Dissolved			99.6		%		80-120	28-AUG-20
Silicon (Si)-Dissolved			99.7		%		60-140	28-AUG-20
Silver (Ag)-Dissolved			102.6		%		80-120	28-AUG-20
Sodium (Na)-Dissolved			101.2		%		80-120	28-AUG-20
Strontium (Sr)-Dissolved			107.5		%		80-120	28-AUG-20
Thallium (Tl)-Dissolved			103.5		%		80-120	28-AUG-20
Tin (Sn)-Dissolved			100.2		%		80-120	28-AUG-20
Titanium (Ti)-Dissolved			95.4		%		80-120	28-AUG-20
Uranium (U)-Dissolved			99.4		%		80-120	28-AUG-20
Vanadium (V)-Dissolved			101.1		%		80-120	28-AUG-20
Zinc (Zn)-Dissolved			99.2		%		80-120	28-AUG-20
WG3393114-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5204350							
WG3393114-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5203957							
WG3392263-2	LCS							
Aluminum (Al)-Total			92.1		%		80-120	29-AUG-20
Antimony (Sb)-Total			100.6		%		80-120	29-AUG-20
Arsenic (As)-Total			90.8		%		80-120	29-AUG-20
Barium (Ba)-Total			98.7		%		80-120	29-AUG-20
Bismuth (Bi)-Total			96.9		%		80-120	29-AUG-20
Boron (B)-Total			95.5		%		80-120	29-AUG-20
Cadmium (Cd)-Total			97.5		%		80-120	29-AUG-20
Calcium (Ca)-Total			96.5		%		80-120	29-AUG-20
Chromium (Cr)-Total			96.1		%		80-120	29-AUG-20
Cobalt (Co)-Total			96.2		%		80-120	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5203957							
WG3392263-2 LCS								
Copper (Cu)-Total			96.4		%		80-120	29-AUG-20
Iron (Fe)-Total			104.3		%		80-120	29-AUG-20
Lead (Pb)-Total			97.3		%		80-120	29-AUG-20
Lithium (Li)-Total			98.6		%		80-120	29-AUG-20
Magnesium (Mg)-Total			97.9		%		80-120	29-AUG-20
Manganese (Mn)-Total			96.9		%		80-120	29-AUG-20
Molybdenum (Mo)-Total			99.9		%		80-120	29-AUG-20
Nickel (Ni)-Total			97.1		%		80-120	29-AUG-20
Potassium (K)-Total			101.4		%		80-120	29-AUG-20
Selenium (Se)-Total			93.5		%		80-120	29-AUG-20
Silicon (Si)-Total			108.0		%		80-120	29-AUG-20
Sodium (Na)-Total			100.0		%		80-120	29-AUG-20
Strontium (Sr)-Total			104.5		%		80-120	29-AUG-20
Thallium (Tl)-Total			95.0		%		80-120	29-AUG-20
Tin (Sn)-Total			99.7		%		80-120	29-AUG-20
Titanium (Ti)-Total			93.9		%		80-120	29-AUG-20
Uranium (U)-Total			98.1		%		80-120	29-AUG-20
Vanadium (V)-Total			97.7		%		80-120	29-AUG-20
Zinc (Zn)-Total			94.5		%		80-120	29-AUG-20
WG3392263-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	29-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	29-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	29-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5203957							
WG3392263-1	MB							
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	29-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	29-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	29-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-AUG-20
Batch	R5206238							
WG3394369-2	LCS							
Aluminum (Al)-Total			96.2		%		80-120	31-AUG-20
Antimony (Sb)-Total			111.8		%		80-120	31-AUG-20
Arsenic (As)-Total			100.8		%		80-120	31-AUG-20
Barium (Ba)-Total			102.5		%		80-120	31-AUG-20
Bismuth (Bi)-Total			100.3		%		80-120	31-AUG-20
Boron (B)-Total			107.3		%		80-120	31-AUG-20
Cadmium (Cd)-Total			102.8		%		80-120	31-AUG-20
Calcium (Ca)-Total			102.0		%		80-120	31-AUG-20
Chromium (Cr)-Total			96.4		%		80-120	31-AUG-20
Cobalt (Co)-Total			98.1		%		80-120	31-AUG-20
Copper (Cu)-Total			96.8		%		80-120	31-AUG-20
Iron (Fe)-Total			102.8		%		80-120	31-AUG-20
Lead (Pb)-Total			99.6		%		80-120	31-AUG-20
Lithium (Li)-Total			97.8		%		80-120	31-AUG-20
Magnesium (Mg)-Total			96.2		%		80-120	31-AUG-20
Manganese (Mn)-Total			99.3		%		80-120	31-AUG-20
Molybdenum (Mo)-Total			104.4		%		80-120	31-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5206238							
WG3394369-2	LCS							
Nickel (Ni)-Total			98.8		%		80-120	31-AUG-20
Potassium (K)-Total			98.0		%		80-120	31-AUG-20
Selenium (Se)-Total			108.1		%		80-120	31-AUG-20
Silicon (Si)-Total			101.7		%		80-120	31-AUG-20
Silver (Ag)-Total			107.6		%		80-120	31-AUG-20
Sodium (Na)-Total			96.9		%		80-120	31-AUG-20
Strontium (Sr)-Total			105.7		%		80-120	31-AUG-20
Thallium (Tl)-Total			101.8		%		80-120	31-AUG-20
Tin (Sn)-Total			98.4		%		80-120	31-AUG-20
Titanium (Ti)-Total			95.1		%		80-120	31-AUG-20
Uranium (U)-Total			103.5		%		80-120	31-AUG-20
Vanadium (V)-Total			99.5		%		80-120	31-AUG-20
Zinc (Zn)-Total			105.3		%		80-120	31-AUG-20
WG3394369-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5206238							
WG3394369-1	MB							
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5201917							
WG3391901-2	LCS							
Ammonia as N			96.4		%		85-115	26-AUG-20
WG3391901-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5203451							
WG3393488-2	LCS							
Nitrite (as N)			101.5		%		90-110	27-AUG-20
WG3393488-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-AUG-20
NO3-L-IC-N-CL								
	Water							
Batch	R5203451							
WG3393488-2	LCS							
Nitrate (as N)			105.5		%		90-110	27-AUG-20
WG3393488-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-AUG-20
ORP-CL								
	Water							
Batch	R5202309							
WG3392165-5	CRM	CL-ORP						
ORP			224		mV		210-230	26-AUG-20
P-T-L-COL-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch R5203597								
WG3393521-6 LCS								
Phosphorus (P)-Total			116.2		%		80-120	28-AUG-20
WG3393521-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-AUG-20
PH-CL								
Water								
Batch R5202821								
WG3392774-5 LCS								
pH			6.99		pH		6.9-7.1	27-AUG-20
PO4-DO-L-COL-CL								
Water								
Batch R5200140								
WG3390978-6 LCS								
Orthophosphate-Dissolved (as P)			95.9		%		80-120	25-AUG-20
WG3390978-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-AUG-20
SO4-IC-N-CL								
Water								
Batch R5203451								
WG3393488-2 LCS								
Sulfate (SO4)			103.5		%		90-110	27-AUG-20
WG3393488-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-AUG-20
SOLIDS-TDS-CL								
Water								
Batch R5204050								
WG3393920-2 LCS								
Total Dissolved Solids			99.0		%		85-115	28-AUG-20
WG3393920-1 MB								
Total Dissolved Solids			<10		mg/L		10	28-AUG-20
TKN-L-F-CL								
Water								
Batch R5201208								
WG3391526-10 LCS								
Total Kjeldahl Nitrogen			88.6		%		75-125	26-AUG-20
WG3391526-2 LCS								
Total Kjeldahl Nitrogen			105.9		%		75-125	26-AUG-20
WG3391526-4 LCS								
Total Kjeldahl Nitrogen			98.2		%		75-125	26-AUG-20
WG3391526-6 LCS								
Total Kjeldahl Nitrogen			98.4		%		75-125	26-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5201208							
WG3391526-8	LCS							
Total Kjeldahl Nitrogen			94.1		%		75-125	26-AUG-20
WG3391526-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-20
WG3391526-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-20
WG3391526-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-20
WG3391526-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-20
WG3391526-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-20
TSS-L-CL								
Water								
Batch	R5203930							
WG3393078-2	LCS							
Total Suspended Solids			91.8		%		85-115	28-AUG-20
WG3393078-1	MB							
Total Suspended Solids			<1.0		mg/L		1	28-AUG-20
TURBIDITY-CL								
Water								
Batch	R5200137							
WG3390920-6	DUP	L2493638-1						
Turbidity		30.9	29.6		NTU	4.3	15	25-AUG-20
WG3390920-5	LCS							
Turbidity			96.9		%		85-115	25-AUG-20
WG3390920-4	MB							
Turbidity			<0.10		NTU		0.1	25-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2493638

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	24-AUG-20 14:00	26-AUG-20 20:00	0.25	54	hours	EHTR-FM
pH	1	24-AUG-20 14:00	27-AUG-20 13:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2493638 were received on 25-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **LC_WG_PIZP1104**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com	x	x
Email	chris.blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS							ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	N	N
								RESERVE	H2SO4	HCl	HCl	HNO3	HNO3	NONE	H2SO4	NAHSO4			
								ANALYSIS	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH		
LC_PIZP1104_WG_Q3-2020_NP	LC_PIZP1104	WG	No	8/24/2020	14:00	G	6		1	1		1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	24-Aug	<i>[Signature]</i>	8/25 9:00

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	S. Fossen/D. Tymstra
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	S Fossen
Emergency (1 Business Day) - 100% surcharge		Date/Time	August 24, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			<i>[Signature]</i>



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 10-SEP-20
Report Date: 09-FEB-21 12:46 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2501293
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC_WG_20200909
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:08

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2501293-1 to -4.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-1 LC_PIZDC1404S_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 12:50							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	238		5.0	mg/L		15-SEP-20	R5223893
Carbonate (CO3)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Dissolved Organic Carbon	2.01		0.50	mg/L		12-SEP-20	R5222802
Hydroxide (OH)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		13-SEP-20	R5222798
Total Organic Carbon	1.79		0.50	mg/L		12-SEP-20	R5222802
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-SEP-20	12-SEP-20	R5223224
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	15-SEP-20	15-SEP-20	R5223601
Dissolved Mercury Filtration Location	FIELD					15-SEP-20	R5223539
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-SEP-20	12-SEP-20	R5223224
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Arsenic (As)-Dissolved	0.00213		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Barium (Ba)-Dissolved	0.250		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Boron (B)-Dissolved	<0.010		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	11-SEP-20	12-SEP-20	R5223224
Calcium (Ca)-Dissolved	52.5		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cobalt (Co)-Dissolved	0.31		0.10	ug/L	11-SEP-20	12-SEP-20	R5223224
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Iron (Fe)-Dissolved	0.881		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Lithium (Li)-Dissolved	0.0053		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Magnesium (Mg)-Dissolved	18.5		0.10	mg/L	11-SEP-20	12-SEP-20	R5223224
Manganese (Mn)-Dissolved	0.0274		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Molybdenum (Mo)-Dissolved	0.00349		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Nickel (Ni)-Dissolved	0.00124		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Potassium (K)-Dissolved	1.48		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	11-SEP-20	12-SEP-20	R5223224
Silicon (Si)-Dissolved	3.25		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Sodium (Na)-Dissolved	1.02		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Strontium (Sr)-Dissolved	0.0543		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Uranium (U)-Dissolved	0.000566		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Hardness							
Hardness (as CaCO3)	208		0.50	mg/L		14-SEP-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		14-SEP-20	R5223368
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-1 LC_PIZDC1404S_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 12:50							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0099		0.0030	mg/L		14-SEP-20	R5223368
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Arsenic (As)-Total	0.00220		0.00010	mg/L		14-SEP-20	R5223368
Barium (Ba)-Total	0.213		0.00010	mg/L		14-SEP-20	R5223368
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-SEP-20	R5223368
Boron (B)-Total	<0.010		0.010	mg/L		14-SEP-20	R5223368
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		14-SEP-20	R5223368
Calcium (Ca)-Total	48.3		0.050	mg/L		14-SEP-20	R5223368
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Cobalt (Co)-Total	0.32		0.10	ug/L		14-SEP-20	R5223368
Copper (Cu)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Iron (Fe)-Total	1.09		0.010	mg/L		14-SEP-20	R5223368
Lead (Pb)-Total	<0.000050		0.000050	mg/L		14-SEP-20	R5223368
Lithium (Li)-Total	0.0054		0.0010	mg/L		14-SEP-20	R5223368
Magnesium (Mg)-Total	17.3		0.10	mg/L		14-SEP-20	R5223368
Manganese (Mn)-Total	0.0288		0.00010	mg/L		14-SEP-20	R5223368
Molybdenum (Mo)-Total	0.00354		0.000050	mg/L		14-SEP-20	R5223368
Nickel (Ni)-Total	0.00125		0.00050	mg/L		14-SEP-20	R5223368
Potassium (K)-Total	1.55		0.050	mg/L		14-SEP-20	R5223368
Selenium (Se)-Total	<0.050		0.050	ug/L		14-SEP-20	R5223368
Silicon (Si)-Total	3.55		0.10	mg/L		14-SEP-20	R5223368
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Sodium (Na)-Total	1.01		0.050	mg/L		14-SEP-20	R5223368
Strontium (Sr)-Total	0.0467		0.00020	mg/L		14-SEP-20	R5223368
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-SEP-20	R5223368
Uranium (U)-Total	0.000585		0.000010	mg/L		14-SEP-20	R5223368
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		14-SEP-20	R5223368
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-SEP-20	R5223334
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	195		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Carbonate (as CaCO3)	6.6		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		15-SEP-20	R5223893
Ammonia, Total (as N)							
Ammonia as N	0.0104		0.0050	mg/L		11-SEP-20	R5222545
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-SEP-20	R5222699
Chloride in Water by IC							
Chloride (Cl)	0.12		0.10	mg/L		11-SEP-20	R5222699
Electrical Conductivity (EC)							
Conductivity (@ 25C)	324		2.0	uS/cm		15-SEP-20	R5223893
Fluoride in Water by IC							
Fluoride (F)	0.122		0.020	mg/L		11-SEP-20	R5222699
Ion Balance Calculation							
Ion Balance	103		-100	%		17-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		16-SEP-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-1 LC_PIZDC1404S_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 12:50							
Matrix: WG							
Ion Balance Calculation							
Anion Sum	4.13			meq/L		16-SEP-20	
Cation Sum	4.28			meq/L		16-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		11-SEP-20	R5222699
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		11-SEP-20	R5222699
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		10-SEP-20	R5221664
Oxidation redution potential by elect.							
ORP	444		-1000	mV		14-SEP-20	R5223466
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0051		0.0020	mg/L		15-SEP-20	R5223908
Sulfate in Water by IC							
Sulfate (SO4)	4.31		0.30	mg/L		11-SEP-20	R5222699
Total Dissolved Solids							
Total Dissolved Solids	212	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	8.31		0.10	NTU		10-SEP-20	R5221692
pH							
pH	8.40		0.10	pH		15-SEP-20	R5223893
L2501293-2 LC_PIZDC1404D_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 13:25							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	468		5.0	mg/L		15-SEP-20	R5223893
Carbonate (CO3)	5.0		5.0	mg/L		15-SEP-20	R5223893
Dissolved Organic Carbon	1.09		0.50	mg/L		12-SEP-20	R5222802
Hydroxide (OH)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Total Kjeldahl Nitrogen	3.03		0.050	mg/L		13-SEP-20	R5222798
Total Organic Carbon	1.29		0.50	mg/L		12-SEP-20	R5222802
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-SEP-20	12-SEP-20	R5223224
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	15-SEP-20	15-SEP-20	R5223601
Dissolved Mercury Filtration Location	FIELD					15-SEP-20	R5223539
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-SEP-20	12-SEP-20	R5223224
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Arsenic (As)-Dissolved	0.00315		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Barium (Ba)-Dissolved	4.72		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Boron (B)-Dissolved	0.025		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	11-SEP-20	12-SEP-20	R5223224
Calcium (Ca)-Dissolved	63.6		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	11-SEP-20	12-SEP-20	R5223224

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-2 LC_PIZDC1404D_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 13:25							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Iron (Fe)-Dissolved	3.01		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Lithium (Li)-Dissolved	0.735		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Magnesium (Mg)-Dissolved	41.8		0.10	mg/L	11-SEP-20	12-SEP-20	R5223224
Manganese (Mn)-Dissolved	0.0191		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Molybdenum (Mo)-Dissolved	0.0241		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Nickel (Ni)-Dissolved	0.00054		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Potassium (K)-Dissolved	26.5		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	11-SEP-20	12-SEP-20	R5223224
Silicon (Si)-Dissolved	2.80		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Sodium (Na)-Dissolved	40.1		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Strontium (Sr)-Dissolved	0.283		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Uranium (U)-Dissolved	0.000072		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Hardness							
Hardness (as CaCO3)	331		0.50	mg/L		14-SEP-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		14-SEP-20	R5223368
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0203		0.0030	mg/L		14-SEP-20	R5223368
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Arsenic (As)-Total	0.00299		0.00010	mg/L		14-SEP-20	R5223368
Barium (Ba)-Total	4.22		0.00010	mg/L		14-SEP-20	R5223368
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-SEP-20	R5223368
Boron (B)-Total	0.024		0.010	mg/L		14-SEP-20	R5223368
Cadmium (Cd)-Total	<0.015	DLM	0.015	ug/L		14-SEP-20	R5223368
Calcium (Ca)-Total	59.9		0.050	mg/L		14-SEP-20	R5223368
Chromium (Cr)-Total	0.00013		0.00010	mg/L		14-SEP-20	R5223368
Cobalt (Co)-Total	0.24		0.10	ug/L		14-SEP-20	R5223368
Copper (Cu)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Iron (Fe)-Total	3.34		0.010	mg/L		14-SEP-20	R5223368
Lead (Pb)-Total	0.000060		0.000050	mg/L		14-SEP-20	R5223368
Lithium (Li)-Total	0.673		0.0010	mg/L		14-SEP-20	R5223368
Magnesium (Mg)-Total	40.8		0.10	mg/L		14-SEP-20	R5223368
Manganese (Mn)-Total	0.0205		0.00010	mg/L		14-SEP-20	R5223368
Molybdenum (Mo)-Total	0.0250		0.000050	mg/L		14-SEP-20	R5223368
Nickel (Ni)-Total	0.00065		0.00050	mg/L		14-SEP-20	R5223368
Potassium (K)-Total	25.2		0.050	mg/L		14-SEP-20	R5223368
Selenium (Se)-Total	<0.050		0.050	ug/L		14-SEP-20	R5223368
Silicon (Si)-Total	3.00		0.10	mg/L		14-SEP-20	R5223368
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Sodium (Na)-Total	39.9		0.050	mg/L		14-SEP-20	R5223368
Strontium (Sr)-Total	0.267		0.00020	mg/L		14-SEP-20	R5223368
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-2 LC_PIZDC1404D_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 13:25							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-SEP-20	R5223368
Uranium (U)-Total	0.000077		0.000010	mg/L		14-SEP-20	R5223368
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Zinc (Zn)-Total	0.0047		0.0030	mg/L		14-SEP-20	R5223368
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-SEP-20	R5223334
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	384		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Carbonate (as CaCO3)	8.4		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Total (as CaCO3)	392		1.0	mg/L		15-SEP-20	R5223893
Ammonia, Total (as N)							
Ammonia as N	2.91	DLHC	0.050	mg/L		12-SEP-20	R5222545
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		12-SEP-20	R5222699
Chloride in Water by IC							
Chloride (Cl)	0.36		0.10	mg/L		12-SEP-20	R5222699
Electrical Conductivity (EC)							
Conductivity (@ 25C)	619		2.0	uS/cm		15-SEP-20	R5223893
Fluoride in Water by IC							
Fluoride (F)	0.201		0.020	mg/L		12-SEP-20	R5222699
Ion Balance Calculation							
Cation - Anion Balance	2.2			%		17-SEP-20	
Anion Sum	9.01			meq/L		17-SEP-20	
Cation Sum	9.41			meq/L		17-SEP-20	
Ion Balance Calculation							
Ion Balance	104		-100	%		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		12-SEP-20	R5222699
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		12-SEP-20	R5222699
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		10-SEP-20	R5221664
Oxidation redution potential by elect.							
ORP	373		-1000	mV		14-SEP-20	R5223466
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0214		0.0020	mg/L		15-SEP-20	R5223908
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		12-SEP-20	R5222699
Total Dissolved Solids							
Total Dissolved Solids	413	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	6.1		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	39.6		0.10	NTU		10-SEP-20	R5221692
pH							
pH	8.37		0.10	pH		15-SEP-20	R5223893
L2501293-3 LC_PIZDC1307_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 11:20							
Matrix: WG							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-3 LC_PIZDC1307_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 11:20							
Matrix: WG							
Bicarbonate (HCO3)	269		5.0	mg/L		15-SEP-20	R5223893
Carbonate (CO3)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Dissolved Organic Carbon	1.01		0.50	mg/L		12-SEP-20	R5222802
Hydroxide (OH)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Total Kjeldahl Nitrogen	0.108		0.050	mg/L		13-SEP-20	R5222798
Total Organic Carbon	1.17		0.50	mg/L		12-SEP-20	R5222802
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-SEP-20	12-SEP-20	R5223224
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	15-SEP-20	15-SEP-20	R5223601
Dissolved Mercury Filtration Location	FIELD					15-SEP-20	R5223539
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-SEP-20	12-SEP-20	R5223224
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Arsenic (As)-Dissolved	0.00104		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Barium (Ba)-Dissolved	1.61		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Boron (B)-Dissolved	0.024		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	11-SEP-20	12-SEP-20	R5223224
Calcium (Ca)-Dissolved	42.7		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	11-SEP-20	12-SEP-20	R5223224
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Iron (Fe)-Dissolved	0.441		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Lithium (Li)-Dissolved	0.0787		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Magnesium (Mg)-Dissolved	20.5		0.10	mg/L	11-SEP-20	12-SEP-20	R5223224
Manganese (Mn)-Dissolved	0.00842		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Molybdenum (Mo)-Dissolved	0.0340		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Potassium (K)-Dissolved	5.39		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	11-SEP-20	12-SEP-20	R5223224
Silicon (Si)-Dissolved	2.69		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Sodium (Na)-Dissolved	14.1		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Strontium (Sr)-Dissolved	0.161		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Uranium (U)-Dissolved	0.000027		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Hardness							
Hardness (as CaCO3)	191		0.50	mg/L		15-SEP-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		14-SEP-20	R5223368
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0096		0.0030	mg/L		14-SEP-20	R5223368

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-3 LC_PIZDC1307_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 11:20							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Arsenic (As)-Total	0.00181		0.00010	mg/L		14-SEP-20	R5223368
Barium (Ba)-Total	1.37		0.00010	mg/L		14-SEP-20	R5223368
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-SEP-20	R5223368
Boron (B)-Total	0.025		0.010	mg/L		14-SEP-20	R5223368
Cadmium (Cd)-Total	<0.020	DLM	0.020	ug/L		14-SEP-20	R5223368
Calcium (Ca)-Total	39.6		0.050	mg/L		14-SEP-20	R5223368
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Cobalt (Co)-Total	<0.10		0.10	ug/L		14-SEP-20	R5223368
Copper (Cu)-Total	0.00186		0.00050	mg/L		14-SEP-20	R5223368
Iron (Fe)-Total	1.26		0.010	mg/L		14-SEP-20	R5223368
Lead (Pb)-Total	0.000258		0.000050	mg/L		14-SEP-20	R5223368
Lithium (Li)-Total	0.0738		0.0010	mg/L		14-SEP-20	R5223368
Magnesium (Mg)-Total	20.0		0.10	mg/L		14-SEP-20	R5223368
Manganese (Mn)-Total	0.00874		0.00010	mg/L		14-SEP-20	R5223368
Molybdenum (Mo)-Total	0.0332		0.000050	mg/L		14-SEP-20	R5223368
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Potassium (K)-Total	5.16		0.050	mg/L		14-SEP-20	R5223368
Selenium (Se)-Total	<0.050		0.050	ug/L		14-SEP-20	R5223368
Silicon (Si)-Total	3.02		0.10	mg/L		14-SEP-20	R5223368
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Sodium (Na)-Total	13.6		0.050	mg/L		14-SEP-20	R5223368
Strontium (Sr)-Total	0.143		0.00020	mg/L		14-SEP-20	R5223368
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-SEP-20	R5223368
Uranium (U)-Total	0.000029		0.000010	mg/L		15-SEP-20	R5224054
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Zinc (Zn)-Total	0.0038		0.0030	mg/L		14-SEP-20	R5223368
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-SEP-20	R5223334
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	221		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Carbonate (as CaCO3)	7.6		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Total (as CaCO3)	228		1.0	mg/L		15-SEP-20	R5223893
Ammonia, Total (as N)							
Ammonia as N	0.0960		0.0050	mg/L		11-SEP-20	R5222545
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		12-SEP-20	R5222699
Chloride in Water by IC							
Chloride (Cl)	0.18		0.10	mg/L		12-SEP-20	R5222699
Electrical Conductivity (EC)							
Conductivity (@ 25C)	353		2.0	uS/cm		15-SEP-20	R5223893
Fluoride in Water by IC							
Fluoride (F)	0.532		0.020	mg/L		12-SEP-20	R5222699
Ion Balance Calculation							
Ion Balance	100		-100	%		16-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		16-SEP-20	
Anion Sum	4.59			meq/L		16-SEP-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-3 LC_PIZDC1307_WG_Q3-2020_NP Sampled By: S. Fossen on 09-SEP-20 @ 11:20 Matrix: WG							
Ion Balance Calculation							
Cation Sum	4.60			meq/L		16-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		12-SEP-20	R5222699
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		12-SEP-20	R5222699
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		10-SEP-20	R5221664
Oxidation redution potential by elect.							
ORP	403		-1000	mV		14-SEP-20	R5223466
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0167		0.0020	mg/L		15-SEP-20	R5223908
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		12-SEP-20	R5222699
Total Dissolved Solids							
Total Dissolved Solids	212	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	4.1		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	9.92		0.10	NTU		10-SEP-20	R5221692
pH							
pH	8.43		0.10	pH		15-SEP-20	R5223893
L2501293-4 LC_PIZDC1308_WG_Q3-2020_NP Sampled By: S. Fossen on 09-SEP-20 @ 10:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	404		5.0	mg/L		15-SEP-20	R5223893
Carbonate (CO3)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Dissolved Organic Carbon	2.84		0.50	mg/L		12-SEP-20	R5222802
Hydroxide (OH)	<5.0		5.0	mg/L		15-SEP-20	R5223893
Total Kjeldahl Nitrogen	0.066		0.050	mg/L		13-SEP-20	R5222798
Total Organic Carbon	2.65		0.50	mg/L		12-SEP-20	R5222802
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-SEP-20	12-SEP-20	R5223224
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	15-SEP-20	15-SEP-20	R5223601
Dissolved Mercury Filtration Location	FIELD					15-SEP-20	R5223539
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					11-SEP-20	R5222443
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-SEP-20	12-SEP-20	R5223224
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Barium (Ba)-Dissolved	0.363		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Boron (B)-Dissolved	0.013		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cadmium (Cd)-Dissolved	0.0533		0.0050	ug/L	11-SEP-20	12-SEP-20	R5223224
Calcium (Ca)-Dissolved	112		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Cobalt (Co)-Dissolved	0.44		0.10	ug/L	11-SEP-20	12-SEP-20	R5223224
Copper (Cu)-Dissolved	0.00021		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-4 LC_PIZDC1308_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 10:10							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	0.051		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Lithium (Li)-Dissolved	0.0100		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Magnesium (Mg)-Dissolved	30.4		0.10	mg/L	11-SEP-20	12-SEP-20	R5223224
Manganese (Mn)-Dissolved	0.0218		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Molybdenum (Mo)-Dissolved	0.00189		0.000050	mg/L	11-SEP-20	12-SEP-20	R5223224
Nickel (Ni)-Dissolved	0.00123		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Potassium (K)-Dissolved	2.11		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Selenium (Se)-Dissolved	0.071		0.050	ug/L	11-SEP-20	12-SEP-20	R5223224
Silicon (Si)-Dissolved	4.92		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Sodium (Na)-Dissolved	1.88		0.050	mg/L	11-SEP-20	12-SEP-20	R5223224
Strontium (Sr)-Dissolved	0.129		0.00020	mg/L	11-SEP-20	12-SEP-20	R5223224
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-SEP-20	12-SEP-20	R5223224
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-SEP-20	12-SEP-20	R5223224
Uranium (U)-Dissolved	0.00158		0.000010	mg/L	11-SEP-20	12-SEP-20	R5223224
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-SEP-20	12-SEP-20	R5223224
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	11-SEP-20	12-SEP-20	R5223224
Hardness							
Hardness (as CaCO3)	404		0.50	mg/L		14-SEP-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		14-SEP-20	R5223368
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0238		0.0030	mg/L		14-SEP-20	R5223368
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Arsenic (As)-Total	0.00019		0.00010	mg/L		14-SEP-20	R5223368
Barium (Ba)-Total	0.295		0.00010	mg/L		14-SEP-20	R5223368
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		14-SEP-20	R5223368
Boron (B)-Total	0.013		0.010	mg/L		14-SEP-20	R5223368
Cadmium (Cd)-Total	0.167		0.0050	ug/L		14-SEP-20	R5223368
Calcium (Ca)-Total	103		0.050	mg/L		14-SEP-20	R5223368
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Cobalt (Co)-Total	0.49		0.10	ug/L		14-SEP-20	R5223368
Copper (Cu)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Iron (Fe)-Total	0.228		0.010	mg/L		14-SEP-20	R5223368
Lead (Pb)-Total	0.000069		0.000050	mg/L		14-SEP-20	R5223368
Lithium (Li)-Total	0.0096		0.0010	mg/L		14-SEP-20	R5223368
Magnesium (Mg)-Total	29.5		0.10	mg/L		14-SEP-20	R5223368
Manganese (Mn)-Total	0.0223		0.00010	mg/L		14-SEP-20	R5223368
Molybdenum (Mo)-Total	0.00182		0.000050	mg/L		14-SEP-20	R5223368
Nickel (Ni)-Total	0.00135		0.00050	mg/L		14-SEP-20	R5223368
Potassium (K)-Total	2.22		0.050	mg/L		14-SEP-20	R5223368
Selenium (Se)-Total	0.107		0.050	ug/L		14-SEP-20	R5223368
Silicon (Si)-Total	5.52		0.10	mg/L		14-SEP-20	R5223368
Silver (Ag)-Total	<0.000010		0.000010	mg/L		14-SEP-20	R5223368
Sodium (Na)-Total	1.81		0.050	mg/L		14-SEP-20	R5223368
Strontium (Sr)-Total	0.114		0.00020	mg/L		14-SEP-20	R5223368
Thallium (Tl)-Total	0.000021		0.000010	mg/L		14-SEP-20	R5223368
Tin (Sn)-Total	<0.00010		0.00010	mg/L		14-SEP-20	R5223368
Titanium (Ti)-Total	<0.010		0.010	mg/L		14-SEP-20	R5223368

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2501293-4 LC_PIZDC1308_WG_Q3-2020_NP							
Sampled By: S. Fossen on 09-SEP-20 @ 10:10							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.00173		0.000010	mg/L		14-SEP-20	R5223368
Vanadium (V)-Total	<0.00050		0.00050	mg/L		14-SEP-20	R5223368
Zinc (Zn)-Total	0.0030		0.0030	mg/L		14-SEP-20	R5223368
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.1		1.0	mg/L		12-SEP-20	R5223334
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	331		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-SEP-20	R5223893
Alkalinity, Total (as CaCO3)	331		1.0	mg/L		15-SEP-20	R5223893
Ammonia, Total (as N)							
Ammonia as N	0.0102		0.0050	mg/L		11-SEP-20	R5222545
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-SEP-20	R5222699
Chloride in Water by IC							
Chloride (Cl)	1.32		0.10	mg/L		11-SEP-20	R5222699
Electrical Conductivity (EC)							
Conductivity (@ 25C)	600		2.0	uS/cm		15-SEP-20	R5223893
Fluoride in Water by IC							
Fluoride (F)	0.137		0.020	mg/L		11-SEP-20	R5222699
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		17-SEP-20	
Anion Sum	7.92			meq/L		17-SEP-20	
Cation Sum	8.21			meq/L		17-SEP-20	
Ion Balance Calculation							
Ion Balance	104		-100	%		17-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0417		0.0050	mg/L		11-SEP-20	R5222699
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0019		0.0010	mg/L		11-SEP-20	R5222699
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		10-SEP-20	R5221664
Oxidation redution potential by elect.							
ORP	398		-1000	mV		14-SEP-20	R5223466
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0048		0.0020	mg/L		15-SEP-20	R5223908
Sulfate in Water by IC							
Sulfate (SO4)	4.77		0.30	mg/L		11-SEP-20	R5222699
Total Dissolved Solids							
Total Dissolved Solids	382	DLHC	20	mg/L		15-SEP-20	R5224879
Total Suspended Solids							
Total Suspended Solids	1.1		1.0	mg/L		15-SEP-20	R5224785
Turbidity							
Turbidity	2.29		0.10	NTU		10-SEP-20	R5221692
pH							
pH	7.85		0.10	pH		15-SEP-20	R5223893

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
			should be near-zero.
			Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as: Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN) This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC_WG_20200909

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2501293

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0
 Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5223334							
WG3403953-17	LCS							
Acidity (as CaCO3)			90.1		%		85-115	12-SEP-20
WG3403953-16	MB							
Acidity (as CaCO3)			1.5		mg/L		2	12-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5223893							
WG3404813-11	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	15-SEP-20
WG3404813-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-2	LCS							
Beryllium (Be)-Dissolved			91.9		%		80-120	12-SEP-20
WG3403040-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-SEP-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5223368							
WG3403306-2	LCS							
Beryllium (Be)-Total			94.2		%		80-120	14-SEP-20
WG3403306-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-SEP-20
BIC-CL								
	Water							
Batch	R5223893							
WG3404813-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5222699							
WG3403361-2	LCS							
Bromide (Br)			106.8		%		85-115	11-SEP-20
WG3403361-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-SEP-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5222802							
WG3403504-6 LCS								
Dissolved Organic Carbon			95.0		%		80-120	12-SEP-20
WG3403504-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5222802							
WG3403504-6 LCS								
Total Organic Carbon			99.2		%		80-120	12-SEP-20
WG3403504-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5222699							
WG3403361-2 LCS								
Chloride (Cl)			101.1		%		85-115	11-SEP-20
WG3403361-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	11-SEP-20
CO3-CL	Water							
Batch	R5223893							
WG3404813-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	15-SEP-20
EC-L-PCT-CL	Water							
Batch	R5223893							
WG3404813-11 LCS								
Conductivity (@ 25C)			92.3		%		90-110	15-SEP-20
WG3404813-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	15-SEP-20
F-IC-N-CL	Water							
Batch	R5222699							
WG3403361-2 LCS								
Fluoride (F)			97.0		%		90-110	11-SEP-20
WG3403361-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-SEP-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5223601							
WG3404401-11	DUP	L2501293-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	15-SEP-20
WG3404401-10	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	15-SEP-20
WG3404401-6	LCS							
Mercury (Hg)-Dissolved			98.6		%		80-120	15-SEP-20
WG3404401-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	15-SEP-20
WG3404401-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	15-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5223224							
WG3403040-2	LCS							
Aluminum (Al)-Dissolved			95.2		%		80-120	12-SEP-20
Antimony (Sb)-Dissolved			96.8		%		80-120	12-SEP-20
Arsenic (As)-Dissolved			98.4		%		80-120	12-SEP-20
Barium (Ba)-Dissolved			102.1		%		80-120	12-SEP-20
Bismuth (Bi)-Dissolved			118.9		%		80-120	12-SEP-20
Boron (B)-Dissolved			96.8		%		80-120	12-SEP-20
Cadmium (Cd)-Dissolved			96.9		%		80-120	12-SEP-20
Calcium (Ca)-Dissolved			100.5		%		80-120	12-SEP-20
Chromium (Cr)-Dissolved			101.2		%		80-120	12-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	12-SEP-20
Copper (Cu)-Dissolved			94.8		%		80-120	12-SEP-20
Iron (Fe)-Dissolved			87.8		%		80-120	12-SEP-20
Lead (Pb)-Dissolved			97.4		%		80-120	12-SEP-20
Lithium (Li)-Dissolved			95.0		%		80-120	12-SEP-20
Magnesium (Mg)-Dissolved			95.6		%		80-120	12-SEP-20
Manganese (Mn)-Dissolved			98.7		%		80-120	12-SEP-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	12-SEP-20
Nickel (Ni)-Dissolved			97.1		%		80-120	12-SEP-20
Potassium (K)-Dissolved			96.3		%		80-120	12-SEP-20
Selenium (Se)-Dissolved			94.6		%		80-120	12-SEP-20
Silicon (Si)-Dissolved			93.4		%		60-140	12-SEP-20
Silver (Ag)-Dissolved			102.1		%		80-120	12-SEP-20
Sodium (Na)-Dissolved			100.1		%		80-120	12-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-2	LCS							
Strontium (Sr)-Dissolved			106.4		%		80-120	12-SEP-20
Thallium (Tl)-Dissolved			97.4		%		80-120	12-SEP-20
Tin (Sn)-Dissolved			98.2		%		80-120	12-SEP-20
Titanium (Ti)-Dissolved			98.7		%		80-120	12-SEP-20
Uranium (U)-Dissolved			102.6		%		80-120	12-SEP-20
Vanadium (V)-Dissolved			97.3		%		80-120	12-SEP-20
Zinc (Zn)-Dissolved			94.7		%		80-120	12-SEP-20
WG3403040-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5223224							
WG3403040-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-SEP-20
MET-T-CCMS-VA								
	Water							
Batch	R5223368							
WG3403306-2	LCS							
Aluminum (Al)-Total			97.8		%		80-120	14-SEP-20
Antimony (Sb)-Total			103.7		%		80-120	14-SEP-20
Arsenic (As)-Total			97.7		%		80-120	14-SEP-20
Barium (Ba)-Total			97.3		%		80-120	14-SEP-20
Bismuth (Bi)-Total			99.6		%		80-120	14-SEP-20
Boron (B)-Total			94.0		%		80-120	14-SEP-20
Cadmium (Cd)-Total			100.1		%		80-120	14-SEP-20
Calcium (Ca)-Total			99.1		%		80-120	14-SEP-20
Chromium (Cr)-Total			99.0		%		80-120	14-SEP-20
Cobalt (Co)-Total			98.4		%		80-120	14-SEP-20
Copper (Cu)-Total			98.8		%		80-120	14-SEP-20
Iron (Fe)-Total			105.1		%		80-120	14-SEP-20
Lead (Pb)-Total			100.3		%		80-120	14-SEP-20
Lithium (Li)-Total			93.7		%		80-120	14-SEP-20
Magnesium (Mg)-Total			98.1		%		80-120	14-SEP-20
Manganese (Mn)-Total			99.4		%		80-120	14-SEP-20
Molybdenum (Mo)-Total			101.8		%		80-120	14-SEP-20
Nickel (Ni)-Total			98.1		%		80-120	14-SEP-20
Potassium (K)-Total			104.3		%		80-120	14-SEP-20
Selenium (Se)-Total			99.99		%		80-120	14-SEP-20
Silicon (Si)-Total			106.0		%		80-120	14-SEP-20
Silver (Ag)-Total			106.9		%		80-120	14-SEP-20
Sodium (Na)-Total			100.5		%		80-120	14-SEP-20
Strontium (Sr)-Total			105.1		%		80-120	14-SEP-20
Thallium (Tl)-Total			98.8		%		80-120	14-SEP-20
Tin (Sn)-Total			101.1		%		80-120	14-SEP-20
Titanium (Ti)-Total			95.8		%		80-120	14-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5223368							
WG3403306-2	LCS							
Uranium (U)-Total			103.8		%		80-120	14-SEP-20
Vanadium (V)-Total			98.8		%		80-120	14-SEP-20
Zinc (Zn)-Total			97.4		%		80-120	14-SEP-20
WG3403306-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	14-SEP-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-SEP-20



Quality Control Report

Workorder: L2501293

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5222545							
WG3402917-10	LCS							
Ammonia as N			99.5		%		85-115	11-SEP-20
WG3402917-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-SEP-20
NO2-L-IC-N-CL								
Water								
Batch	R5222699							
WG3403361-2	LCS							
Nitrite (as N)			102.4		%		90-110	11-SEP-20
WG3403361-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-SEP-20
NO3-L-IC-N-CL								
Water								
Batch	R5222699							
WG3403361-2	LCS							
Nitrate (as N)			102.5		%		90-110	11-SEP-20
WG3403361-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-SEP-20
OH-CL								
Water								
Batch	R5223893							
WG3404813-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	15-SEP-20
ORP-CL								
Water								
Batch	R5223466							
WG3404288-1	CRM	CL-ORP						
ORP			220		mV		210-230	14-SEP-20
P-T-L-COL-CL								
Water								
Batch	R5223908							
WG3404799-6	LCS							
Phosphorus (P)-Total			102.1		%		80-120	15-SEP-20
WG3404799-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-SEP-20
PH-CL								
Water								
Batch	R5223893							
WG3404813-11	LCS							
pH			6.99		pH		6.9-7.1	15-SEP-20



Quality Control Report

Workorder: L2501293

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R5221664							
WG3402046-6	LCS							
Orthophosphate-Dissolved (as P)			100.5		%		80-120	10-SEP-20
WG3402046-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-SEP-20
SO4-IC-N-CL								
	Water							
Batch	R5222699							
WG3403361-2	LCS							
Sulfate (SO4)			101.8		%		90-110	11-SEP-20
WG3403361-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-SEP-20
SOLIDS-TDS-CL								
	Water							
Batch	R5224879							
WG3404525-3	DUP	L2501293-2						
Total Dissolved Solids		413	412		mg/L	0.2	20	15-SEP-20
WG3404525-2	LCS							
Total Dissolved Solids			100.4		%		85-115	15-SEP-20
WG3404525-1	MB							
Total Dissolved Solids			<10		mg/L		10	15-SEP-20
TKN-L-F-CL								
	Water							
Batch	R5222798							
WG3403208-13	LCS							
Total Kjeldahl Nitrogen			102.3		%		75-125	13-SEP-20
WG3403208-2	LCS							
Total Kjeldahl Nitrogen			119.4		%		75-125	13-SEP-20
WG3403208-5	LCS							
Total Kjeldahl Nitrogen			112.3		%		75-125	13-SEP-20
WG3403208-7	LCS							
Total Kjeldahl Nitrogen			104.2		%		75-125	13-SEP-20
WG3403208-9	LCS							
Total Kjeldahl Nitrogen			105.3		%		75-125	13-SEP-20
WG3403208-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-20
WG3403208-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-20
WG3403208-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-20
WG3403208-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-20



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Workorder: L2501293

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5222798							
WG3403208-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-20
TSS-L-CL	Water							
Batch	R5224785							
WG3404295-2 LCS								
Total Suspended Solids			95.9		%		85-115	15-SEP-20
WG3404295-4 LCS								
Total Suspended Solids			103.7		%		85-115	15-SEP-20
WG3404295-1 MB								
Total Suspended Solids			<1.0		mg/L		1	15-SEP-20
WG3404295-3 MB								
Total Suspended Solids			<1.0		mg/L		1	15-SEP-20
TURBIDITY-CL	Water							
Batch	R5221692							
WG3401638-14 LCS								
Turbidity			98.0		%		85-115	10-SEP-20
WG3401638-15 MB								
Turbidity			<0.10		NTU		0.1	10-SEP-20

Quality Control Report

Workorder: L2501293

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2501293

Report Date: 09-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	09-SEP-20 12:50	14-SEP-20 14:45	0.25	122	hours	EHTR-FM
	2	09-SEP-20 13:25	14-SEP-20 14:45	0.25	121	hours	EHTR-FM
	3	09-SEP-20 11:20	14-SEP-20 14:45	0.25	123	hours	EHTR-FM
	4	09-SEP-20 10:10	14-SEP-20 14:45	0.25	125	hours	EHTR-FM
pH							
	1	09-SEP-20 12:50	15-SEP-20 14:00	0.25	145	hours	EHTR-FM
	2	09-SEP-20 13:25	15-SEP-20 14:00	0.25	144	hours	EHTR-FM
	3	09-SEP-20 11:20	15-SEP-20 14:00	0.25	147	hours	EHTR-FM
	4	09-SEP-20 10:10	15-SEP-20 14:00	0.25	148	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2501293 were received on 10-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: DC_WG_20200909		TURNAROUND TIME:			RUSH:			
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets		Email 1:	chris.blurton@teck.com	x	x
Email	chris.blurton@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	teckcoal@equisonline.com		x
Address	Box 2003	Address	2559 29 Street NE		Email 3:	drake.lymstra@teck.com	x	x
City	15km North Hwy 43	City	Calgary	Province	AB	Email 4:	shanise.fossen@teck.com	x
Postal Code	Sparwood V0B 2G0	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643	
Phone Number	250-425-8478	Phone Number	403 407 1794					



L2501293-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED											
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T	NaOH/Zn Ac		
LC_PIZDC1404S_WG_Q3-2020_NP	LC_PIZDC1404S	WG	No	9/9/2020	12:50	G	6	1	1		1	1	1	1					
LC_PIZDC1404D_WG_Q3-2020_NP	LC_PIZDC404D	WG	No	9/9/2020	13:25	G	6	1	1		1	1	1	1					
LC_PIZDC1307_WG_Q3-2020_NP	LC_PIZDC1307	WG	No	9/9/2020	11:20	G	6	1	1		1	1	1	1					
LC_PIZDC1308_WG_Q3-2020_NP	LC_PIZDC1308	WG	No	9/9/2020	10:10	G	6	1	1		1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S. Fossen	9-Sep	<i>[Signature]</i>	9/10/20

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	S. Fossen	Mobile #		
Sampler's Signature	S Fossen	Date/Time	September 9, 2020	<i>[Signature]</i>



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 15-SEP-20
Report Date: 09-FEB-21 12:47 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2503296
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC_WG_20200914
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:13

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2503296-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503296-1 LC_PIZDC1306_WG_Q3-2020_NP							
Sampled By: S. Fossen on 14-SEP-20 @ 11:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	299		5.0	mg/L		17-SEP-20	R5226926
Carbonate (CO3)	9.8		5.0	mg/L		17-SEP-20	R5226926
Dissolved Organic Carbon	1.46		0.50	mg/L		18-SEP-20	R5230798
Hydroxide (OH)	<5.0		5.0	mg/L		17-SEP-20	R5226926
Total Kjeldahl Nitrogen	0.053		0.050	mg/L		17-SEP-20	R5226059
Total Organic Carbon	1.65		0.50	mg/L		18-SEP-20	R5230798
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-SEP-20	18-SEP-20	R5231117
Dissolved Metals Filtration Location	FIELD					17-SEP-20	R5227918
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-SEP-20	21-SEP-20	R5231716
Dissolved Mercury Filtration Location	FIELD					21-SEP-20	R5231384
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-SEP-20	R5227918
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-SEP-20	18-SEP-20	R5231117
Antimony (Sb)-Dissolved	0.00023		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Barium (Ba)-Dissolved	0.179		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Boron (B)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Cadmium (Cd)-Dissolved	0.166		0.0050	ug/L	17-SEP-20	18-SEP-20	R5231117
Calcium (Ca)-Dissolved	67.3		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-SEP-20	18-SEP-20	R5231117
Copper (Cu)-Dissolved	0.00148		0.00020	mg/L	17-SEP-20	18-SEP-20	R5231117
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Lithium (Li)-Dissolved	0.0107		0.0010	mg/L	17-SEP-20	18-SEP-20	R5231117
Magnesium (Mg)-Dissolved	24.4		0.10	mg/L	17-SEP-20	18-SEP-20	R5231117
Manganese (Mn)-Dissolved	0.00013		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Molybdenum (Mo)-Dissolved	0.00189		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Nickel (Ni)-Dissolved	0.00119		0.00050	mg/L	17-SEP-20	18-SEP-20	R5231117
Potassium (K)-Dissolved	2.29		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Selenium (Se)-Dissolved	4.81		0.050	ug/L	17-SEP-20	18-SEP-20	R5231117
Silicon (Si)-Dissolved	2.84		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Sodium (Na)-Dissolved	0.791		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Strontium (Sr)-Dissolved	0.0688		0.00020	mg/L	17-SEP-20	18-SEP-20	R5231117
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Uranium (U)-Dissolved	0.000815		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Vanadium (V)-Dissolved	0.00057		0.00050	mg/L	17-SEP-20	18-SEP-20	R5231117
Zinc (Zn)-Dissolved	0.0252		0.0010	mg/L	17-SEP-20	18-SEP-20	R5231117
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	268		0.50	mg/L		20-SEP-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-SEP-20	R5230596
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503296-1 LC_PIZDC1306_WG_Q3-2020_NP							
Sampled By: S. Fossen on 14-SEP-20 @ 11:15							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0526		0.0030	mg/L		18-SEP-20	R5230596
Antimony (Sb)-Total	0.00023		0.00010	mg/L		18-SEP-20	R5230596
Arsenic (As)-Total	0.00013		0.00010	mg/L		18-SEP-20	R5230596
Barium (Ba)-Total	0.166		0.00010	mg/L		18-SEP-20	R5230596
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-SEP-20	R5230596
Boron (B)-Total	0.011		0.010	mg/L		18-SEP-20	R5230596
Cadmium (Cd)-Total	0.167		0.0050	ug/L		18-SEP-20	R5230596
Calcium (Ca)-Total	62.8		0.050	mg/L		18-SEP-20	R5230596
Chromium (Cr)-Total	0.00012		0.00010	mg/L		18-SEP-20	R5230596
Cobalt (Co)-Total	<0.10		0.10	ug/L		18-SEP-20	R5230596
Copper (Cu)-Total	0.00183		0.00050	mg/L		18-SEP-20	R5230596
Iron (Fe)-Total	0.031		0.010	mg/L		18-SEP-20	R5230596
Lead (Pb)-Total	0.000109		0.000050	mg/L		18-SEP-20	R5230596
Lithium (Li)-Total	0.0094		0.0010	mg/L		18-SEP-20	R5230596
Magnesium (Mg)-Total	21.9		0.10	mg/L		18-SEP-20	R5230596
Manganese (Mn)-Total	0.00160		0.00010	mg/L		18-SEP-20	R5230596
Molybdenum (Mo)-Total	0.00195		0.000050	mg/L		18-SEP-20	R5230596
Nickel (Ni)-Total	0.00114		0.00050	mg/L		18-SEP-20	R5230596
Potassium (K)-Total	1.93		0.050	mg/L		18-SEP-20	R5230596
Selenium (Se)-Total	4.33		0.050	ug/L		18-SEP-20	R5230596
Silicon (Si)-Total	3.01		0.10	mg/L		18-SEP-20	R5230596
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-SEP-20	R5230596
Sodium (Na)-Total	0.686		0.050	mg/L		18-SEP-20	R5230596
Strontium (Sr)-Total	0.0680		0.00020	mg/L		18-SEP-20	R5230596
Thallium (Tl)-Total	0.000013		0.000010	mg/L		18-SEP-20	R5230596
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-SEP-20	R5230596
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-SEP-20	R5230596
Uranium (U)-Total	0.000878		0.000010	mg/L		18-SEP-20	R5230596
Vanadium (V)-Total	0.00105		0.00050	mg/L		18-SEP-20	R5230596
Zinc (Zn)-Total	0.0217		0.0030	mg/L		18-SEP-20	R5230596
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.0		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	245		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Carbonate (as CaCO3)	16.4		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Total (as CaCO3)	261		1.0	mg/L		17-SEP-20	R5226926
Ammonia, Total (as N)							
Ammonia as N	0.0056		0.0050	mg/L		17-SEP-20	R5228422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224720
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		15-SEP-20	R5224720
Electrical Conductivity (EC)							
Conductivity (@ 25C)	429		2.0	uS/cm		17-SEP-20	R5226926
Fluoride in Water by IC							
Fluoride (F)	0.140		0.020	mg/L		15-SEP-20	R5224720
Ion Balance Calculation							
Cation - Anion Balance	0.7			%		20-SEP-20	
Anion Sum	5.38			meq/L		20-SEP-20	
Cation Sum	5.45			meq/L		20-SEP-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503296-1 LC_PIZDC1306_WG_Q3-2020_NP Sampled By: S. Fossen on 14-SEP-20 @ 11:15 Matrix: WG							
Ion Balance Calculation							
Ion Balance	101		-100	%		20-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.188		0.0050	mg/L		15-SEP-20	R5224720
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0025		0.0010	mg/L		15-SEP-20	R5224720
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	389		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0040		0.0020	mg/L		19-SEP-20	R5230972
Sulfate in Water by IC							
Sulfate (SO4)	6.82		0.30	mg/L		15-SEP-20	R5224720
Total Dissolved Solids							
Total Dissolved Solids	206	DLHC	20	mg/L		17-SEP-20	R5229601
Total Suspended Solids							
Total Suspended Solids	1.7		1.0	mg/L		17-SEP-20	R5229505
Turbidity							
Turbidity	1.72		0.10	NTU		15-SEP-20	R5224219
pH							
pH	8.52		0.10	pH		17-SEP-20	R5226926
L2503296-2 LC_PIZDC0901_WG_Q3-2020_NP Sampled By: S. Fossen on 14-SEP-20 @ 12:35 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	414		5.0	mg/L		17-SEP-20	R5226926
Carbonate (CO3)	<5.0		5.0	mg/L		17-SEP-20	R5226926
Dissolved Organic Carbon	3.04		0.50	mg/L		18-SEP-20	R5230798
Hydroxide (OH)	<5.0		5.0	mg/L		17-SEP-20	R5226926
Total Kjeldahl Nitrogen	0.136		0.050	mg/L		17-SEP-20	R5226059
Total Organic Carbon	2.59		0.50	mg/L		18-SEP-20	R5230798
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-SEP-20	18-SEP-20	R5231117
Dissolved Metals Filtration Location	FIELD					17-SEP-20	R5227918
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-SEP-20	21-SEP-20	R5231716
Dissolved Mercury Filtration Location	FIELD					21-SEP-20	R5231384
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-SEP-20	R5227918
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-SEP-20	18-SEP-20	R5231117
Antimony (Sb)-Dissolved	0.00025		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Barium (Ba)-Dissolved	0.336		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Boron (B)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Cadmium (Cd)-Dissolved	0.118		0.0050	ug/L	17-SEP-20	18-SEP-20	R5231117
Calcium (Ca)-Dissolved	109		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-SEP-20	18-SEP-20	R5231117
Copper (Cu)-Dissolved	0.0150		0.00020	mg/L	17-SEP-20	18-SEP-20	R5231117

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503296-2 LC_PIZDC0901_WG_Q3-2020_NP							
Sampled By: S. Fossen on 14-SEP-20 @ 12:35							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Lead (Pb)-Dissolved	0.000931		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Lithium (Li)-Dissolved	0.0033		0.0010	mg/L	17-SEP-20	18-SEP-20	R5231117
Magnesium (Mg)-Dissolved	32.7		0.10	mg/L	17-SEP-20	18-SEP-20	R5231117
Manganese (Mn)-Dissolved	0.00032		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Molybdenum (Mo)-Dissolved	0.000653		0.000050	mg/L	17-SEP-20	18-SEP-20	R5231117
Nickel (Ni)-Dissolved	0.00275		0.00050	mg/L	17-SEP-20	18-SEP-20	R5231117
Potassium (K)-Dissolved	1.54		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Selenium (Se)-Dissolved	0.513		0.050	ug/L	17-SEP-20	18-SEP-20	R5231117
Silicon (Si)-Dissolved	6.42		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Sodium (Na)-Dissolved	3.01		0.050	mg/L	17-SEP-20	18-SEP-20	R5231117
Strontium (Sr)-Dissolved	0.179		0.00020	mg/L	17-SEP-20	18-SEP-20	R5231117
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-SEP-20	18-SEP-20	R5231117
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-SEP-20	18-SEP-20	R5231117
Uranium (U)-Dissolved	0.00238		0.000010	mg/L	17-SEP-20	18-SEP-20	R5231117
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-SEP-20	18-SEP-20	R5231117
Zinc (Zn)-Dissolved	0.0332		0.0010	mg/L	17-SEP-20	18-SEP-20	R5231117
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	407		0.50	mg/L		20-SEP-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-SEP-20	R5230596
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0561		0.0030	mg/L		18-SEP-20	R5230596
Antimony (Sb)-Total	0.00028		0.00010	mg/L		18-SEP-20	R5230596
Arsenic (As)-Total	0.00036		0.00010	mg/L		18-SEP-20	R5230596
Barium (Ba)-Total	0.308		0.00010	mg/L		18-SEP-20	R5230596
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-SEP-20	R5230596
Boron (B)-Total	<0.010		0.010	mg/L		18-SEP-20	R5230596
Cadmium (Cd)-Total	0.133		0.0050	ug/L		18-SEP-20	R5230596
Calcium (Ca)-Total	106		0.050	mg/L		18-SEP-20	R5230596
Chromium (Cr)-Total	0.00020		0.00010	mg/L		18-SEP-20	R5230596
Cobalt (Co)-Total	0.14		0.10	ug/L		18-SEP-20	R5230596
Copper (Cu)-Total	0.0138		0.00050	mg/L		18-SEP-20	R5230596
Iron (Fe)-Total	0.053		0.010	mg/L		18-SEP-20	R5230596
Lead (Pb)-Total	0.00110		0.000050	mg/L		18-SEP-20	R5230596
Lithium (Li)-Total	0.0033		0.0010	mg/L		18-SEP-20	R5230596
Magnesium (Mg)-Total	28.0		0.10	mg/L		18-SEP-20	R5230596
Manganese (Mn)-Total	0.0106		0.00010	mg/L		18-SEP-20	R5230596
Molybdenum (Mo)-Total	0.000653		0.000050	mg/L		18-SEP-20	R5230596
Nickel (Ni)-Total	0.00276		0.00050	mg/L		18-SEP-20	R5230596
Potassium (K)-Total	1.27		0.050	mg/L		18-SEP-20	R5230596
Selenium (Se)-Total	0.521		0.050	ug/L		18-SEP-20	R5230596
Silicon (Si)-Total	6.52		0.10	mg/L		18-SEP-20	R5230596
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-SEP-20	R5230596
Sodium (Na)-Total	2.74		0.050	mg/L		18-SEP-20	R5230596
Strontium (Sr)-Total	0.179		0.00020	mg/L		18-SEP-20	R5230596
Thallium (Tl)-Total	0.000020		0.000010	mg/L		18-SEP-20	R5230596
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-SEP-20	R5230596
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-SEP-20	R5230596

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2503296-2 LC_PIZDC0901_WG_Q3-2020_NP							
Sampled By: S. Fossen on 14-SEP-20 @ 12:35							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.00244		0.000010	mg/L		18-SEP-20	R5230596
Vanadium (V)-Total	0.00097		0.00050	mg/L		18-SEP-20	R5230596
Zinc (Zn)-Total	0.0296		0.0030	mg/L		18-SEP-20	R5230596
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.9		1.0	mg/L		16-SEP-20	R5224717
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	339		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-SEP-20	R5226926
Alkalinity, Total (as CaCO3)	339		1.0	mg/L		17-SEP-20	R5226926
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		17-SEP-20	R5228422
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-SEP-20	R5224720
Chloride in Water by IC							
Chloride (Cl)	0.62		0.10	mg/L		15-SEP-20	R5224720
Electrical Conductivity (EC)							
Conductivity (@ 25C)	575		2.0	uS/cm		17-SEP-20	R5226926
Fluoride in Water by IC							
Fluoride (F)	0.078		0.020	mg/L		15-SEP-20	R5224720
Ion Balance Calculation							
Ion Balance	117		-100	%		21-SEP-20	
Ion Balance Calculation							
Cation - Anion Balance	8.0			%		20-SEP-20	
Anion Sum	7.07			meq/L		20-SEP-20	
Cation Sum	8.30			meq/L		20-SEP-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.299		0.0050	mg/L		15-SEP-20	R5224720
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-SEP-20	R5224720
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0156		0.0010	mg/L		15-SEP-20	R5224224
Oxidation redution potential by elect.							
ORP	350		-1000	mV		15-SEP-20	R5224232
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0175		0.0020	mg/L		19-SEP-20	R5230972
Sulfate in Water by IC							
Sulfate (SO4)	11.9		0.30	mg/L		15-SEP-20	R5224720
Total Dissolved Solids							
Total Dissolved Solids	435	DLHC	20	mg/L		17-SEP-20	R5229601
Total Suspended Solids							
Total Suspended Solids	3.8		1.0	mg/L		17-SEP-20	R5229505
Turbidity							
Turbidity	7.81		0.10	NTU		15-SEP-20	R5224219
pH							
pH	8.11		0.10	pH		17-SEP-20	R5226926

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC_WG_20200914

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2503296

Report Date: 09-FEB-21

Page 1 of 12

Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5224717							
WG3405808-2	LCS							
Acidity (as CaCO3)			100.9		%		85-115	16-SEP-20
WG3405808-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	16-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5226926							
WG3406781-17	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	17-SEP-20
WG3406781-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5231117							
WG3407011-3	DUP	L2503296-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-SEP-20
WG3407011-2	LCS							
Beryllium (Be)-Dissolved			109.6		%		80-120	18-SEP-20
WG3407011-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-SEP-20
WG3407011-4	MS	L2503296-2						
Beryllium (Be)-Dissolved			102.3		%		70-130	18-SEP-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5230596							
WG3407377-2	LCS							
Beryllium (Be)-Total			89.3		%		80-120	18-SEP-20
WG3407377-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	18-SEP-20
BIC-CL								
	Water							
Batch	R5226926							
WG3406781-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5224720							
WG3405805-2	LCS							
Bromide (Br)			102.3		%		85-115	15-SEP-20
WG3405805-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5230798							
WG3407886-2 LCS								
Dissolved Organic Carbon			103.0		%		80-120	18-SEP-20
WG3407886-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-SEP-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5230798							
WG3407886-2 LCS								
Total Organic Carbon			102.0		%		80-120	18-SEP-20
WG3407886-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	18-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5224720							
WG3405805-2 LCS								
Chloride (Cl)			100.3		%		85-115	15-SEP-20
WG3405805-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	15-SEP-20
CO3-CL	Water							
Batch	R5226926							
WG3406781-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-SEP-20
EC-L-PCT-CL	Water							
Batch	R5226926							
WG3406781-17 LCS								
Conductivity (@ 25C)			95.7		%		90-110	17-SEP-20
WG3406781-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-SEP-20
F-IC-N-CL	Water							
Batch	R5224720							
WG3405805-2 LCS								
Fluoride (F)			99.5		%		90-110	15-SEP-20
WG3405805-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	15-SEP-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5231716							
WG3408817-2	LCS							
Mercury (Hg)-Dissolved			98.6		%		80-120	21-SEP-20
WG3408817-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-SEP-20
WG3408817-4	MS	L2503296-2						
Mercury (Hg)-Dissolved			99.2		%		70-130	21-SEP-20
MET-D-CCMS-VA								
	Water							
Batch	R5231117							
WG3407011-3	DUP	L2503296-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-SEP-20
Antimony (Sb)-Dissolved		0.00023	0.00021		mg/L	8.2	20	18-SEP-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Barium (Ba)-Dissolved		0.179	0.163		mg/L	9.2	20	18-SEP-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-SEP-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-SEP-20
Cadmium (Cd)-Dissolved		0.000166	0.000162		mg/L	2.3	20	18-SEP-20
Calcium (Ca)-Dissolved		67.3	67.8		mg/L	0.8	20	18-SEP-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Copper (Cu)-Dissolved		0.00148	0.00138		mg/L	6.5	20	18-SEP-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-SEP-20
Lithium (Li)-Dissolved		0.0107	0.0110		mg/L	2.5	20	18-SEP-20
Magnesium (Mg)-Dissolved		24.4	23.7		mg/L	2.7	20	18-SEP-20
Manganese (Mn)-Dissolved		0.00013	0.00014		mg/L	13	20	18-SEP-20
Molybdenum (Mo)-Dissolved		0.00189	0.00186		mg/L	1.7	20	18-SEP-20
Nickel (Ni)-Dissolved		0.00119	0.00121		mg/L	1.6	20	18-SEP-20
Potassium (K)-Dissolved		2.29	2.20		mg/L	4.3	20	18-SEP-20
Selenium (Se)-Dissolved		0.00481	0.00442		mg/L	8.4	20	18-SEP-20
Silicon (Si)-Dissolved		2.84	2.86		mg/L	0.4	20	18-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-SEP-20
Sodium (Na)-Dissolved		0.791	0.775		mg/L	2.1	20	18-SEP-20
Strontium (Sr)-Dissolved		0.0688	0.0672		mg/L	2.3	20	18-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231117							
WG3407011-3	DUP	L2503296-1						
Uranium (U)-Dissolved		0.000815	0.000784		mg/L	3.8	20	18-SEP-20
Vanadium (V)-Dissolved		0.00057	0.00051		mg/L	11	20	18-SEP-20
Zinc (Zn)-Dissolved		0.0252	0.0253		mg/L	0.2	20	18-SEP-20
WG3407011-2	LCS							
Aluminum (Al)-Dissolved			104.4		%		80-120	18-SEP-20
Antimony (Sb)-Dissolved			98.6		%		80-120	18-SEP-20
Arsenic (As)-Dissolved			101.1		%		80-120	18-SEP-20
Barium (Ba)-Dissolved			100.0		%		80-120	18-SEP-20
Bismuth (Bi)-Dissolved			104.2		%		80-120	18-SEP-20
Boron (B)-Dissolved			99.4		%		80-120	18-SEP-20
Cadmium (Cd)-Dissolved			101.8		%		80-120	18-SEP-20
Calcium (Ca)-Dissolved			109.7		%		80-120	18-SEP-20
Chromium (Cr)-Dissolved			103.9		%		80-120	18-SEP-20
Cobalt (Co)-Dissolved			101.5		%		80-120	18-SEP-20
Copper (Cu)-Dissolved			101.7		%		80-120	18-SEP-20
Iron (Fe)-Dissolved			101.9		%		80-120	18-SEP-20
Lead (Pb)-Dissolved			105.5		%		80-120	18-SEP-20
Lithium (Li)-Dissolved			111.3		%		80-120	18-SEP-20
Magnesium (Mg)-Dissolved			102.7		%		80-120	18-SEP-20
Manganese (Mn)-Dissolved			105.3		%		80-120	18-SEP-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	18-SEP-20
Nickel (Ni)-Dissolved			98.6		%		80-120	18-SEP-20
Potassium (K)-Dissolved			105.0		%		80-120	18-SEP-20
Selenium (Se)-Dissolved			94.9		%		80-120	18-SEP-20
Silicon (Si)-Dissolved			91.3		%		60-140	18-SEP-20
Silver (Ag)-Dissolved			107.2		%		80-120	18-SEP-20
Sodium (Na)-Dissolved			105.7		%		80-120	18-SEP-20
Strontium (Sr)-Dissolved			99.5		%		80-120	18-SEP-20
Thallium (Tl)-Dissolved			102.3		%		80-120	18-SEP-20
Tin (Sn)-Dissolved			99.7		%		80-120	18-SEP-20
Titanium (Ti)-Dissolved			98.7		%		80-120	18-SEP-20
Uranium (U)-Dissolved			101.1		%		80-120	18-SEP-20
Vanadium (V)-Dissolved			99.7		%		80-120	18-SEP-20
Zinc (Zn)-Dissolved			102.0		%		80-120	18-SEP-20
WG3407011-1	MB	NP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231117							
WG3407011-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
WG3407011-4	MS	L2503296-2						
Aluminum (Al)-Dissolved			99.98		%		70-130	18-SEP-20
Antimony (Sb)-Dissolved			101.7		%		70-130	18-SEP-20
Arsenic (As)-Dissolved			102.5		%		70-130	18-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231117							
WG3407011-4 MS		L2503296-2						
Barium (Ba)-Dissolved			N/A	MS-B	%		-	18-SEP-20
Bismuth (Bi)-Dissolved			87.4		%		70-130	18-SEP-20
Boron (B)-Dissolved			85.0		%		70-130	18-SEP-20
Cadmium (Cd)-Dissolved			102.4		%		70-130	18-SEP-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-SEP-20
Chromium (Cr)-Dissolved			102.8		%		70-130	18-SEP-20
Cobalt (Co)-Dissolved			96.8		%		70-130	18-SEP-20
Copper (Cu)-Dissolved			88.3		%		70-130	18-SEP-20
Iron (Fe)-Dissolved			98.5		%		70-130	18-SEP-20
Lead (Pb)-Dissolved			97.0		%		70-130	18-SEP-20
Lithium (Li)-Dissolved			99.95		%		70-130	18-SEP-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	18-SEP-20
Manganese (Mn)-Dissolved			100.4		%		70-130	18-SEP-20
Molybdenum (Mo)-Dissolved			96.6		%		70-130	18-SEP-20
Nickel (Ni)-Dissolved			95.3		%		70-130	18-SEP-20
Potassium (K)-Dissolved			98.7		%		70-130	18-SEP-20
Selenium (Se)-Dissolved			103.0		%		70-130	18-SEP-20
Silicon (Si)-Dissolved			92.5		%		70-130	18-SEP-20
Silver (Ag)-Dissolved			95.0		%		70-130	18-SEP-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	18-SEP-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	18-SEP-20
Thallium (Tl)-Dissolved			90.5		%		70-130	18-SEP-20
Tin (Sn)-Dissolved			97.1		%		70-130	18-SEP-20
Titanium (Ti)-Dissolved			97.7		%		70-130	18-SEP-20
Uranium (U)-Dissolved			86.8		%		70-130	18-SEP-20
Vanadium (V)-Dissolved			99.3		%		70-130	18-SEP-20
Zinc (Zn)-Dissolved			100.4		%		70-130	18-SEP-20
MET-T-CCMS-VA								
	Water							
Batch	R5230596							
WG3407377-2 LCS								
Aluminum (Al)-Total			94.2		%		80-120	18-SEP-20
Antimony (Sb)-Total			97.2		%		80-120	18-SEP-20
Arsenic (As)-Total			95.4		%		80-120	18-SEP-20
Barium (Ba)-Total			95.6		%		80-120	18-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230596							
WG3407377-2 LCS								
Bismuth (Bi)-Total			98.5		%		80-120	18-SEP-20
Boron (B)-Total			96.3		%		80-120	18-SEP-20
Cadmium (Cd)-Total			95.0		%		80-120	18-SEP-20
Calcium (Ca)-Total			93.7		%		80-120	18-SEP-20
Chromium (Cr)-Total			95.9		%		80-120	18-SEP-20
Cobalt (Co)-Total			95.3		%		80-120	18-SEP-20
Copper (Cu)-Total			93.9		%		80-120	18-SEP-20
Iron (Fe)-Total			94.2		%		80-120	18-SEP-20
Lead (Pb)-Total			94.9		%		80-120	18-SEP-20
Lithium (Li)-Total			92.8		%		80-120	18-SEP-20
Magnesium (Mg)-Total			88.2		%		80-120	18-SEP-20
Manganese (Mn)-Total			94.8		%		80-120	18-SEP-20
Molybdenum (Mo)-Total			93.9		%		80-120	18-SEP-20
Nickel (Ni)-Total			93.6		%		80-120	18-SEP-20
Potassium (K)-Total			91.8		%		80-120	18-SEP-20
Selenium (Se)-Total			94.4		%		80-120	18-SEP-20
Silicon (Si)-Total			100.5		%		80-120	18-SEP-20
Silver (Ag)-Total			92.3		%		80-120	18-SEP-20
Sodium (Na)-Total			97.3		%		80-120	18-SEP-20
Strontium (Sr)-Total			92.3		%		80-120	18-SEP-20
Thallium (Tl)-Total			94.1		%		80-120	18-SEP-20
Tin (Sn)-Total			93.6		%		80-120	18-SEP-20
Titanium (Ti)-Total			93.5		%		80-120	18-SEP-20
Uranium (U)-Total			89.6		%		80-120	18-SEP-20
Vanadium (V)-Total			97.1		%		80-120	18-SEP-20
Zinc (Zn)-Total			92.6		%		80-120	18-SEP-20
WG3407377-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	18-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	18-SEP-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	18-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230596							
WG3407377-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	18-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	18-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	18-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	18-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	18-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	18-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	18-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	18-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	18-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-SEP-20
NH3-L-F-CL		Water						
Batch	R5228422							
WG3406742-6	LCS							
Ammonia as N			89.9		%		85-115	17-SEP-20
WG3406742-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-SEP-20
NO2-L-IC-N-CL		Water						
Batch	R5224720							
WG3405805-2	LCS							
Nitrite (as N)			99.8		%		90-110	15-SEP-20
WG3405805-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-SEP-20



Quality Control Report

Workorder: L2503296

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5224720							
WG3405805-2	LCS							
Nitrate (as N)			100.8		%		90-110	15-SEP-20
WG3405805-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-SEP-20
OH-CL	Water							
Batch	R5226926							
WG3406781-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-SEP-20
ORP-CL	Water							
Batch	R5224232							
WG3404997-6	CRM	CL-ORP						
ORP			221		mV		210-230	15-SEP-20
P-T-L-COL-CL	Water							
Batch	R5230972							
WG3408145-6	LCS							
Phosphorus (P)-Total			97.6		%		80-120	19-SEP-20
WG3408145-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-SEP-20
PH-CL	Water							
Batch	R5226926							
WG3406781-17	LCS							
pH			7.00		pH		6.9-7.1	17-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5224224							
WG3404933-4	LCS							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	15-SEP-20
WG3404933-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-SEP-20
SO4-IC-N-CL	Water							
Batch	R5224720							
WG3405805-2	LCS							
Sulfate (SO4)			100.5		%		90-110	15-SEP-20
WG3405805-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-SEP-20



Quality Control Report

Workorder: L2503296

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5229601							
WG3406333-8	LCS							
Total Dissolved Solids			99.0		%		85-115	17-SEP-20
WG3406333-7	MB							
Total Dissolved Solids			<10		mg/L		10	17-SEP-20
TKN-L-F-CL		Water						
Batch	R5226059							
WG3406476-12	LCS							
Total Kjeldahl Nitrogen			104.7		%		75-125	17-SEP-20
WG3406476-2	LCS							
Total Kjeldahl Nitrogen			99.6		%		75-125	17-SEP-20
WG3406476-4	LCS							
Total Kjeldahl Nitrogen			106.0		%		75-125	17-SEP-20
WG3406476-6	LCS							
Total Kjeldahl Nitrogen			103.7		%		75-125	17-SEP-20
WG3406476-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-SEP-20
WG3406476-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-SEP-20
WG3406476-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-SEP-20
WG3406476-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-SEP-20
TSS-L-CL		Water						
Batch	R5229505							
WG3406130-6	LCS							
Total Suspended Solids			106.9		%		85-115	17-SEP-20
WG3406130-5	MB							
Total Suspended Solids			<1.0		mg/L		1	17-SEP-20
TURBIDITY-CL		Water						
Batch	R5224219							
WG3404934-5	LCS							
Turbidity			98.0		%		85-115	15-SEP-20
WG3404934-4	MB							
Turbidity			<0.10		NTU		0.1	15-SEP-20

Quality Control Report

Workorder: L2503296

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2503296

Report Date: 09-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	14-SEP-20 11:15	15-SEP-20 15:45	0.25	29	hours	EHTR-FM
	2	14-SEP-20 12:35	15-SEP-20 15:45	0.25	27	hours	EHTR-FM
pH	1	14-SEP-20 11:15	17-SEP-20 14:00	0.25	75	hours	EHTR-FM
	2	14-SEP-20 12:35	17-SEP-20 14:00	0.25	73	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2503296 were received on 15-SEP-20 09:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

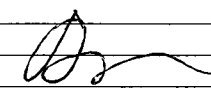
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.


Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **DC_WG_2020914** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com	Excel	PDF	EDD
Email	chris.blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	x	x	x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x	
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com	x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643			
Phone Number	250-425-8478			Phone Number	403 407 1794							

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-BOD	ALS Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC	ALS Package-Sulfide-T	Other	Other	Other	Other	
LC_PIZDC1306_WG_Q3-2020_NP	LC_PIZDC1306	WG	No	9/14/2020	11:15	G	6	1	1			1	1	1	1						
LC_PIZDC0901_WG_Q3-2020_NP	LC_PIZDC0901	WG	No	9/14/2020	12:35	G	6	1	1			1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	S. Fossen	14-Sep		9/15 9:50

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	S. Fossen	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	S. Fossen	Date/Time
Emergency (1 Business Day) - 100% surcharge				September 14, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 05-NOV-20
Report Date: 26-FEB-21 14:35 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2526334
Project P.O. #: VPO00739930
Job Reference: LINE CREEK OPERATION
C of C Numbers: PIZP1104_20201104
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:14

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2526334-1

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2526334-1 LC_PIZP1104_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 04-NOV-20 @ 14:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	297		5.0	mg/L		10-NOV-20	R5283394
Carbonate (CO3)	<5.0		5.0	mg/L		10-NOV-20	R5283394
Dissolved Organic Carbon	2.20		0.50	mg/L		10-NOV-20	R5283882
Hydroxide (OH)	<5.0		5.0	mg/L		10-NOV-20	R5283394
Total Kjeldahl Nitrogen	0.107		0.050	mg/L		07-NOV-20	R5282222
Total Organic Carbon	3.05		0.50	mg/L		10-NOV-20	R5283882
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	07-NOV-20	08-NOV-20	R5282469
Dissolved Metals Filtration Location	FIELD					07-NOV-20	R5282258
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	07-NOV-20	07-NOV-20	R5282117
Dissolved Mercury Filtration Location	FIELD					07-NOV-20	R5282325
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					07-NOV-20	R5282258
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	07-NOV-20	08-NOV-20	R5282469
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Arsenic (As)-Dissolved	0.00037		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Barium (Ba)-Dissolved	0.247		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	07-NOV-20	08-NOV-20	R5282469
Boron (B)-Dissolved	0.023		0.010	mg/L	07-NOV-20	08-NOV-20	R5282469
Cadmium (Cd)-Dissolved	0.0223		0.0050	ug/L	07-NOV-20	08-NOV-20	R5282469
Calcium (Ca)-Dissolved	150		0.050	mg/L	07-NOV-20	08-NOV-20	R5282469
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Cobalt (Co)-Dissolved	0.66		0.10	ug/L	07-NOV-20	08-NOV-20	R5282469
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	07-NOV-20	08-NOV-20	R5282469
Iron (Fe)-Dissolved	0.769		0.010	mg/L	07-NOV-20	08-NOV-20	R5282469
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	07-NOV-20	08-NOV-20	R5282469
Lithium (Li)-Dissolved	0.0229		0.0010	mg/L	07-NOV-20	08-NOV-20	R5282469
Magnesium (Mg)-Dissolved	48.6		0.10	mg/L	07-NOV-20	08-NOV-20	R5282469
Manganese (Mn)-Dissolved	0.266		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Molybdenum (Mo)-Dissolved	0.00148		0.000050	mg/L	07-NOV-20	08-NOV-20	R5282469
Nickel (Ni)-Dissolved	0.00552		0.00050	mg/L	07-NOV-20	08-NOV-20	R5282469
Potassium (K)-Dissolved	2.84		0.050	mg/L	07-NOV-20	08-NOV-20	R5282469
Selenium (Se)-Dissolved	0.147		0.050	ug/L	07-NOV-20	08-NOV-20	R5282469
Silicon (Si)-Dissolved	4.31		0.050	mg/L	07-NOV-20	08-NOV-20	R5282469
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	07-NOV-20	08-NOV-20	R5282469
Sodium (Na)-Dissolved	15.8		0.050	mg/L	07-NOV-20	08-NOV-20	R5282469
Strontium (Sr)-Dissolved	0.488		0.00020	mg/L	07-NOV-20	08-NOV-20	R5282469
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	07-NOV-20	08-NOV-20	R5282469
Tin (Sn)-Dissolved	0.00020		0.00010	mg/L	07-NOV-20	08-NOV-20	R5282469
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	07-NOV-20	08-NOV-20	R5282469
Uranium (U)-Dissolved	0.00292		0.000010	mg/L	07-NOV-20	08-NOV-20	R5282469
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	07-NOV-20	08-NOV-20	R5282469
Zinc (Zn)-Dissolved	0.0028		0.0010	mg/L	07-NOV-20	08-NOV-20	R5282469
Hardness							
Hardness (as CaCO3)	574		0.50	mg/L		08-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.031		0.020	ug/L		09-NOV-20	R5283041
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2526334-1 LC_PIZP1104_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 04-NOV-20 @ 14:00							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.322		0.0030	mg/L		07-NOV-20	R5282390
Antimony (Sb)-Total	0.00010		0.00010	mg/L		07-NOV-20	R5282390
Arsenic (As)-Total	0.00102		0.00010	mg/L		07-NOV-20	R5282390
Barium (Ba)-Total	0.269		0.00010	mg/L		07-NOV-20	R5282390
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		07-NOV-20	R5282390
Boron (B)-Total	0.024		0.010	mg/L		07-NOV-20	R5282390
Cadmium (Cd)-Total	0.0880		0.0050	ug/L		07-NOV-20	R5282390
Calcium (Ca)-Total	145		0.050	mg/L		07-NOV-20	R5282390
Chromium (Cr)-Total	0.00149		0.00010	mg/L		07-NOV-20	R5282390
Cobalt (Co)-Total	0.93		0.10	ug/L		07-NOV-20	R5282390
Copper (Cu)-Total	0.00165		0.00050	mg/L		07-NOV-20	R5282390
Iron (Fe)-Total	1.94		0.010	mg/L		07-NOV-20	R5282390
Lead (Pb)-Total	0.000448		0.000050	mg/L		07-NOV-20	R5282390
Lithium (Li)-Total	0.0228		0.0010	mg/L		07-NOV-20	R5282390
Magnesium (Mg)-Total	47.9		0.10	mg/L		07-NOV-20	R5282390
Manganese (Mn)-Total	0.309		0.00010	mg/L		07-NOV-20	R5282390
Molybdenum (Mo)-Total	0.00171		0.000050	mg/L		07-NOV-20	R5282390
Nickel (Ni)-Total	0.00724		0.00050	mg/L		07-NOV-20	R5282390
Potassium (K)-Total	2.84		0.050	mg/L		07-NOV-20	R5282390
Selenium (Se)-Total	0.169		0.050	ug/L		07-NOV-20	R5282390
Silicon (Si)-Total	5.04		0.10	mg/L		07-NOV-20	R5282390
Silver (Ag)-Total	0.000012		0.000010	mg/L		07-NOV-20	R5282390
Sodium (Na)-Total	15.3		0.050	mg/L		07-NOV-20	R5282390
Strontium (Sr)-Total	0.530		0.00020	mg/L		07-NOV-20	R5282390
Thallium (Tl)-Total	0.000025		0.000010	mg/L		07-NOV-20	R5282390
Tin (Sn)-Total	0.00010		0.00010	mg/L		07-NOV-20	R5282390
Titanium (Ti)-Total	<0.010		0.010	mg/L		07-NOV-20	R5282390
Uranium (U)-Total	0.00311		0.000010	mg/L		07-NOV-20	R5282390
Vanadium (V)-Total	0.00164		0.00050	mg/L		07-NOV-20	R5282390
Zinc (Zn)-Total	0.0133		0.0030	mg/L		07-NOV-20	R5282390
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	13.2		1.0	mg/L		10-NOV-20	R5283403
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	243		1.0	mg/L		10-NOV-20	R5283394
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		10-NOV-20	R5283394
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		10-NOV-20	R5283394
Alkalinity, Total (as CaCO3)	243		1.0	mg/L		10-NOV-20	R5283394
Ammonia, Total (as N)							
Ammonia as N	0.0213		0.0050	mg/L		09-NOV-20	R5282929
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.41	DLHC	0.25	mg/L		07-NOV-20	R5283014
Chloride in Water by IC							
Chloride (Cl)	185	DLHC	0.50	mg/L		07-NOV-20	R5283014
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1110		2.0	uS/cm		10-NOV-20	R5283394
Fluoride in Water by IC							
Fluoride (F)	0.22	DLHC	0.10	mg/L		07-NOV-20	R5283014
Ion Balance Calculation							
Ion Balance	109		-100	%		12-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	4.1			%		12-NOV-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2526334-1 LC_PIZP1104_WG_Q4-2020_NP Sampled By: S. Fossen/D. Tymstra on 04-NOV-20 @ 14:00 Matrix: WG							
Ion Balance Calculation							
Anion Sum	11.3			meq/L		12-NOV-20	
Cation Sum	12.3			meq/L		12-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.406	DLHC	0.025	mg/L		07-NOV-20	R5283014
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0056	DLHC	0.0050	mg/L		07-NOV-20	R5283014
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-NOV-20	R5281831
Oxidation redution potential by elect.							
ORP	383		-1000	mV		09-NOV-20	R5283052
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.144	DLHC	0.010	mg/L		09-NOV-20	R5282759
Sulfate in Water by IC							
Sulfate (SO4)	57.1	DLHC	1.5	mg/L		07-NOV-20	R5283014
Total Dissolved Solids							
Total Dissolved Solids	801	DLHC	20	mg/L		09-NOV-20	R5283566
Total Suspended Solids							
Total Suspended Solids	32.6		1.0	mg/L		10-NOV-20	R5284048
Turbidity							
Turbidity	30.3		0.10	NTU		05-NOV-20	R5281271
pH							
pH	7.49		0.10	pH		10-NOV-20	R5283394

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP10	12C - Samples Received with temperature >10 Degrees C

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

PIZP1104_20201104

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
 mg/kg wwt - milligrams per kilogram based on wet weight of sample
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2526334

Report Date: 26-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5283403							
WG3442657-8	LCS							
Acidity (as CaCO3)			106.5		%		85-115	10-NOV-20
WG3442657-7	MB							
Acidity (as CaCO3)			1.7		mg/L		2	10-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5283394							
WG3442641-11	LCS							
Alkalinity, Total (as CaCO3)			95.6		%		85-115	10-NOV-20
WG3442641-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5282469							
WG3441233-2	LCS							
Beryllium (Be)-Dissolved			97.0		%		80-120	08-NOV-20
WG3441233-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-NOV-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5282390							
WG3441071-2	LCS							
Beryllium (Be)-Total			86.4		%		80-120	07-NOV-20
WG3441071-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	07-NOV-20
Batch	R5283041							
WG3441071-3	DUP	L2526334-1						
Beryllium (Be)-Total		0.000031	0.000034		mg/L	9.0	20	09-NOV-20
BIC-CL								
	Water							
Batch	R5283394							
WG3442641-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	10-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5283014							
WG3442158-2	LCS							
Bromide (Br)			102.4		%		85-115	07-NOV-20
WG3442158-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	07-NOV-20



Quality Control Report

Workorder: L2526334

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
Water								
Batch	R5283882							
WG3443135-7	DUP	L2526334-1						
Dissolved Organic Carbon		2.20	3.18	J	mg/L	0.98	1	10-NOV-20
WG3443135-6	LCS							
Dissolved Organic Carbon			101.6		%		80-120	10-NOV-20
WG3443135-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-NOV-20
WG3443135-8	MS	L2526334-1						
Dissolved Organic Carbon			106.7		%		70-130	10-NOV-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5283882							
WG3443135-7	DUP	L2526334-1						
Total Organic Carbon		3.05	2.82		mg/L	7.7	20	10-NOV-20
WG3443135-6	LCS							
Total Organic Carbon			108.8		%		80-120	10-NOV-20
WG3443135-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	10-NOV-20
WG3443135-8	MS	L2526334-1						
Total Organic Carbon			98.0		%		70-130	10-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5283014							
WG3442158-2	LCS							
Chloride (Cl)			96.1		%		85-115	07-NOV-20
WG3442158-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	07-NOV-20
CO3-CL								
Water								
Batch	R5283394							
WG3442641-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	10-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5283394							
WG3442641-11	LCS							
Conductivity (@ 25C)			97.3		%		90-110	10-NOV-20
WG3442641-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	10-NOV-20
F-IC-N-CL								
Water								



Quality Control Report

Workorder: L2526334

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
	Water							
Batch	R5283014							
WG3442158-2	LCS							
Fluoride (F)			93.9		%		90-110	07-NOV-20
WG3442158-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	07-NOV-20
HG-D-CVAA-VA								
	Water							
Batch	R5282117							
WG3441260-10	LCS							
Mercury (Hg)-Dissolved			94.9		%		80-120	07-NOV-20
WG3441260-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5282469							
WG3441233-2	LCS							
Aluminum (Al)-Dissolved			102.4		%		80-120	08-NOV-20
Antimony (Sb)-Dissolved			96.1		%		80-120	08-NOV-20
Arsenic (As)-Dissolved			99.8		%		80-120	08-NOV-20
Barium (Ba)-Dissolved			101.2		%		80-120	08-NOV-20
Bismuth (Bi)-Dissolved			102.4		%		80-120	08-NOV-20
Boron (B)-Dissolved			92.3		%		80-120	08-NOV-20
Cadmium (Cd)-Dissolved			99.6		%		80-120	08-NOV-20
Calcium (Ca)-Dissolved			96.1		%		80-120	08-NOV-20
Chromium (Cr)-Dissolved			98.8		%		80-120	08-NOV-20
Cobalt (Co)-Dissolved			100.9		%		80-120	08-NOV-20
Copper (Cu)-Dissolved			96.0		%		80-120	08-NOV-20
Iron (Fe)-Dissolved			104.6		%		80-120	08-NOV-20
Lead (Pb)-Dissolved			99.6		%		80-120	08-NOV-20
Lithium (Li)-Dissolved			94.9		%		80-120	08-NOV-20
Magnesium (Mg)-Dissolved			99.6		%		80-120	08-NOV-20
Manganese (Mn)-Dissolved			96.7		%		80-120	08-NOV-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	08-NOV-20
Nickel (Ni)-Dissolved			99.6		%		80-120	08-NOV-20
Potassium (K)-Dissolved			101.4		%		80-120	08-NOV-20
Selenium (Se)-Dissolved			102.2		%		80-120	08-NOV-20
Silicon (Si)-Dissolved			98.6		%		60-140	08-NOV-20
Silver (Ag)-Dissolved			100.2		%		80-120	08-NOV-20
Sodium (Na)-Dissolved			107.3		%		80-120	08-NOV-20



Quality Control Report

Workorder: L2526334

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5282469							
WG3441233-2	LCS							
Strontium (Sr)-Dissolved			100.2		%		80-120	08-NOV-20
Thallium (Tl)-Dissolved			98.3		%		80-120	08-NOV-20
Tin (Sn)-Dissolved			97.7		%		80-120	08-NOV-20
Titanium (Ti)-Dissolved			97.8		%		80-120	08-NOV-20
Uranium (U)-Dissolved			102.0		%		80-120	08-NOV-20
Vanadium (V)-Dissolved			101.1		%		80-120	08-NOV-20
Zinc (Zn)-Dissolved			98.4		%		80-120	08-NOV-20
WG3441233-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-20



Quality Control Report

Workorder: L2526334

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5282469							
WG3441233-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-NOV-20
MET-T-CCMS-VA								
	Water							
Batch	R5282390							
WG3441071-3	DUP	L2526334-1						
Aluminum (Al)-Total		0.322	0.271		mg/L	17	20	07-NOV-20
Antimony (Sb)-Total		0.00010	0.00018	J	mg/L	0.00008	0.0002	07-NOV-20
Arsenic (As)-Total		0.00102	0.00099		mg/L	3.4	20	07-NOV-20
Barium (Ba)-Total		0.269	0.269		mg/L	0.3	20	07-NOV-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-NOV-20
Boron (B)-Total		0.024	0.025		mg/L	2.3	20	07-NOV-20
Cadmium (Cd)-Total		0.0000880	0.0000923		mg/L	4.8	20	07-NOV-20
Calcium (Ca)-Total		145	151		mg/L	3.5	20	07-NOV-20
Chromium (Cr)-Total		0.00149	0.00142		mg/L	4.8	20	07-NOV-20
Cobalt (Co)-Total		0.00093	0.00092		mg/L	0.9	20	07-NOV-20
Copper (Cu)-Total		0.00165	0.00166		mg/L	0.3	20	07-NOV-20
Iron (Fe)-Total		1.94	2.03		mg/L	4.4	20	07-NOV-20
Lead (Pb)-Total		0.000448	0.000461		mg/L	2.7	20	07-NOV-20
Lithium (Li)-Total		0.0228	0.0236		mg/L	3.2	20	07-NOV-20
Magnesium (Mg)-Total		47.9	49.5		mg/L	3.2	20	07-NOV-20
Manganese (Mn)-Total		0.309	0.311		mg/L	0.7	20	07-NOV-20
Molybdenum (Mo)-Total		0.00171	0.00175		mg/L	2.3	20	07-NOV-20
Nickel (Ni)-Total		0.00724	0.00717		mg/L	0.9	20	07-NOV-20
Potassium (K)-Total		2.84	2.86		mg/L	0.8	20	07-NOV-20
Selenium (Se)-Total		0.000169	0.000182		mg/L	7.5	20	07-NOV-20
Silicon (Si)-Total		5.04	5.01		mg/L	0.5	20	07-NOV-20
Silver (Ag)-Total		0.000012	0.000012		mg/L	2.3	20	07-NOV-20
Sodium (Na)-Total		15.3	15.2		mg/L	0.5	20	07-NOV-20
Strontium (Sr)-Total		0.530	0.535		mg/L	1.0	20	07-NOV-20
Thallium (Tl)-Total		0.000025	0.000023		mg/L	4.8	20	07-NOV-20
Tin (Sn)-Total		0.00010	0.00016	J	mg/L	0.00006	0.0002	07-NOV-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5282390							
WG3441071-3	DUP	L2526334-1						
Uranium (U)-Total		0.00311	0.00313		mg/L	0.4	20	07-NOV-20
Vanadium (V)-Total		0.00164	0.00163		mg/L	0.6	20	07-NOV-20
Zinc (Zn)-Total		0.0133	0.0145		mg/L	8.7	20	07-NOV-20
WG3441071-2	LCS							
Aluminum (Al)-Total			100.4		%		80-120	07-NOV-20
Antimony (Sb)-Total			110.8		%		80-120	07-NOV-20
Arsenic (As)-Total			101.1		%		80-120	07-NOV-20
Barium (Ba)-Total			100.9		%		80-120	07-NOV-20
Bismuth (Bi)-Total			103.0		%		80-120	07-NOV-20
Boron (B)-Total			89.7		%		80-120	07-NOV-20
Cadmium (Cd)-Total			103.7		%		80-120	07-NOV-20
Calcium (Ca)-Total			95.1		%		80-120	07-NOV-20
Chromium (Cr)-Total			103.1		%		80-120	07-NOV-20
Cobalt (Co)-Total			102.3		%		80-120	07-NOV-20
Copper (Cu)-Total			100.3		%		80-120	07-NOV-20
Iron (Fe)-Total			97.6		%		80-120	07-NOV-20
Lead (Pb)-Total			104.6		%		80-120	07-NOV-20
Lithium (Li)-Total			91.3		%		80-120	07-NOV-20
Magnesium (Mg)-Total			101.9		%		80-120	07-NOV-20
Manganese (Mn)-Total			101.3		%		80-120	07-NOV-20
Molybdenum (Mo)-Total			101.9		%		80-120	07-NOV-20
Nickel (Ni)-Total			101.2		%		80-120	07-NOV-20
Potassium (K)-Total			99.0		%		80-120	07-NOV-20
Selenium (Se)-Total			105.3		%		80-120	07-NOV-20
Silicon (Si)-Total			104.7		%		80-120	07-NOV-20
Silver (Ag)-Total			99.1		%		80-120	07-NOV-20
Sodium (Na)-Total			102.3		%		80-120	07-NOV-20
Strontium (Sr)-Total			99.2		%		80-120	07-NOV-20
Thallium (Tl)-Total			103.4		%		80-120	07-NOV-20
Tin (Sn)-Total			97.9		%		80-120	07-NOV-20
Titanium (Ti)-Total			102.8		%		80-120	07-NOV-20
Uranium (U)-Total			107.1		%		80-120	07-NOV-20
Vanadium (V)-Total			100.9		%		80-120	07-NOV-20
Zinc (Zn)-Total			100.8		%		80-120	07-NOV-20
WG3441071-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5282390							
WG3441071-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	07-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	07-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	07-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	07-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	07-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-NOV-20
Batch	R5283041							
WG3441071-1	MB							
Potassium (K)-Total			<0.050		mg/L		0.05	09-NOV-20
NH3-L-F-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5282929							
WG3441936-10	LCS							
Ammonia as N			110.6		%		85-115	09-NOV-20
WG3441936-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	09-NOV-20
NO2-L-IC-N-CL	Water							
Batch	R5283014							
WG3442158-2	LCS							
Nitrite (as N)			94.8		%		90-110	07-NOV-20
WG3442158-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5283014							
WG3442158-2	LCS							
Nitrate (as N)			96.4		%		90-110	07-NOV-20
WG3442158-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-NOV-20
OH-CL	Water							
Batch	R5283394							
WG3442641-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	10-NOV-20
ORP-CL	Water							
Batch	R5283052							
WG3442182-11	CRM	CL-ORP						
ORP			221		mV		210-230	09-NOV-20
P-T-L-COL-CL	Water							
Batch	R5282759							
WG3441894-6	LCS							
Phosphorus (P)-Total			99.6		%		80-120	09-NOV-20
WG3441894-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-NOV-20
PH-CL	Water							
Batch	R5283394							
WG3442641-11	LCS							
pH			7.03		pH		6.9-7.1	10-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5281831							
WG3439874-14 LCS								
Orthophosphate-Dissolved (as P)			95.0		%		80-120	05-NOV-20
WG3439874-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-NOV-20
SO4-IC-N-CL	Water							
Batch	R5283014							
WG3442158-2 LCS								
Sulfate (SO4)			98.6		%		90-110	07-NOV-20
WG3442158-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	07-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5283566							
WG3441620-8 LCS								
Total Dissolved Solids			96.1		%		85-115	09-NOV-20
WG3441620-7 MB								
Total Dissolved Solids			<10		mg/L		10	09-NOV-20
TKN-L-F-CL	Water							
Batch	R5282222							
WG3441158-12 LCS								
Total Kjeldahl Nitrogen			92.8		%		75-125	07-NOV-20
WG3441158-14 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	07-NOV-20
WG3441158-16 LCS								
Total Kjeldahl Nitrogen			92.2		%		75-125	07-NOV-20
WG3441158-18 LCS								
Total Kjeldahl Nitrogen			90.3		%		75-125	07-NOV-20
WG3441158-2 LCS								
Total Kjeldahl Nitrogen			86.1		%		75-125	07-NOV-20
WG3441158-20 LCS								
Total Kjeldahl Nitrogen			89.6		%		75-125	07-NOV-20
WG3441158-22 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	07-NOV-20
WG3441158-4 LCS								
Total Kjeldahl Nitrogen			87.5		%		75-125	07-NOV-20
WG3441158-6 LCS								
Total Kjeldahl Nitrogen			87.9		%		75-125	07-NOV-20
WG3441158-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5282222							
WG3441158-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-15 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-19 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
WG3441158-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-20
TSS-L-CL		Water						
Batch	R5284048							
WG3442329-2 LCS								
Total Suspended Solids			91.3		%		85-115	10-NOV-20
WG3442329-1 MB								
Total Suspended Solids			<1.0		mg/L		1	10-NOV-20
TURBIDITY-CL		Water						
Batch	R5281271							
WG3439581-17 LCS								
Turbidity			97.4		%		85-115	05-NOV-20
WG3439581-16 MB								
Turbidity			<0.10		NTU		0.1	05-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	04-NOV-20 14:00	09-NOV-20 18:30	0.25	125	hours	EHTR-FM
pH	1	04-NOV-20 14:00	10-NOV-20 14:00	0.25	144	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2526334 were received on 05-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **PIZP1104_20201104** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com	x	x
Email	chris.blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	x	x
Address	Box 2003			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com	x	x
	15km North Hwy 43							Email 4:	shanise.fossen@teck.com	x	x
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643		
Phone Number	250-425-8478			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-BOD	ALS Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/IOC	ALS Package-Sulfide-T							
LC_PIZP1104_WG_Q4-2020_NP	LC_PIZP1104	WG	No	11/4/2020	14:00	G	7	1	1			1	1	1	1								



L2526334-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	4-Nov	<i>DFC</i>	11/5 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/>	S. Fossen/D. Tymstra	S Fossen		November 4, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

1202



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 13-NOV-20
Report Date: 09-FEB-21 12:55 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2529328
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:16

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2529328-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529328-1 LC_PIZP1103_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 12-NOV-20 @ 14:40							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	417		5.0	mg/L		17-NOV-20	R5286834
Carbonate (CO3)	22.0		5.0	mg/L		17-NOV-20	R5286834
Dissolved Organic Carbon	2.29		0.50	mg/L		16-NOV-20	R5286903
Hydroxide (OH)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Total Kjeldahl Nitrogen	0.298		0.050	mg/L		14-NOV-20	R5285582
Total Organic Carbon	2.07		0.50	mg/L		16-NOV-20	R5286903
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-NOV-20	16-NOV-20	R5286361
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286375
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	FIELD					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286375
Aluminum (Al)-Dissolved	0.0043		0.0030	mg/L	16-NOV-20	16-NOV-20	R5286361
Antimony (Sb)-Dissolved	0.00013		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Arsenic (As)-Dissolved	0.00062		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Barium (Ba)-Dissolved	0.0691		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	16-NOV-20	R5286361
Boron (B)-Dissolved	0.436		0.010	mg/L	16-NOV-20	16-NOV-20	R5286361
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	16-NOV-20	16-NOV-20	R5286361
Calcium (Ca)-Dissolved	30.8		0.050	mg/L	16-NOV-20	16-NOV-20	R5286361
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Cobalt (Co)-Dissolved	0.40		0.10	ug/L	16-NOV-20	16-NOV-20	R5286361
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-NOV-20	16-NOV-20	R5286361
Iron (Fe)-Dissolved	0.221		0.010	mg/L	16-NOV-20	16-NOV-20	R5286361
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	16-NOV-20	R5286361
Lithium (Li)-Dissolved	0.116		0.0010	mg/L	16-NOV-20	16-NOV-20	R5286361
Magnesium (Mg)-Dissolved	16.3		0.10	mg/L	16-NOV-20	16-NOV-20	R5286361
Manganese (Mn)-Dissolved	0.597		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Molybdenum (Mo)-Dissolved	0.00855		0.000050	mg/L	16-NOV-20	16-NOV-20	R5286361
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	16-NOV-20	R5286361
Potassium (K)-Dissolved	1.58		0.050	mg/L	16-NOV-20	16-NOV-20	R5286361
Selenium (Se)-Dissolved	0.434	DTSE	0.050	ug/L	16-NOV-20	16-NOV-20	R5286361
Silicon (Si)-Dissolved	3.99		0.050	mg/L	16-NOV-20	16-NOV-20	R5286361
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	16-NOV-20	R5286361
Sodium (Na)-Dissolved	128		0.050	mg/L	16-NOV-20	16-NOV-20	R5286361
Strontium (Sr)-Dissolved	0.837		0.00020	mg/L	16-NOV-20	16-NOV-20	R5286361
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	16-NOV-20	R5286361
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	16-NOV-20	R5286361
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	16-NOV-20	R5286361
Uranium (U)-Dissolved	0.00139		0.000010	mg/L	16-NOV-20	16-NOV-20	R5286361
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	16-NOV-20	R5286361
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	16-NOV-20	16-NOV-20	R5286361
Hardness							
Hardness (as CaCO3)	144		0.50	mg/L		17-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-NOV-20	R5286993
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529328-1 LC_PIZP1103_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 12-NOV-20 @ 14:40							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0253		0.0030	mg/L		17-NOV-20	R5286993
Antimony (Sb)-Total	0.00020		0.00010	mg/L		17-NOV-20	R5286993
Arsenic (As)-Total	0.00083		0.00010	mg/L		17-NOV-20	R5286993
Barium (Ba)-Total	0.0694		0.00010	mg/L		17-NOV-20	R5286993
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-NOV-20	R5286993
Boron (B)-Total	0.377		0.010	mg/L		17-NOV-20	R5286993
Cadmium (Cd)-Total	<0.010	DLM	0.010	ug/L		17-NOV-20	R5286993
Calcium (Ca)-Total	31.6		0.050	mg/L		17-NOV-20	R5286993
Chromium (Cr)-Total	0.00023		0.00010	mg/L		17-NOV-20	R5286993
Cobalt (Co)-Total	0.48		0.10	ug/L		17-NOV-20	R5286993
Copper (Cu)-Total	0.00071		0.00050	mg/L		17-NOV-20	R5286993
Iron (Fe)-Total	0.296		0.010	mg/L		17-NOV-20	R5286993
Lead (Pb)-Total	0.000120		0.000050	mg/L		17-NOV-20	R5286993
Lithium (Li)-Total	0.121		0.0010	mg/L		17-NOV-20	R5286993
Magnesium (Mg)-Total	15.8		0.10	mg/L		17-NOV-20	R5286993
Manganese (Mn)-Total	0.519		0.00010	mg/L		17-NOV-20	R5286993
Molybdenum (Mo)-Total	0.00991		0.000050	mg/L		17-NOV-20	R5286993
Nickel (Ni)-Total	0.00138		0.00050	mg/L		17-NOV-20	R5286993
Potassium (K)-Total	1.60		0.050	mg/L		17-NOV-20	R5286993
Selenium (Se)-Total	0.110		0.050	ug/L		18-NOV-20	R5290397
Silicon (Si)-Total	4.36		0.10	mg/L		17-NOV-20	R5286993
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-NOV-20	R5286993
Sodium (Na)-Total	129		0.050	mg/L		17-NOV-20	R5286993
Strontium (Sr)-Total	0.859		0.00020	mg/L		17-NOV-20	R5286993
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		17-NOV-20	R5286993
Tin (Sn)-Total	0.00018		0.00010	mg/L		17-NOV-20	R5286993
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-NOV-20	R5286993
Uranium (U)-Total	0.00154		0.000010	mg/L		17-NOV-20	R5286993
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-NOV-20	R5286993
Zinc (Zn)-Total	0.0051		0.0030	mg/L		17-NOV-20	R5286993
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-NOV-20	R5286547
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	342		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Carbonate (as CaCO3)	36.6		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Total (as CaCO3)	378		1.0	mg/L		17-NOV-20	R5286834
Ammonia, Total (as N)							
Ammonia as N	0.119		0.0050	mg/L		14-NOV-20	R5285720
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.058		0.050	mg/L		13-NOV-20	R5285592
Chloride in Water by IC							
Chloride (Cl)	2.41		0.10	mg/L		13-NOV-20	R5285592
Electrical Conductivity (EC)							
Conductivity (@ 25C)	714		2.0	uS/cm		17-NOV-20	R5286834
Fluoride in Water by IC							
Fluoride (F)	0.322		0.020	mg/L		13-NOV-20	R5285592
Ion Balance Calculation							
Cation - Anion Balance	1.8			%		19-NOV-20	
Anion Sum	8.24			meq/L		19-NOV-20	
Cation Sum	8.54			meq/L		19-NOV-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529328-1 LC_PIZP1103_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 12-NOV-20 @ 14:40							
Matrix: WG							
Ion Balance Calculation							
Ion Balance	104		-100	%		19-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0340		0.0050	mg/L		13-NOV-20	R5285592
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0012		0.0010	mg/L		13-NOV-20	R5285592
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0283		0.0010	mg/L		13-NOV-20	R5285438
Oxidation redution potential by elect.							
ORP	337		-1000	mV		13-NOV-20	R5285434
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0479		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	28.5		0.30	mg/L		13-NOV-20	R5285592
Total Dissolved Solids							
Total Dissolved Solids	455	DLHC	20	mg/L		17-NOV-20	R5287526
Total Suspended Solids							
Total Suspended Solids	4.7		1.0	mg/L		17-NOV-20	R5287371
Turbidity							
Turbidity	3.74		0.10	NTU		13-NOV-20	R5285439
pH							
pH	8.65		0.10	pH		17-NOV-20	R5286834

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2529328

Report Date: 09-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5286547							
WG3446219-5	LCS							
Acidity (as CaCO3)			99.4		%		85-115	14-NOV-20
WG3446219-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	14-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5286834							
WG3446541-2	LCS							
Alkalinity, Total (as CaCO3)			99.0		%		85-115	17-NOV-20
WG3446541-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5286361							
WG3445937-2	LCS							
Beryllium (Be)-Dissolved			99.9		%		80-120	16-NOV-20
WG3445937-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-NOV-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5286993							
WG3446012-2	LCS							
Beryllium (Be)-Total			103.3		%		80-120	18-NOV-20
WG3446012-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	17-NOV-20
BIC-CL								
	Water							
Batch	R5286834							
WG3446541-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5285592							
WG3445077-10	LCS							
Bromide (Br)			101.9		%		85-115	13-NOV-20
WG3445077-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-NOV-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2529328

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5286903							
WG3446549-2 LCS								
Dissolved Organic Carbon			102.0		%		80-120	16-NOV-20
WG3446549-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5286903							
WG3446549-2 LCS								
Total Organic Carbon			101.0		%		80-120	16-NOV-20
WG3446549-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5285592							
WG3445077-10 LCS								
Chloride (Cl)			103.1		%		85-115	13-NOV-20
WG3445077-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	13-NOV-20
CO3-CL	Water							
Batch	R5286834							
WG3446541-1 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-NOV-20
EC-L-PCT-CL	Water							
Batch	R5286834							
WG3446541-2 LCS								
Conductivity (@ 25C)			98.1		%		90-110	17-NOV-20
WG3446541-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-NOV-20
F-IC-N-CL	Water							
Batch	R5285592							
WG3445077-10 LCS								
Fluoride (F)			99.7		%		90-110	13-NOV-20
WG3445077-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-NOV-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2529328

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5288056							
WG3447828-6	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	19-NOV-20
WG3447828-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5286361							
WG3445937-2	LCS							
Aluminum (Al)-Dissolved			97.1		%		80-120	16-NOV-20
Antimony (Sb)-Dissolved			102.4		%		80-120	16-NOV-20
Arsenic (As)-Dissolved			93.5		%		80-120	16-NOV-20
Barium (Ba)-Dissolved			96.6		%		80-120	16-NOV-20
Bismuth (Bi)-Dissolved			96.7		%		80-120	16-NOV-20
Boron (B)-Dissolved			90.1		%		80-120	16-NOV-20
Cadmium (Cd)-Dissolved			88.7		%		80-120	16-NOV-20
Calcium (Ca)-Dissolved			98.9		%		80-120	16-NOV-20
Chromium (Cr)-Dissolved			98.6		%		80-120	16-NOV-20
Cobalt (Co)-Dissolved			96.9		%		80-120	16-NOV-20
Copper (Cu)-Dissolved			95.7		%		80-120	16-NOV-20
Iron (Fe)-Dissolved			89.6		%		80-120	16-NOV-20
Lead (Pb)-Dissolved			97.0		%		80-120	16-NOV-20
Lithium (Li)-Dissolved			97.3		%		80-120	16-NOV-20
Magnesium (Mg)-Dissolved			95.0		%		80-120	16-NOV-20
Manganese (Mn)-Dissolved			96.4		%		80-120	16-NOV-20
Molybdenum (Mo)-Dissolved			97.8		%		80-120	16-NOV-20
Nickel (Ni)-Dissolved			96.0		%		80-120	16-NOV-20
Potassium (K)-Dissolved			97.8		%		80-120	16-NOV-20
Selenium (Se)-Dissolved			96.8		%		80-120	16-NOV-20
Silicon (Si)-Dissolved			89.0		%		60-140	16-NOV-20
Silver (Ag)-Dissolved			91.1		%		80-120	16-NOV-20
Sodium (Na)-Dissolved			104.9		%		80-120	16-NOV-20
Strontium (Sr)-Dissolved			105.9		%		80-120	16-NOV-20
Thallium (Tl)-Dissolved			97.5		%		80-120	16-NOV-20
Tin (Sn)-Dissolved			88.9		%		80-120	16-NOV-20
Titanium (Ti)-Dissolved			94.6		%		80-120	16-NOV-20
Uranium (U)-Dissolved			89.1		%		80-120	16-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5286361							
WG3445937-2	LCS							
Vanadium (V)-Dissolved			98.0		%		80-120	16-NOV-20
Zinc (Zn)-Dissolved			92.3		%		80-120	16-NOV-20
WG3445937-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-NOV-20
Nickel (Ni)-Dissolved			<0.00050	B	mg/L		0.0005	16-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-NOV-20

MET-T-CCMS-VA

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5286993							
WG3446012-2	LCS							
Aluminum (Al)-Total			99.97		%		80-120	18-NOV-20
Antimony (Sb)-Total			107.3		%		80-120	18-NOV-20
Arsenic (As)-Total			97.0		%		80-120	18-NOV-20
Barium (Ba)-Total			98.1		%		80-120	18-NOV-20
Bismuth (Bi)-Total			108.0		%		80-120	18-NOV-20
Boron (B)-Total			89.2		%		80-120	18-NOV-20
Cadmium (Cd)-Total			99.3		%		80-120	18-NOV-20
Calcium (Ca)-Total			112.7		%		80-120	18-NOV-20
Chromium (Cr)-Total			99.8		%		80-120	18-NOV-20
Cobalt (Co)-Total			101.7		%		80-120	18-NOV-20
Copper (Cu)-Total			98.0		%		80-120	18-NOV-20
Iron (Fe)-Total			97.5		%		80-120	18-NOV-20
Lead (Pb)-Total			104.9		%		80-120	18-NOV-20
Lithium (Li)-Total			101.8		%		80-120	18-NOV-20
Magnesium (Mg)-Total			99.7		%		80-120	18-NOV-20
Manganese (Mn)-Total			101.6		%		80-120	18-NOV-20
Molybdenum (Mo)-Total			102.7		%		80-120	18-NOV-20
Nickel (Ni)-Total			98.8		%		80-120	18-NOV-20
Potassium (K)-Total			101.7		%		80-120	18-NOV-20
Selenium (Se)-Total			97.4		%		80-120	18-NOV-20
Silicon (Si)-Total			99.4		%		80-120	18-NOV-20
Silver (Ag)-Total			103.9		%		80-120	18-NOV-20
Sodium (Na)-Total			100.4		%		80-120	18-NOV-20
Strontium (Sr)-Total			110.5		%		80-120	18-NOV-20
Thallium (Tl)-Total			103.3		%		80-120	18-NOV-20
Tin (Sn)-Total			98.8		%		80-120	18-NOV-20
Titanium (Ti)-Total			97.5		%		80-120	18-NOV-20
Uranium (U)-Total			115.7		%		80-120	18-NOV-20
Vanadium (V)-Total			101.4		%		80-120	18-NOV-20
Zinc (Zn)-Total			103.2		%		80-120	18-NOV-20
WG3446012-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	17-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5286993							
WG3446012-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	17-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	17-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	17-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	17-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	17-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	17-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	17-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	17-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	17-NOV-20
NH3-L-F-CL		Water						
Batch	R5285720							
WG3445226-10	LCS							
Ammonia as N			101.4		%		85-115	14-NOV-20
WG3445226-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-20
NO2-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5285592							
WG3445077-10	LCS							
Nitrite (as N)			97.5		%		90-110	13-NOV-20
WG3445077-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5285592							
WG3445077-10	LCS							
Nitrate (as N)			104.0		%		90-110	13-NOV-20
WG3445077-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-NOV-20
OH-CL	Water							
Batch	R5286834							
WG3446541-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-NOV-20
ORP-CL	Water							
Batch	R5285434							
WG3444909-5	CRM	CL-ORP						
ORP			223		mV		210-230	13-NOV-20
P-T-L-COL-CL	Water							
Batch	R5286966							
WG3446486-30	LCS							
Phosphorus (P)-Total			98.5		%		80-120	17-NOV-20
WG3446486-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-20
PH-CL	Water							
Batch	R5286834							
WG3446541-2	LCS							
pH			6.98		pH		6.9-7.1	17-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5285438							
WG3444888-10	LCS							
Orthophosphate-Dissolved (as P)			96.5		%		80-120	13-NOV-20
WG3444888-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5285592							
WG3445077-10 LCS								
Sulfate (SO4)			102.4		%		90-110	13-NOV-20
WG3445077-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	13-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5287526							
WG3446690-5 LCS								
Total Dissolved Solids			98.6		%		85-115	17-NOV-20
WG3446690-4 MB								
Total Dissolved Solids			<10		mg/L		10	17-NOV-20
TKN-L-F-CL	Water							
Batch	R5285582							
WG3444973-10 LCS								
Total Kjeldahl Nitrogen			86.3		%		75-125	14-NOV-20
WG3444973-14 LCS								
Total Kjeldahl Nitrogen			87.6		%		75-125	14-NOV-20
WG3444973-18 LCS								
Total Kjeldahl Nitrogen			94.8		%		75-125	14-NOV-20
WG3444973-2 LCS								
Total Kjeldahl Nitrogen			89.8		%		75-125	14-NOV-20
WG3444973-4 LCS								
Total Kjeldahl Nitrogen			90.0		%		75-125	14-NOV-20
WG3444973-6 LCS								
Total Kjeldahl Nitrogen			88.0		%		75-125	14-NOV-20
WG3444973-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5287371							
WG3446033-4	LCS							
Total Suspended Solids			100.5		%		85-115	17-NOV-20
WG3446033-3	MB							
Total Suspended Solids			<1.0		mg/L		1	17-NOV-20
TURBIDITY-CL	Water							
Batch	R5285439							
WG3444656-8	LCS							
Turbidity			96.4		%		85-115	13-NOV-20
WG3444656-7	MB							
Turbidity			<0.10		NTU		0.1	13-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-NOV-20 14:40	13-NOV-20 13:00	0.25	22	hours	EHTR-FM
pH	1	12-NOV-20 14:40	17-NOV-20 14:00	0.25	119	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2529328 were received on 13-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 14-NOV-20
Report Date: 24-NOV-20 14:55 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2529538
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: PIZP1101_20201113
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-1 LC_PIZP1101_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Total Kjeldahl Nitrogen	0.158		0.050	mg/L		16-NOV-20	R5286419
Total Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	17-NOV-20	17-NOV-20	R5287621
EPH19-32	<0.25		0.25	mg/L	17-NOV-20	17-NOV-20	R5287621
Surrogate: 2-Bromobenzotrifluoride	74.6		60-140	%	17-NOV-20	17-NOV-20	R5287621
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		18-NOV-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	17-NOV-20	17-NOV-20	R5287621
Surrogate: 2-Bromobenzotrifluoride	74.6		60-140	%	17-NOV-20	17-NOV-20	R5287621
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-20	18-NOV-20	R5287141
Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	FIELD					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-20	18-NOV-20	R5287141
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Arsenic (As)-Dissolved	0.00131		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Barium (Ba)-Dissolved	0.414		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Boron (B)-Dissolved	0.022		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	17-NOV-20	18-NOV-20	R5287141
Calcium (Ca)-Dissolved	26.8		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cobalt (Co)-Dissolved	0.20		0.10	ug/L	17-NOV-20	18-NOV-20	R5287141
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Iron (Fe)-Dissolved	0.202		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Lithium (Li)-Dissolved	0.0091		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Magnesium (Mg)-Dissolved	12.6		0.10	mg/L	17-NOV-20	18-NOV-20	R5287141
Manganese (Mn)-Dissolved	0.200		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Molybdenum (Mo)-Dissolved	0.0112		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141
Potassium (K)-Dissolved	0.707		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-NOV-20	18-NOV-20	R5287141
Silicon (Si)-Dissolved	3.58		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Sodium (Na)-Dissolved	21.0		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Strontium (Sr)-Dissolved	0.188		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Uranium (U)-Dissolved	0.00171		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-1 LC_PIZP1101_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Hardness							
Hardness (as CaCO3)	119		0.50	mg/L		19-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.054		0.020	ug/L		19-NOV-20	R5288739
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-NOV-20	R5288056
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.962		0.0030	mg/L		19-NOV-20	R5288739
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Arsenic (As)-Total	0.00150		0.00010	mg/L		19-NOV-20	R5288739
Barium (Ba)-Total	0.465		0.00010	mg/L		19-NOV-20	R5288739
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-NOV-20	R5288739
Boron (B)-Total	0.024		0.010	mg/L		19-NOV-20	R5288739
Cadmium (Cd)-Total	0.100		0.0050	ug/L		19-NOV-20	R5288739
Calcium (Ca)-Total	29.4		0.050	mg/L		19-NOV-20	R5288739
Chromium (Cr)-Total	0.00143		0.00010	mg/L		19-NOV-20	R5288739
Cobalt (Co)-Total	0.54		0.10	ug/L		19-NOV-20	R5288739
Copper (Cu)-Total	0.00304		0.00050	mg/L		19-NOV-20	R5288739
Iron (Fe)-Total	1.15		0.010	mg/L		19-NOV-20	R5288739
Lead (Pb)-Total	0.000611		0.000050	mg/L		19-NOV-20	R5288739
Lithium (Li)-Total	0.0105		0.0010	mg/L		19-NOV-20	R5288739
Magnesium (Mg)-Total	13.6		0.10	mg/L		19-NOV-20	R5288739
Manganese (Mn)-Total	0.236		0.00010	mg/L		19-NOV-20	R5288739
Molybdenum (Mo)-Total	0.0114		0.000050	mg/L		19-NOV-20	R5288739
Nickel (Ni)-Total	0.00172		0.00050	mg/L		19-NOV-20	R5288739
Potassium (K)-Total	1.07		0.050	mg/L		19-NOV-20	R5288739
Selenium (Se)-Total	0.253		0.050	ug/L		19-NOV-20	R5288739
Silicon (Si)-Total	5.46		0.10	mg/L		19-NOV-20	R5288739
Silver (Ag)-Total	0.000035		0.000010	mg/L		19-NOV-20	R5288739
Sodium (Na)-Total	20.5		0.050	mg/L		19-NOV-20	R5288739
Strontium (Sr)-Total	0.200		0.00020	mg/L		19-NOV-20	R5288739
Thallium (Tl)-Total	0.000049		0.000010	mg/L		19-NOV-20	R5288739
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Titanium (Ti)-Total	0.012		0.010	mg/L		19-NOV-20	R5288739
Uranium (U)-Total	0.00173		0.000010	mg/L		19-NOV-20	R5288739
Vanadium (V)-Total	0.00263		0.00050	mg/L		19-NOV-20	R5288739
Zinc (Zn)-Total	0.0084		0.0030	mg/L		19-NOV-20	R5288739
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5287217
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	160		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Carbonate (as CaCO3)	6.6		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Total (as CaCO3)	167		1.0	mg/L		18-NOV-20	R5288182
Ammonia, Total (as N)							
Ammonia as N	0.0674		0.0050	mg/L		15-NOV-20	R5285889
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-20	R5286248
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-1 LC_PIZP1101_WG_Q4-2020_N Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	0.66		0.10	mg/L		14-NOV-20	R5286248
Electrical Conductivity (EC) Conductivity (@ 25C)	301		2.0	uS/cm		18-NOV-20	R5288182
Fluoride in Water by IC Fluoride (F)	1.79		0.020	mg/L		14-NOV-20	R5286248
Ion Balance Calculation Ion Balance	94.2		-100	%		19-NOV-20	
Ion Balance Calculation Cation - Anion Balance	-3.0			%		19-NOV-20	
Anion Sum	3.54			meq/L		19-NOV-20	
Cation Sum	3.33			meq/L		19-NOV-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.0515		0.0050	mg/L		14-NOV-20	R5286248
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-20	R5286248
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0116		0.0010	mg/L		14-NOV-20	R5285809
Oxidation redution potential by elect. ORP	289		-1000	mV		16-NOV-20	R5286416
Phosphorus (P)-Total Phosphorus (P)-Total	0.0719		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC Sulfate (SO4)	4.47		0.30	mg/L		14-NOV-20	R5286248
Total Dissolved Solids Total Dissolved Solids	165	DLHC	20	mg/L		18-NOV-20	R5288416
Total Suspended Solids Total Suspended Solids	16.8		1.0	mg/L		18-NOV-20	R5288178
Turbidity Turbidity	39.2		0.10	NTU		14-NOV-20	R5285700
pH pH	8.37		0.10	pH		18-NOV-20	R5288182
L2529538-2 WG_Q4-2020-010 Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Total Kjeldahl Nitrogen	0.160		0.050	mg/L		16-NOV-20	R5286419
Total Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-20	18-NOV-20	R5287141
Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	FIELD					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-20	18-NOV-20	R5287141
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Arsenic (As)-Dissolved	0.00134		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Barium (Ba)-Dissolved	0.417		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-2 WG_Q4-2020-010							
Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Boron (B)-Dissolved	0.022		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	17-NOV-20	18-NOV-20	R5287141
Calcium (Ca)-Dissolved	27.1		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cobalt (Co)-Dissolved	0.20		0.10	ug/L	17-NOV-20	18-NOV-20	R5287141
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Iron (Fe)-Dissolved	0.210		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Lithium (Li)-Dissolved	0.0093		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Magnesium (Mg)-Dissolved	12.8		0.10	mg/L	17-NOV-20	18-NOV-20	R5287141
Manganese (Mn)-Dissolved	0.200		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Molybdenum (Mo)-Dissolved	0.0117		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141
Potassium (K)-Dissolved	0.710		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-NOV-20	18-NOV-20	R5287141
Silicon (Si)-Dissolved	3.64		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Sodium (Na)-Dissolved	21.1		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Strontium (Sr)-Dissolved	0.196		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Uranium (U)-Dissolved	0.00171		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Hardness							
Hardness (as CaCO3)	120		0.50	mg/L		19-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.051		0.020	ug/L		19-NOV-20	R5288739
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-NOV-20	R5288056
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.880		0.0030	mg/L		19-NOV-20	R5288739
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Arsenic (As)-Total	0.00144		0.00010	mg/L		19-NOV-20	R5288739
Barium (Ba)-Total	0.465		0.00010	mg/L		19-NOV-20	R5288739
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-NOV-20	R5288739
Boron (B)-Total	0.025		0.010	mg/L		19-NOV-20	R5288739
Cadmium (Cd)-Total	0.107		0.0050	ug/L		19-NOV-20	R5288739
Calcium (Ca)-Total	30.1		0.050	mg/L		19-NOV-20	R5288739
Chromium (Cr)-Total	0.00134		0.00010	mg/L		19-NOV-20	R5288739
Cobalt (Co)-Total	0.51		0.10	ug/L		19-NOV-20	R5288739
Copper (Cu)-Total	0.00294		0.00050	mg/L		19-NOV-20	R5288739
Iron (Fe)-Total	1.06		0.010	mg/L		19-NOV-20	R5288739
Lead (Pb)-Total	0.000582		0.000050	mg/L		19-NOV-20	R5288739
Lithium (Li)-Total	0.0107		0.0010	mg/L		19-NOV-20	R5288739
Magnesium (Mg)-Total	13.5		0.10	mg/L		19-NOV-20	R5288739
Manganese (Mn)-Total	0.235		0.00010	mg/L		19-NOV-20	R5288739
Molybdenum (Mo)-Total	0.0116		0.000050	mg/L		19-NOV-20	R5288739
Nickel (Ni)-Total	0.00160		0.00050	mg/L		19-NOV-20	R5288739

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-2 WG_Q4-2020-010							
Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Potassium (K)-Total	1.04		0.050	mg/L		19-NOV-20	R5288739
Selenium (Se)-Total	0.227		0.050	ug/L		19-NOV-20	R5288739
Silicon (Si)-Total	5.25		0.10	mg/L		19-NOV-20	R5288739
Silver (Ag)-Total	0.000033		0.000010	mg/L		19-NOV-20	R5288739
Sodium (Na)-Total	20.5		0.050	mg/L		19-NOV-20	R5288739
Strontium (Sr)-Total	0.200		0.00020	mg/L		19-NOV-20	R5288739
Thallium (Tl)-Total	0.000043		0.000010	mg/L		19-NOV-20	R5288739
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-NOV-20	R5288739
Uranium (U)-Total	0.00172		0.000010	mg/L		19-NOV-20	R5288739
Vanadium (V)-Total	0.00240		0.00050	mg/L		19-NOV-20	R5288739
Zinc (Zn)-Total	0.0087		0.0030	mg/L		19-NOV-20	R5288739
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5287217
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	164		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Carbonate (as CaCO3)	5.4		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Total (as CaCO3)	169		1.0	mg/L		18-NOV-20	R5288182
Ammonia, Total (as N)							
Ammonia as N	0.0470		0.0050	mg/L		15-NOV-20	R5285889
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-20	R5286248
Chloride in Water by IC							
Chloride (Cl)	0.67		0.10	mg/L		14-NOV-20	R5286248
Electrical Conductivity (EC)							
Conductivity (@ 25C)	301		2.0	uS/cm		18-NOV-20	R5288182
Fluoride in Water by IC							
Fluoride (F)	1.82		0.020	mg/L		14-NOV-20	R5286248
Ion Balance Calculation							
Ion Balance	93.3		-100	%		19-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.5			%		19-NOV-20	
Anion Sum	3.60			meq/L		19-NOV-20	
Cation Sum	3.36			meq/L		19-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-NOV-20	R5286248
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-20	R5286248
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0118		0.0010	mg/L		14-NOV-20	R5285809
Oxidation redution potential by elect.							
ORP	259		-1000	mV		16-NOV-20	R5286416
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0917		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	5.05		0.30	mg/L		14-NOV-20	R5286248
Total Dissolved Solids							
Total Dissolved Solids	165	DLHC	20	mg/L		18-NOV-20	R5288416
Total Suspended Solids							
Total Suspended Solids	19.5		1.0	mg/L		18-NOV-20	R5288178

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-2 WG_Q4-2020-010 Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45 Matrix: WG							
Turbidity Turbidity	46.5		0.10	NTU		14-NOV-20	R5285700
pH pH	8.35		0.10	pH		18-NOV-20	R5288182
L2529538-3 WG_Q4-2020-012 Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Total Metals in Water Total Be (Low) in Water by CRC ICPMS Beryllium (Be)-Total	<0.020		0.020	ug/L		19-NOV-20	R5288739
Total Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-NOV-20	R5288056
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	<0.0030		0.0030	mg/L		19-NOV-20	R5288739
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Arsenic (As)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Barium (Ba)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-NOV-20	R5288739
Boron (B)-Total	<0.010		0.010	mg/L		19-NOV-20	R5288739
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		19-NOV-20	R5288739
Calcium (Ca)-Total	<0.050		0.050	mg/L		19-NOV-20	R5288739
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Cobalt (Co)-Total	<0.10		0.10	ug/L		19-NOV-20	R5288739
Copper (Cu)-Total	<0.00050		0.00050	mg/L		19-NOV-20	R5288739
Iron (Fe)-Total	<0.010		0.010	mg/L		19-NOV-20	R5288739
Lead (Pb)-Total	<0.000050		0.000050	mg/L		19-NOV-20	R5288739
Lithium (Li)-Total	<0.0010		0.0010	mg/L		19-NOV-20	R5288739
Magnesium (Mg)-Total	<0.10		0.10	mg/L		19-NOV-20	R5288739
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		19-NOV-20	R5288739
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		19-NOV-20	R5288739
Potassium (K)-Total	<0.050		0.050	mg/L		19-NOV-20	R5288739
Selenium (Se)-Total	<0.050		0.050	ug/L		19-NOV-20	R5288739
Silicon (Si)-Total	<0.10		0.10	mg/L		19-NOV-20	R5288739
Silver (Ag)-Total	<0.000010		0.000010	mg/L		19-NOV-20	R5288739
Sodium (Na)-Total	<0.050		0.050	mg/L		19-NOV-20	R5288739
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		19-NOV-20	R5288739
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		19-NOV-20	R5288739
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-NOV-20	R5288739
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-NOV-20	R5288739
Uranium (U)-Total	<0.000010		0.000010	mg/L		19-NOV-20	R5288739
Vanadium (V)-Total	<0.00050		0.00050	mg/L		19-NOV-20	R5288739
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		19-NOV-20	R5288739
Routine for Teck Coal Acidity by Automatic Titration Acidity (as CaCO3)	1.8		1.0	mg/L		17-NOV-20	R5287217
Alkalinity (Species) by Manual Titration Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529538-3 WG_Q4-2020-012							
Sampled By: S. Fossen/D. Tymstra on 13-NOV-20 @ 12:45							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Ammonia, Total (as N)							
Ammonia as N	0.0444	RRV	0.0050	mg/L		15-NOV-20	R5285889
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-20	R5286248
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		14-NOV-20	R5286248
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	LAB					20-NOV-20	R5291903
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		20-NOV-20	R5292217
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		20-NOV-20	R5292217
Potassium (K)-Dissolved	<0.050		0.050	mg/L		20-NOV-20	R5292217
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		20-NOV-20	R5292217
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		18-NOV-20	R5288182
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		14-NOV-20	R5286248
Ion Balance Calculation							
Ion Balance	0.0		-100	%		21-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		21-NOV-20	
Anion Sum	<0.10			meq/L		21-NOV-20	
Cation Sum	<0.10			meq/L		21-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-NOV-20	R5286248
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-20	R5286248
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-20	R5285809
Oxidation redution potential by elect.							
ORP	321		-1000	mV		16-NOV-20	R5286416
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		14-NOV-20	R5286248
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		18-NOV-20	R5288416
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		18-NOV-20	R5288178
Turbidity							
Turbidity	<0.10		0.10	NTU		14-NOV-20	R5285700
pH							
pH	5.56		0.10	pH		18-NOV-20	R5288182

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	-3 DOC BOTTLE NOT RECEIVED, DOC SUBSAMPLED/FILTERED/PRESERVED AT THE LAB - Sample was Filtered and Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

PIZP1101_20201113

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2529538

Report Date: 24-NOV-20

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5287217							
WG3447068-14	LCS							
Acidity (as CaCO3)			110.7		%		85-115	17-NOV-20
WG3447068-13	MB							
Acidity (as CaCO3)			1.8		mg/L		2	17-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5288182							
WG3447920-11	LCS							
Alkalinity, Total (as CaCO3)			99.98		%		85-115	18-NOV-20
WG3447920-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-2	LCS							
Beryllium (Be)-Dissolved			94.6		%		80-120	18-NOV-20
WG3446853-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5288739							
WG3446852-2	LCS							
Beryllium (Be)-Total			98.5		%		80-120	19-NOV-20
WG3446852-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5286248							
WG3445842-2	LCS							
Bromide (Br)			102.2		%		85-115	14-NOV-20
WG3445842-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5286879							
WG3446466-12	LCS							
Dissolved Organic Carbon			107.1		%		80-120	16-NOV-20
WG3446466-11	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2529538

Report Date: 24-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5286879							
WG3446466-12 LCS								
Total Organic Carbon			113.7		%		80-120	16-NOV-20
WG3446466-11 MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Chloride (Cl)			99.9		%		85-115	14-NOV-20
WG3445842-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	14-NOV-20
EC-L-PCT-CL	Water							
Batch	R5288182							
WG3447920-11 LCS								
Conductivity (@ 25C)			96.0		%		90-110	18-NOV-20
WG3447920-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-NOV-20
F-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Fluoride (F)			95.6		%		90-110	14-NOV-20
WG3445842-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	14-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5288056							
WG3447828-6 LCS								
Mercury (Hg)-Dissolved			98.3		%		80-120	19-NOV-20
WG3447828-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-20
HG-T-CVAA-VA	Water							
Batch	R5288056							
WG3447903-2 LCS								
Mercury (Hg)-Total			99.5		%		80-120	19-NOV-20
WG3447903-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-NOV-20
WG3447903-4 MS		L2529538-1						
Mercury (Hg)-Total			97.6		%		70-130	19-NOV-20
MET-D-CCMS-CL	Water							



Quality Control Report

Workorder: L2529538

Report Date: 24-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5292217							
WG3449054-2	LCS	TMRM						
Calcium (Ca)-Dissolved			104.0		%		80-120	20-NOV-20
Magnesium (Mg)-Dissolved			104.1		%		80-120	20-NOV-20
Potassium (K)-Dissolved			102.2		%		80-120	20-NOV-20
Sodium (Na)-Dissolved			101.8		%		80-120	20-NOV-20
WG3449054-1	MB							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-2	LCS							
Aluminum (Al)-Dissolved			93.9		%		80-120	18-NOV-20
Antimony (Sb)-Dissolved			98.8		%		80-120	18-NOV-20
Arsenic (As)-Dissolved			95.0		%		80-120	18-NOV-20
Barium (Ba)-Dissolved			96.2		%		80-120	18-NOV-20
Bismuth (Bi)-Dissolved			98.4		%		80-120	18-NOV-20
Boron (B)-Dissolved			91.4		%		80-120	18-NOV-20
Cadmium (Cd)-Dissolved			96.4		%		80-120	18-NOV-20
Calcium (Ca)-Dissolved			99.3		%		80-120	18-NOV-20
Chromium (Cr)-Dissolved			94.0		%		80-120	18-NOV-20
Cobalt (Co)-Dissolved			94.8		%		80-120	18-NOV-20
Copper (Cu)-Dissolved			92.8		%		80-120	18-NOV-20
Iron (Fe)-Dissolved			94.2		%		80-120	18-NOV-20
Lead (Pb)-Dissolved			97.4		%		80-120	18-NOV-20
Lithium (Li)-Dissolved			93.4		%		80-120	18-NOV-20
Magnesium (Mg)-Dissolved			90.2		%		80-120	18-NOV-20
Manganese (Mn)-Dissolved			93.1		%		80-120	18-NOV-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	18-NOV-20
Nickel (Ni)-Dissolved			93.5		%		80-120	18-NOV-20
Potassium (K)-Dissolved			94.4		%		80-120	18-NOV-20
Selenium (Se)-Dissolved			93.7		%		80-120	18-NOV-20
Silicon (Si)-Dissolved			104.8		%		60-140	18-NOV-20
Silver (Ag)-Dissolved			97.4		%		80-120	18-NOV-20



Quality Control Report

Workorder: L2529538

Report Date: 24-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-2	LCS							
Sodium (Na)-Dissolved			94.4		%		80-120	18-NOV-20
Strontium (Sr)-Dissolved			99.6		%		80-120	18-NOV-20
Thallium (Tl)-Dissolved			97.9		%		80-120	18-NOV-20
Tin (Sn)-Dissolved			95.0		%		80-120	18-NOV-20
Titanium (Ti)-Dissolved			91.7		%		80-120	18-NOV-20
Uranium (U)-Dissolved			102.4		%		80-120	18-NOV-20
Vanadium (V)-Dissolved			96.7		%		80-120	18-NOV-20
Zinc (Zn)-Dissolved			94.9		%		80-120	18-NOV-20
WG3446853-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-1	MB	NP						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
MET-T-CCMS-VA								
	Water							
Batch	R5288739							
WG3446852-2	LCS							
Aluminum (Al)-Total			101.7		%		80-120	19-NOV-20
Antimony (Sb)-Total			103.2		%		80-120	19-NOV-20
Arsenic (As)-Total			96.9		%		80-120	19-NOV-20
Barium (Ba)-Total			101.7		%		80-120	19-NOV-20
Bismuth (Bi)-Total			89.9		%		80-120	19-NOV-20
Boron (B)-Total			97.6		%		80-120	19-NOV-20
Cadmium (Cd)-Total			97.1		%		80-120	19-NOV-20
Calcium (Ca)-Total			100.8		%		80-120	19-NOV-20
Chromium (Cr)-Total			99.8		%		80-120	19-NOV-20
Cobalt (Co)-Total			98.2		%		80-120	19-NOV-20
Copper (Cu)-Total			97.7		%		80-120	19-NOV-20
Iron (Fe)-Total			98.7		%		80-120	19-NOV-20
Lead (Pb)-Total			99.9		%		80-120	19-NOV-20
Lithium (Li)-Total			98.5		%		80-120	19-NOV-20
Magnesium (Mg)-Total			100.0		%		80-120	19-NOV-20
Manganese (Mn)-Total			97.2		%		80-120	19-NOV-20
Molybdenum (Mo)-Total			99.7		%		80-120	19-NOV-20
Nickel (Ni)-Total			98.0		%		80-120	19-NOV-20
Potassium (K)-Total			100.5		%		80-120	19-NOV-20
Selenium (Se)-Total			101.2		%		80-120	19-NOV-20
Silicon (Si)-Total			103.9		%		80-120	19-NOV-20
Silver (Ag)-Total			94.9		%		80-120	19-NOV-20
Sodium (Na)-Total			101.3		%		80-120	19-NOV-20
Strontium (Sr)-Total			101.7		%		80-120	19-NOV-20
Thallium (Tl)-Total			99.6		%		80-120	19-NOV-20
Tin (Sn)-Total			96.3		%		80-120	19-NOV-20



Quality Control Report

Workorder: L2529538

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5288739							
WG3446852-2 LCS								
Titanium (Ti)-Total			97.9		%		80-120	19-NOV-20
Uranium (U)-Total			97.4		%		80-120	19-NOV-20
Vanadium (V)-Total			101.1		%		80-120	19-NOV-20
Zinc (Zn)-Total			101.6		%		80-120	19-NOV-20
WG3446852-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	19-NOV-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	19-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	19-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	19-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	19-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	19-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	Water							
Batch	R5288739							
WG3446852-1 MB								
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-NOV-20
NH3-L-F-CL	Water							
Batch	R5285889							
WG3445309-14 LCS								
Ammonia as N			100.5		%		85-115	15-NOV-20
WG3445309-13 MB								
Ammonia as N			<0.0050		mg/L		0.005	15-NOV-20
NO2-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Nitrite (as N)			98.8		%		90-110	14-NOV-20
WG3445842-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	14-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Nitrate (as N)			101.3		%		90-110	14-NOV-20
WG3445842-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	14-NOV-20
ORP-CL	Water							
Batch	R5286416							
WG3445933-3 CRM		CL-ORP						
ORP			226		mV		210-230	16-NOV-20
P-T-L-COL-CL	Water							
Batch	R5286966							
WG3446486-34 LCS								
Phosphorus (P)-Total			97.2		%		80-120	17-NOV-20
WG3446486-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-20
PH-CL	Water							
Batch	R5288182							
WG3447920-11 LCS								
pH			7.02		pH		6.9-7.1	18-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R5285809							
WG3445320-3	DUP	L2529538-3						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-NOV-20
WG3445320-2	LCS							
Orthophosphate-Dissolved (as P)			96.7		%		80-120	14-NOV-20
WG3445320-6	LCS							
Orthophosphate-Dissolved (as P)			96.6		%		80-120	14-NOV-20
WG3445320-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-20
WG3445320-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-20
WG3445320-4	MS	L2529538-3						
Orthophosphate-Dissolved (as P)			108.4		%		70-130	14-NOV-20
SO4-IC-N-CL								
	Water							
Batch	R5286248							
WG3445842-2	LCS							
Sulfate (SO4)			100.9		%		90-110	14-NOV-20
WG3445842-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-NOV-20
SOLIDS-TDS-CL								
	Water							
Batch	R5288416							
WG3447406-8	LCS							
Total Dissolved Solids			99.9		%		85-115	18-NOV-20
WG3447406-7	MB							
Total Dissolved Solids			<10		mg/L		10	18-NOV-20
TEH-BC-VA-CL								
	Water							
Batch	R5287621							
WG3446324-2	LCS							
EPH10-19			86.6		%		70-130	17-NOV-20
EPH19-32			77.9		%		70-130	17-NOV-20
WG3446324-1	MB							
EPH10-19			<0.25		mg/L		0.25	17-NOV-20
EPH19-32			<0.25		mg/L		0.25	17-NOV-20
Surrogate: 2-Bromobenzotrifluoride			70.9		%		60-140	17-NOV-20
TEH-WATER-VA-CL								
	Water							



Quality Control Report

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Report Date: 24-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL		Water						
Batch	R5287621							
WG3446324-2	LCS							
TEH (C10-C30)			84.0		%		70-130	17-NOV-20
WG3446324-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	17-NOV-20
Surrogate: 2-Bromobenzotrifluoride			70.9		%		60-140	17-NOV-20
TKN-L-F-CL		Water						
Batch	R5286419							
WG3445930-13	LCS							
Total Kjeldahl Nitrogen			91.2		%		75-125	16-NOV-20
WG3445930-2	LCS							
Total Kjeldahl Nitrogen			95.4		%		75-125	16-NOV-20
WG3445930-5	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	16-NOV-20
WG3445930-9	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	16-NOV-20
WG3445930-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
TSS-L-CL		Water						
Batch	R5288178							
WG3447395-6	LCS							
Total Suspended Solids			100.5		%		85-115	18-NOV-20
WG3447395-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-20
TURBIDITY-CL		Water						
Batch	R5285700							
WG3445126-2	LCS							
Turbidity			97.9		%		85-115	14-NOV-20
WG3445126-1	MB							
Turbidity			<0.10		NTU		0.1	14-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	13-NOV-20 12:45	16-NOV-20 14:00	0.25	73	hours	EHTR-FM
	2	13-NOV-20 12:45	16-NOV-20 14:00	0.25	73	hours	EHTR-FM
	3	13-NOV-20 12:45	16-NOV-20 14:00	0.25	73	hours	EHTR-FM
pH	1	13-NOV-20 12:45	18-NOV-20 14:00	0.25	121	hours	EHTR-FM
	2	13-NOV-20 12:45	18-NOV-20 14:00	0.25	121	hours	EHTR-FM
	3	13-NOV-20 12:45	18-NOV-20 14:00	0.25	121	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2529538 were received on 14-NOV-20 09:50.

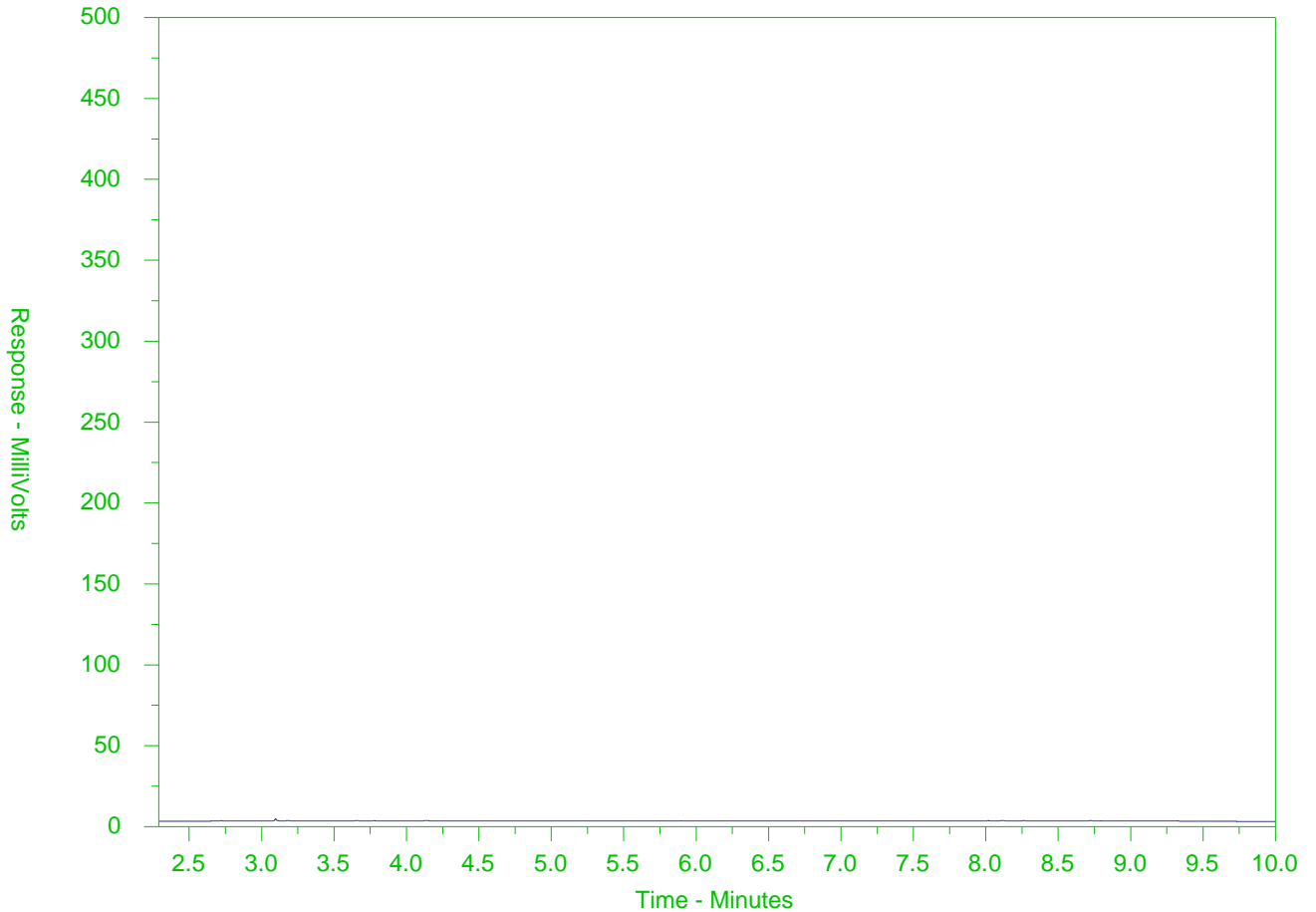
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2529538-1
 Client Sample ID: LC_PIZP1101_WG_Q4-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	PIZP1101_20201113	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets	Email 1:	chris.blurton@teck.com x x
Email	chris.blurton@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	teckcoal@equisonline.com x x
Address	Box 2003	Address	2559 29 Street NE	Email 3:	drake.tymstra@teck.com x x
	15km North Hwy 43			Email 4:	shanise.fossen@teck.com x x
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	PO number	VPO00680643

SAMPLE DETAILS Filtered - P: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH				
LC_PIZP1101_WG_Q4-2020_N	LC_PIZP1101	WG	No	11/13/2020	12:45	G	9	1	1	1	1	1	1	1	1	2				
WG_Q4-2020_010	LC_PIZP1101	WG	No	11/13/2020	12:45	G	7	1	1	1	1	1	1	1	1					
WG_Q4-2020-012	LC_PIZP1101	WG	No	11/13/2020	12:45	G	4	1		1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	13-Nov	<i>DK</i>	11/14 0950

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	S. Fossen/D. Tymstra	Mobile #		
Sampler's Signature	S Fossen	Date/Time	November 13, 2020	

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TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 26-NOV-20
Report Date: 02-DEC-20 12:34 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2533998
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC_GW_20201125
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533998-1 LC_PIZDC1307_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:55							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	2.19		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	0.114		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	2.07		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00147		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	1.50		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.025		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0062		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	41.6		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.799		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0796		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	21.0		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.00863		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.0325		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	5.47		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	2.71		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	14.1		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.139		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000036		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	190		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0076		0.0030	mg/L		27-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-NOV-20	R5299179
Arsenic (As)-Total	0.00153		0.00010	mg/L		27-NOV-20	R5299179

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533998-1 LC_PIZDC1307_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:55							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Barium (Ba)-Total	1.45		0.00010	mg/L		27-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-NOV-20	R5299179
Boron (B)-Total	0.025		0.010	mg/L		27-NOV-20	R5299179
Cadmium (Cd)-Total	<0.015	DLM	0.015	ug/L		27-NOV-20	R5299179
Calcium (Ca)-Total	40.5		0.050	mg/L		27-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-NOV-20	R5299179
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-NOV-20	R5299179
Copper (Cu)-Total	0.00054		0.00050	mg/L		27-NOV-20	R5299179
Iron (Fe)-Total	1.13		0.010	mg/L		27-NOV-20	R5299179
Lead (Pb)-Total	0.000118		0.000050	mg/L		27-NOV-20	R5299179
Lithium (Li)-Total	0.0742		0.0010	mg/L		27-NOV-20	R5299179
Magnesium (Mg)-Total	20.7		0.10	mg/L		27-NOV-20	R5299179
Manganese (Mn)-Total	0.00899		0.00010	mg/L		27-NOV-20	R5299179
Molybdenum (Mo)-Total	0.0315		0.000050	mg/L		27-NOV-20	R5299179
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		27-NOV-20	R5299179
Potassium (K)-Total	5.22		0.050	mg/L		27-NOV-20	R5299179
Selenium (Se)-Total	<0.050		0.050	ug/L		27-NOV-20	R5299179
Silicon (Si)-Total	2.96		0.10	mg/L		27-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-NOV-20	R5299179
Sodium (Na)-Total	14.0		0.050	mg/L		27-NOV-20	R5299179
Strontium (Sr)-Total	0.129		0.00020	mg/L		27-NOV-20	R5299179
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-NOV-20	R5299179
Uranium (U)-Total	0.000026		0.000010	mg/L		27-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-NOV-20	R5299179
Zinc (Zn)-Total	0.0052		0.0030	mg/L		27-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	232		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	232		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.145		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	0.17		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	335		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.562		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Ion Balance	98.7		-100	%		02-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.7			%		02-DEC-20	
Anion Sum	4.67			meq/L		02-DEC-20	
Cation Sum	4.61			meq/L		02-DEC-20	
Nitrate in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533998-1 LC_PIZDC1307_WG_Q4-2020_NP Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:55 Matrix: WG							
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	272		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0150		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	218	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	1.2		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	8.79		0.10	NTU		26-NOV-20	R5298493
pH							
pH	8.14		0.10	pH		27-NOV-20	R5299383
L2533998-2 LC_PIZDC1308_WG_Q4-2020_NP Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	2.69		0.50	mg/L		28-NOV-20	R5299473
Total Kjeldahl Nitrogen	0.098		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	2.34		0.50	mg/L		28-NOV-20	R5299473
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.427		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.014		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.0272		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	74.1		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.77		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	0.201		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0224		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	23.6		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.0765		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533998-2 LC_PIZDC1308_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Molybdenum (Mo)-Dissolved	0.00751		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00192		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	2.72		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.03		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	4.74		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.109		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	0.000036		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000729		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	282		0.50	mg/L		28-NOV-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-NOV-20	R5299179
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0032		0.0030	mg/L		28-NOV-20	R5299179
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Arsenic (As)-Total	0.00015		0.00010	mg/L		28-NOV-20	R5299179
Barium (Ba)-Total	0.401		0.00010	mg/L		28-NOV-20	R5299179
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Boron (B)-Total	0.015		0.010	mg/L		28-NOV-20	R5299179
Cadmium (Cd)-Total	0.0616		0.0050	ug/L		28-NOV-20	R5299179
Calcium (Ca)-Total	75.2		0.050	mg/L		28-NOV-20	R5299179
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Cobalt (Co)-Total	0.88		0.10	ug/L		28-NOV-20	R5299179
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Iron (Fe)-Total	0.238		0.010	mg/L		28-NOV-20	R5299179
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-NOV-20	R5299179
Lithium (Li)-Total	0.0219		0.0010	mg/L		28-NOV-20	R5299179
Magnesium (Mg)-Total	25.0		0.10	mg/L		28-NOV-20	R5299179
Manganese (Mn)-Total	0.0812		0.00010	mg/L		28-NOV-20	R5299179
Molybdenum (Mo)-Total	0.00673		0.000050	mg/L		28-NOV-20	R5299179
Nickel (Ni)-Total	0.00197		0.00050	mg/L		28-NOV-20	R5299179
Potassium (K)-Total	2.61		0.050	mg/L		28-NOV-20	R5299179
Selenium (Se)-Total	<0.050		0.050	ug/L		28-NOV-20	R5299179
Silicon (Si)-Total	4.49		0.10	mg/L		28-NOV-20	R5299179
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-NOV-20	R5299179
Sodium (Na)-Total	4.47		0.050	mg/L		28-NOV-20	R5299179
Strontium (Sr)-Total	0.105		0.00020	mg/L		28-NOV-20	R5299179
Thallium (Tl)-Total	0.000035		0.000010	mg/L		28-NOV-20	R5299179
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-NOV-20	R5299179
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-NOV-20	R5299179
Uranium (U)-Total	0.000807		0.000010	mg/L		28-NOV-20	R5299179
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-NOV-20	R5299179
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-NOV-20	R5299179
Routine for Teck Coal							
Acidity by Automatic Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533998-2 LC_PIZDC1308_WG_Q4-2020_NP							
Sampled By: S. Fossen/D. Tymstra on 25-NOV-20 @ 12:00							
Matrix: WG							
Acidity by Automatic Titration							
Acidity (as CaCO ₃)	2.4		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO ₃)	307		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO ₃)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO ₃)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO ₃)	307		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.101		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298781
Chloride in Water by IC							
Chloride (Cl)	0.69		0.10	mg/L		26-NOV-20	R5298781
Electrical Conductivity (EC)							
Conductivity (@ 25C)	466		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.252		0.020	mg/L		26-NOV-20	R5298781
Ion Balance Calculation							
Cation - Anion Balance	-2.5			%		02-DEC-20	
Anion Sum	6.23			meq/L		02-DEC-20	
Cation Sum	5.93			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	95.1		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-20	R5298781
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298781
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	331		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0031		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO ₄)	3.04		0.30	mg/L		26-NOV-20	R5298781
Total Dissolved Solids							
Total Dissolved Solids	290	DLHC	20	mg/L		30-NOV-20	R5300305
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		30-NOV-20	R5300239
Turbidity							
Turbidity	1.96		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.91		0.10	pH		27-NOV-20	R5299383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC_GW_20201125

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2533998

Report Date: 02-DEC-20

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299380							
WG3453663-2	LCS							
Acidity (as CaCO3)			110.2		%		85-115	27-NOV-20
WG3453663-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	27-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5299383							
WG3453669-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-2	LCS							
Beryllium (Be)-Dissolved			107.4		%		80-120	27-NOV-20
WG3453347-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-NOV-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5299179							
WG3453339-3	DUP	L2533998-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3453339-2	LCS							
Beryllium (Be)-Total			101.9		%		80-120	27-NOV-20
WG3453339-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-NOV-20
WG3453339-4	MS	L2533998-2						
Beryllium (Be)-Total			100.3		%		70-130	28-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-2	LCS							
Bromide (Br)			99.2		%		85-115	26-NOV-20
WG3452992-6	LCS							
Bromide (Br)			97.3		%		85-115	26-NOV-20
WG3452992-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-20
WG3452992-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2533998

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5299473							
WG3453576-2	LCS							
Dissolved Organic Carbon			106.4		%		80-120	28-NOV-20
WG3453576-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5299473							
WG3453576-2	LCS							
Total Organic Carbon			107.6		%		80-120	28-NOV-20
WG3453576-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5298781							
WG3452992-2	LCS							
Chloride (Cl)			105.4		%		85-115	26-NOV-20
WG3452992-6	LCS							
Chloride (Cl)			101.7		%		85-115	26-NOV-20
WG3452992-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	26-NOV-20
WG3452992-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	26-NOV-20
EC-L-PCT-CL	Water							
Batch	R5299383							
WG3453669-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
F-IC-N-CL	Water							
Batch	R5298781							
WG3452992-2	LCS							
Fluoride (F)			102.9		%		90-110	26-NOV-20
WG3452992-6	LCS							
Fluoride (F)			98.6		%		90-110	26-NOV-20
WG3452992-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-20
WG3452992-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2533998

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5299206							
WG3453482-6	LCS							
Mercury (Hg)-Dissolved			97.3		%		80-120	28-NOV-20
WG3453482-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-2	LCS							
Aluminum (Al)-Dissolved			100.8		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			107.3		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			103.2		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			107.3		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			96.7		%		80-120	27-NOV-20
Boron (B)-Dissolved			102.3		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			101.5		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			105.0		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			101.4		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			102.2		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			100.5		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			96.2		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			98.2		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			107.9		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			102.1		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			103.4		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			108.3		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			101.8		%		80-120	27-NOV-20
Potassium (K)-Dissolved			105.8		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			101.9		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			96.8		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			105.5		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			104.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			104.2		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			102.9		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			102.9		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			100.8		%		80-120	27-NOV-20
Uranium (U)-Dissolved			95.3		%		80-120	27-NOV-20



Quality Control Report

Workorder: L2533998

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-2	LCS							
Vanadium (V)-Dissolved			105.4		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			106.5		%		80-120	27-NOV-20
WG3453347-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20

MET-T-CCMS-VA

Water



Quality Control Report

Workorder: L2533998

Report Date: 02-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5299179							
WG3453339-3	DUP	L2533998-1						
Aluminum (Al)-Total		0.0076	0.0125	J	mg/L	0.0049	0.006	27-NOV-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Arsenic (As)-Total		0.00153	0.00162		mg/L	5.9	20	27-NOV-20
Barium (Ba)-Total		1.45	1.45		mg/L	0.0	20	27-NOV-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Boron (B)-Total		0.025	0.026		mg/L	2.1	20	27-NOV-20
Cadmium (Cd)-Total		<0.000015	<0.000015	RPD-NA	mg/L	N/A	20	27-NOV-20
Calcium (Ca)-Total		40.5	39.9		mg/L	1.5	20	27-NOV-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Copper (Cu)-Total		0.00054	0.00057		mg/L	4.6	20	27-NOV-20
Iron (Fe)-Total		1.13	1.15		mg/L	1.4	20	27-NOV-20
Lead (Pb)-Total		0.000118	0.000114		mg/L	3.5	20	27-NOV-20
Lithium (Li)-Total		0.0742	0.0751		mg/L	1.2	20	27-NOV-20
Magnesium (Mg)-Total		20.7	20.9		mg/L	0.6	20	27-NOV-20
Manganese (Mn)-Total		0.00899	0.00902		mg/L	0.3	20	27-NOV-20
Molybdenum (Mo)-Total		0.0315	0.0323		mg/L	2.6	20	27-NOV-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Potassium (K)-Total		5.22	5.23		mg/L	0.1	20	27-NOV-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Silicon (Si)-Total		2.96	3.04		mg/L	2.7	20	27-NOV-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Sodium (Na)-Total		14.0	13.9		mg/L	0.9	20	27-NOV-20
Strontium (Sr)-Total		0.129	0.133		mg/L	3.0	20	27-NOV-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Uranium (U)-Total		0.000026	0.000028		mg/L	4.3	20	27-NOV-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Zinc (Zn)-Total		0.0052	0.0057		mg/L	9.1	20	27-NOV-20
WG3453339-2	LCS							
Aluminum (Al)-Total			101.4		%		80-120	27-NOV-20
Antimony (Sb)-Total			105.6		%		80-120	27-NOV-20
Arsenic (As)-Total			101.6		%		80-120	27-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5299179							
WG3453339-2	LCS							
Barium (Ba)-Total			100.9		%		80-120	27-NOV-20
Bismuth (Bi)-Total			100.4		%		80-120	27-NOV-20
Boron (B)-Total			98.2		%		80-120	27-NOV-20
Cadmium (Cd)-Total			94.2		%		80-120	27-NOV-20
Calcium (Ca)-Total			100.3		%		80-120	27-NOV-20
Chromium (Cr)-Total			100.9		%		80-120	27-NOV-20
Cobalt (Co)-Total			102.3		%		80-120	27-NOV-20
Copper (Cu)-Total			99.4		%		80-120	27-NOV-20
Iron (Fe)-Total			99.9		%		80-120	27-NOV-20
Lead (Pb)-Total			101.5		%		80-120	27-NOV-20
Lithium (Li)-Total			96.2		%		80-120	27-NOV-20
Magnesium (Mg)-Total			100.8		%		80-120	27-NOV-20
Manganese (Mn)-Total			103.0		%		80-120	27-NOV-20
Molybdenum (Mo)-Total			101.8		%		80-120	27-NOV-20
Nickel (Ni)-Total			101.9		%		80-120	27-NOV-20
Potassium (K)-Total			100.9		%		80-120	27-NOV-20
Selenium (Se)-Total			101.3		%		80-120	27-NOV-20
Silicon (Si)-Total			105.1		%		80-120	27-NOV-20
Silver (Ag)-Total			96.1		%		80-120	27-NOV-20
Sodium (Na)-Total			105.9		%		80-120	27-NOV-20
Strontium (Sr)-Total			95.6		%		80-120	27-NOV-20
Thallium (Tl)-Total			99.3		%		80-120	27-NOV-20
Tin (Sn)-Total			96.0		%		80-120	27-NOV-20
Titanium (Ti)-Total			101.9		%		80-120	27-NOV-20
Uranium (U)-Total			95.4		%		80-120	27-NOV-20
Vanadium (V)-Total			101.6		%		80-120	27-NOV-20
Zinc (Zn)-Total			99.99		%		80-120	27-NOV-20
WG3453339-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	27-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5299179							
WG3453339-1	MB							
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-NOV-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-NOV-20
WG3453339-4	MS	L2533998-2						
Aluminum (Al)-Total			98.8		%		70-130	28-NOV-20
Antimony (Sb)-Total			94.8		%		70-130	28-NOV-20
Arsenic (As)-Total			97.2		%		70-130	28-NOV-20
Barium (Ba)-Total			N/A	MS-B	%		-	28-NOV-20
Bismuth (Bi)-Total			90.6		%		70-130	28-NOV-20
Boron (B)-Total			107.0		%		70-130	28-NOV-20
Cadmium (Cd)-Total			96.1		%		70-130	28-NOV-20
Calcium (Ca)-Total			N/A	MS-B	%		-	28-NOV-20
Chromium (Cr)-Total			93.9		%		70-130	28-NOV-20



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Workorder: L2533998

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5299179							
WG3453339-4	MS	L2533998-2						
Cobalt (Co)-Total			95.7		%		70-130	28-NOV-20
Copper (Cu)-Total			91.9		%		70-130	28-NOV-20
Iron (Fe)-Total			97.0		%		70-130	28-NOV-20
Lead (Pb)-Total			91.5		%		70-130	28-NOV-20
Lithium (Li)-Total			97.4		%		70-130	28-NOV-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	28-NOV-20
Manganese (Mn)-Total			N/A	MS-B	%		-	28-NOV-20
Molybdenum (Mo)-Total			99.0		%		70-130	28-NOV-20
Nickel (Ni)-Total			92.7		%		70-130	28-NOV-20
Potassium (K)-Total			96.7		%		70-130	28-NOV-20
Selenium (Se)-Total			96.9		%		70-130	28-NOV-20
Silicon (Si)-Total			90.5		%		70-130	28-NOV-20
Silver (Ag)-Total			91.7		%		70-130	28-NOV-20
Sodium (Na)-Total			N/A	MS-B	%		-	28-NOV-20
Strontium (Sr)-Total			N/A	MS-B	%		-	28-NOV-20
Thallium (Tl)-Total			89.6		%		70-130	28-NOV-20
Tin (Sn)-Total			97.3		%		70-130	28-NOV-20
Titanium (Ti)-Total			97.9		%		70-130	28-NOV-20
Uranium (U)-Total			94.9		%		70-130	28-NOV-20
Vanadium (V)-Total			99.5		%		70-130	28-NOV-20
Zinc (Zn)-Total			96.3		%		70-130	28-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5298936							
WG3452713-6	LCS							
Ammonia as N			100.3		%		85-115	26-NOV-20
WG3452713-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-2	LCS							
Nitrite (as N)			101.8		%		90-110	26-NOV-20
WG3452992-6	LCS							
Nitrite (as N)			99.0		%		90-110	26-NOV-20
WG3452992-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-20
NO3-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-2	LCS							
Nitrate (as N)			102.8		%		90-110	26-NOV-20
WG3452992-6	LCS							
Nitrate (as N)			100.5		%		90-110	26-NOV-20
WG3452992-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-20
WG3452992-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-20
ORP-CL Water								
Batch	R5298490							
WG3452546-1	CRM	CL-ORP						
ORP			227		mV		210-230	26-NOV-20
WG3452546-3	CRM	CL-ORP						
ORP			223		mV		210-230	26-NOV-20
P-T-L-COL-CL Water								
Batch	R5298968							
WG3453126-10	LCS							
Phosphorus (P)-Total			93.0		%		80-120	27-NOV-20
WG3453126-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-NOV-20
PO4-DO-L-COL-CL Water								
Batch	R5298450							
WG3452559-6	LCS							
Orthophosphate-Dissolved (as P)			98.0		%		80-120	26-NOV-20
WG3452559-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-20
SO4-IC-N-CL Water								
Batch	R5298781							
WG3452992-2	LCS							
Sulfate (SO4)			104.3		%		90-110	26-NOV-20
WG3452992-6	LCS							
Sulfate (SO4)			105.0		%		90-110	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL		Water						
Batch	R5298781							
WG3452992-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-20
WG3452992-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-20
SOLIDS-TDS-CL		Water						
Batch	R5300305							
WG3453851-8	LCS							
Total Dissolved Solids			85.5		%		85-115	30-NOV-20
WG3453851-7	MB							
Total Dissolved Solids			<10		mg/L		10	30-NOV-20
TKN-L-F-CL		Water						
Batch	R5298937							
WG3452899-10	LCS							
Total Kjeldahl Nitrogen			110.0		%		75-125	27-NOV-20
WG3452899-12	LCS							
Total Kjeldahl Nitrogen			112.0		%		75-125	27-NOV-20
WG3452899-2	LCS							
Total Kjeldahl Nitrogen			115.0		%		75-125	27-NOV-20
WG3452899-6	LCS							
Total Kjeldahl Nitrogen			117.0		%		75-125	27-NOV-20
WG3452899-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
TSS-L-CL		Water						
Batch	R5300239							
WG3453850-6	LCS							
Total Suspended Solids			96.6		%		85-115	30-NOV-20
WG3453850-5	MB							
Total Suspended Solids			<1.0		mg/L		1	30-NOV-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5298493							
WG3452472-5	LCS							
Turbidity			97.4		%		85-115	26-NOV-20
WG3452472-4	MB							
Turbidity			<0.10		NTU		0.1	26-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	25-NOV-20 12:55	26-NOV-20 12:00	0.25	23	hours	EHTR-FM
	2	25-NOV-20 12:00	26-NOV-20 12:00	0.25	24	hours	EHTR-FM
pH	1	25-NOV-20 12:55	27-NOV-20 12:00	0.25	47	hours	EHTR-FM
	2	25-NOV-20 12:00	27-NOV-20 12:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2533998 were received on 26-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	DC_GW_20201125	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY			OTHER INFO:
Facility Name / Job#	Line Creek Operation	Lab Name	ALS Calgary		Report Format / Distribution
Project Manager	Chris Blurton	Lab Contact	Lyudmyla Shvets		Excel PDF EDD
Email	chris.blurton@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com		Email 1: chris.blurton@teck.com x x
Address	Box 2003	Address	2559 29 Street NE		Email 2: teckcoal@equisonline.com x x
	15km North Hwy 43				Email 3: drake.tymstra@teck.com x x
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8478	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794		PO number
					VPO00680643

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2533998-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-Sulfide-T					
LC_PIZDC1307_WG_Q4-2020_NP	LC_PIZDC1307	WG	No	11/25/2020	12:55	G	6		1	1			1	1	1	1					
LC_PIZDC1308_WG_Q4-2020_NP	LC_PIZDC1308	WG	No	11/25/2020	12:00	G	6		1	1			1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	25-Nov		11/25 900

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	S. Fossen/D. Tymstra		Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	S Fossen		Date/Time
Emergency (1 Business Day) - 100% surcharge				November 25, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 03-DEC-20
Report Date: 26-FEB-21 14:37 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2536431
Project P.O. #: VPO00739930
Job Reference: LINE CREEK OPERATION
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:17

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2536431-1 to -3

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-1 LC_PIZDC1404S_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 11:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	247		5.0	mg/L		04-DEC-20	R5307878
Carbonate (CO3)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Dissolved Organic Carbon	2.64		0.50	mg/L		07-DEC-20	R5309538
Hydroxide (OH)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		05-DEC-20	R5308435
Total Organic Carbon	2.29		0.50	mg/L		07-DEC-20	R5309538
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	06-DEC-20	R5308750
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5309695
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	06-DEC-20	R5308750
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Arsenic (As)-Dissolved	0.00213		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Barium (Ba)-Dissolved	0.242		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-DEC-20	06-DEC-20	R5308750
Calcium (Ca)-Dissolved	46.2		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cobalt (Co)-Dissolved	0.32		0.10	ug/L	06-DEC-20	06-DEC-20	R5308750
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750
Iron (Fe)-Dissolved	1.01		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Lithium (Li)-Dissolved	0.0049		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Magnesium (Mg)-Dissolved	17.8		0.10	mg/L	06-DEC-20	06-DEC-20	R5308750
Manganese (Mn)-Dissolved	0.0286		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Molybdenum (Mo)-Dissolved	0.00345		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Nickel (Ni)-Dissolved	0.00120		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Potassium (K)-Dissolved	1.50		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-DEC-20	06-DEC-20	R5308750
Silicon (Si)-Dissolved	3.47		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Sodium (Na)-Dissolved	1.13		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Strontium (Sr)-Dissolved	0.0456		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Uranium (U)-Dissolved	0.000513		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Hardness							
Hardness (as CaCO3)	188		0.50	mg/L		07-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		06-DEC-20	R5308750
Total Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-1 LC_PIZDC1404S_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 11:15							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0061		0.0030	mg/L		06-DEC-20	R5308750
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Arsenic (As)-Total	0.00218		0.00010	mg/L		06-DEC-20	R5308750
Barium (Ba)-Total	0.234		0.00010	mg/L		06-DEC-20	R5308750
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		06-DEC-20	R5308750
Boron (B)-Total	<0.010		0.010	mg/L		06-DEC-20	R5308750
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		06-DEC-20	R5308750
Calcium (Ca)-Total	47.8		0.050	mg/L		06-DEC-20	R5308750
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		07-DEC-20	R5309041
Cobalt (Co)-Total	0.31		0.10	ug/L		06-DEC-20	R5308750
Copper (Cu)-Total	<0.00050		0.00050	mg/L		06-DEC-20	R5308750
Iron (Fe)-Total	1.07		0.010	mg/L		06-DEC-20	R5308750
Lead (Pb)-Total	<0.000050		0.000050	mg/L		06-DEC-20	R5308750
Lithium (Li)-Total	0.0051		0.0010	mg/L		06-DEC-20	R5308750
Magnesium (Mg)-Total	18.4		0.10	mg/L		06-DEC-20	R5308750
Manganese (Mn)-Total	0.0292		0.00010	mg/L		06-DEC-20	R5308750
Molybdenum (Mo)-Total	0.00349		0.000050	mg/L		06-DEC-20	R5308750
Nickel (Ni)-Total	0.00130		0.00050	mg/L		06-DEC-20	R5308750
Potassium (K)-Total	1.50		0.050	mg/L		06-DEC-20	R5308750
Selenium (Se)-Total	<0.050		0.050	ug/L		06-DEC-20	R5308750
Silicon (Si)-Total	3.52		0.10	mg/L		06-DEC-20	R5308750
Silver (Ag)-Total	<0.000010		0.000010	mg/L		06-DEC-20	R5308750
Sodium (Na)-Total	1.07		0.050	mg/L		06-DEC-20	R5308750
Strontium (Sr)-Total	0.0461		0.00020	mg/L		06-DEC-20	R5308750
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		06-DEC-20	R5308750
Tin (Sn)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Titanium (Ti)-Total	<0.010		0.010	mg/L		06-DEC-20	R5308750
Uranium (U)-Total	0.000537		0.000010	mg/L		06-DEC-20	R5308750
Vanadium (V)-Total	<0.00050		0.00050	mg/L		06-DEC-20	R5308750
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		06-DEC-20	R5308750
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.1		1.0	mg/L		04-DEC-20	R5307819
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		04-DEC-20	R5307878
Ammonia, Total (as N)							
Ammonia as N	0.0075		0.0050	mg/L		04-DEC-20	R5308341
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		03-DEC-20	R5307797
Chloride in Water by IC							
Chloride (Cl)	0.15		0.10	mg/L		03-DEC-20	R5307797
Electrical Conductivity (EC)							
Conductivity (@ 25C)	321		2.0	uS/cm		04-DEC-20	R5307878
Fluoride in Water by IC							
Fluoride (F)	0.159		0.020	mg/L		03-DEC-20	R5307797
Ion Balance Calculation							
Cation - Anion Balance	-2.9			%		07-DEC-20	
Anion Sum	4.14			meq/L		07-DEC-20	
Cation Sum	3.91			meq/L		07-DEC-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-1 LC_PIZDC1404S_WG_Q4-2020_NP Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 11:15 Matrix: WG							
Ion Balance Calculation							
Ion Balance	94.3		-100	%		07-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		03-DEC-20	R5307797
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		03-DEC-20	R5307797
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-DEC-20	R5306317
Oxidation redution potential by elect.							
ORP	458		-1000	mV		03-DEC-20	R5306322
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC							
Sulfate (SO4)	4.20		0.30	mg/L		03-DEC-20	R5307797
Total Dissolved Solids							
Total Dissolved Solids	194	DLHC	20	mg/L		09-DEC-20	R5310138
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		09-DEC-20	R5310076
Turbidity							
Turbidity	7.33		0.10	NTU		03-DEC-20	R5306330
pH							
pH	8.06		0.10	pH		04-DEC-20	R5307878
L2536431-2 LC_PIZDC1404D_WG_Q4-2020_NP Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 12:40 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	534		5.0	mg/L		04-DEC-20	R5307878
Carbonate (CO3)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Dissolved Organic Carbon	1.85		0.50	mg/L		07-DEC-20	R5309538
Hydroxide (OH)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Total Kjeldahl Nitrogen	2.31		0.050	mg/L		05-DEC-20	R5308435
Total Organic Carbon	7.12		0.50	mg/L		07-DEC-20	R5309538
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	06-DEC-20	R5308750
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5309695
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	06-DEC-20	R5308750
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Arsenic (As)-Dissolved	0.00325		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Barium (Ba)-Dissolved	4.48		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Boron (B)-Dissolved	0.025		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-DEC-20	06-DEC-20	R5308750
Calcium (Ca)-Dissolved	59.9		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	06-DEC-20	06-DEC-20	R5308750
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-2 LC_PIZDC1404D_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 12:40							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Iron (Fe)-Dissolved	3.08		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Lithium (Li)-Dissolved	0.583		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Magnesium (Mg)-Dissolved	38.4		0.10	mg/L	06-DEC-20	06-DEC-20	R5308750
Manganese (Mn)-Dissolved	0.0227		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Molybdenum (Mo)-Dissolved	0.0209		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Nickel (Ni)-Dissolved	<0.000050		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Potassium (K)-Dissolved	24.5		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-DEC-20	06-DEC-20	R5308750
Silicon (Si)-Dissolved	2.83		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Sodium (Na)-Dissolved	34.9		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Strontium (Sr)-Dissolved	0.237		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Uranium (U)-Dissolved	0.000082		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Hardness							
Hardness (as CaCO3)	308		0.50	mg/L		07-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		06-DEC-20	R5308750
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0236		0.0030	mg/L		06-DEC-20	R5308750
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Arsenic (As)-Total	0.00299		0.00010	mg/L		06-DEC-20	R5308750
Barium (Ba)-Total	4.30		0.00010	mg/L		06-DEC-20	R5308750
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		06-DEC-20	R5308750
Boron (B)-Total	0.026		0.010	mg/L		06-DEC-20	R5308750
Cadmium (Cd)-Total	0.0073		0.0050	ug/L		06-DEC-20	R5308750
Calcium (Ca)-Total	58.9		0.050	mg/L		06-DEC-20	R5308750
Chromium (Cr)-Total	0.00013		0.00010	mg/L		06-DEC-20	R5308750
Cobalt (Co)-Total	0.27		0.10	ug/L		06-DEC-20	R5308750
Copper (Cu)-Total	<0.00050		0.00050	mg/L		06-DEC-20	R5308750
Iron (Fe)-Total	3.23		0.010	mg/L		06-DEC-20	R5308750
Lead (Pb)-Total	<0.000050		0.000050	mg/L		06-DEC-20	R5308750
Lithium (Li)-Total	0.574		0.0010	mg/L		06-DEC-20	R5308750
Magnesium (Mg)-Total	38.6		0.10	mg/L		06-DEC-20	R5308750
Manganese (Mn)-Total	0.0229		0.00010	mg/L		06-DEC-20	R5308750
Molybdenum (Mo)-Total	0.0208		0.000050	mg/L		06-DEC-20	R5308750
Nickel (Ni)-Total	0.00063		0.00050	mg/L		06-DEC-20	R5308750
Potassium (K)-Total	24.0		0.050	mg/L		06-DEC-20	R5308750
Selenium (Se)-Total	<0.050		0.050	ug/L		06-DEC-20	R5308750
Silicon (Si)-Total	2.89		0.10	mg/L		06-DEC-20	R5308750
Silver (Ag)-Total	<0.000010		0.000010	mg/L		06-DEC-20	R5308750
Sodium (Na)-Total	34.2		0.050	mg/L		06-DEC-20	R5308750
Strontium (Sr)-Total	0.236		0.00020	mg/L		06-DEC-20	R5308750
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		06-DEC-20	R5308750
Tin (Sn)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Titanium (Ti)-Total	<0.010		0.010	mg/L		06-DEC-20	R5308750

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-2 LC_PIZDC1404D_WG_Q4-2020_NP Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 12:40 Matrix: WG							
Total Metals in Water by CRC ICPMS							
Uranium (U)-Total	0.000091		0.000010	mg/L		06-DEC-20	R5308750
Vanadium (V)-Total	<0.00050		0.00050	mg/L		06-DEC-20	R5308750
Zinc (Zn)-Total	0.0032		0.0030	mg/L		06-DEC-20	R5308750
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307819
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	438		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Carbonate (as CaCO3)	5.8		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Total (as CaCO3)	444		1.0	mg/L		04-DEC-20	R5307878
Ammonia, Total (as N)							
Ammonia as N	2.31	DLHC	0.050	mg/L		04-DEC-20	R5308341
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		03-DEC-20	R5307797
Chloride in Water by IC							
Chloride (Cl)	0.35		0.10	mg/L		03-DEC-20	R5307797
Electrical Conductivity (EC)							
Conductivity (@ 25C)	655		2.0	uS/cm		04-DEC-20	R5307878
Fluoride in Water by IC							
Fluoride (F)	0.239		0.020	mg/L		03-DEC-20	R5307797
Ion Balance Calculation							
Ion Balance	97.0		-100	%		07-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.5			%		07-DEC-20	
Anion Sum	8.89			meq/L		07-DEC-20	
Cation Sum	8.62			meq/L		07-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		03-DEC-20	R5307797
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		03-DEC-20	R5307797
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-DEC-20	R5306317
Oxidation redution potential by elect.							
ORP	433		-1000	mV		03-DEC-20	R5306322
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0193		0.0020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		03-DEC-20	R5307797
Total Dissolved Solids							
Total Dissolved Solids	383	DLHC	20	mg/L		09-DEC-20	R5310138
Total Suspended Solids							
Total Suspended Solids	6.3		1.0	mg/L		09-DEC-20	R5310076
Turbidity							
Turbidity	35.6		0.10	NTU		03-DEC-20	R5306330
pH							
pH	8.30		0.10	pH		04-DEC-20	R5307878
L2536431-3 LC_PIZDC1306_WG_Q4-2020_NP Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 13:40 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	327		5.0	mg/L		04-DEC-20	R5307878

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-3 LC_PIZDC1306_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 13:40							
Matrix: WG							
Carbonate (CO3)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Dissolved Organic Carbon	2.03		0.50	mg/L		07-DEC-20	R5309538
Hydroxide (OH)	<5.0		5.0	mg/L		04-DEC-20	R5307878
Total Kjeldahl Nitrogen	0.173		0.050	mg/L		05-DEC-20	R5308435
Total Organic Carbon	1.88		0.50	mg/L		07-DEC-20	R5309538
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-DEC-20	06-DEC-20	R5308750
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	09-DEC-20	09-DEC-20	R5309746
Dissolved Mercury Filtration Location	FIELD					09-DEC-20	R5309695
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-DEC-20	R5308520
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-DEC-20	06-DEC-20	R5308750
Antimony (Sb)-Dissolved	0.00020		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Barium (Ba)-Dissolved	0.181		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Boron (B)-Dissolved	0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cadmium (Cd)-Dissolved	0.111		0.0050	ug/L	06-DEC-20	06-DEC-20	R5308750
Calcium (Ca)-Dissolved	64.1		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-DEC-20	06-DEC-20	R5308750
Copper (Cu)-Dissolved	0.00055		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Lithium (Li)-Dissolved	0.0110		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Magnesium (Mg)-Dissolved	24.8		0.10	mg/L	06-DEC-20	06-DEC-20	R5308750
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Molybdenum (Mo)-Dissolved	0.00210		0.000050	mg/L	06-DEC-20	06-DEC-20	R5308750
Nickel (Ni)-Dissolved	0.00114		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Potassium (K)-Dissolved	2.13		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Selenium (Se)-Dissolved	3.86		0.050	ug/L	06-DEC-20	06-DEC-20	R5308750
Silicon (Si)-Dissolved	3.00		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Sodium (Na)-Dissolved	0.771		0.050	mg/L	06-DEC-20	06-DEC-20	R5308750
Strontium (Sr)-Dissolved	0.0709		0.00020	mg/L	06-DEC-20	06-DEC-20	R5308750
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-DEC-20	06-DEC-20	R5308750
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-DEC-20	06-DEC-20	R5308750
Uranium (U)-Dissolved	0.000779		0.000010	mg/L	06-DEC-20	06-DEC-20	R5308750
Vanadium (V)-Dissolved	0.00056		0.00050	mg/L	06-DEC-20	06-DEC-20	R5308750
Zinc (Zn)-Dissolved	0.0041		0.0010	mg/L	06-DEC-20	06-DEC-20	R5308750
Hardness							
Hardness (as CaCO3)	262		0.50	mg/L		07-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		06-DEC-20	R5308750
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0702		0.0030	mg/L		06-DEC-20	R5308750
Antimony (Sb)-Total	0.00022		0.00010	mg/L		06-DEC-20	R5308750

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-3 LC_PIZDC1306_WG_Q4-2020_NP							
Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 13:40							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Barium (Ba)-Total	0.173		0.00010	mg/L		06-DEC-20	R5308750
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		06-DEC-20	R5308750
Boron (B)-Total	0.010		0.010	mg/L		06-DEC-20	R5308750
Cadmium (Cd)-Total	0.160		0.0050	ug/L		06-DEC-20	R5308750
Calcium (Ca)-Total	64.4		0.050	mg/L		06-DEC-20	R5308750
Chromium (Cr)-Total	0.00025		0.00010	mg/L		06-DEC-20	R5308750
Cobalt (Co)-Total	<0.10		0.10	ug/L		06-DEC-20	R5308750
Copper (Cu)-Total	0.00100		0.00050	mg/L		06-DEC-20	R5308750
Iron (Fe)-Total	0.076		0.010	mg/L		06-DEC-20	R5308750
Lead (Pb)-Total	0.000080		0.000050	mg/L		06-DEC-20	R5308750
Lithium (Li)-Total	0.0108		0.0010	mg/L		06-DEC-20	R5308750
Magnesium (Mg)-Total	24.3		0.10	mg/L		06-DEC-20	R5308750
Manganese (Mn)-Total	0.00231		0.00010	mg/L		06-DEC-20	R5308750
Molybdenum (Mo)-Total	0.00198		0.000050	mg/L		06-DEC-20	R5308750
Nickel (Ni)-Total	0.00139		0.00050	mg/L		06-DEC-20	R5308750
Potassium (K)-Total	2.08		0.050	mg/L		06-DEC-20	R5308750
Selenium (Se)-Total	3.42		0.050	ug/L		06-DEC-20	R5308750
Silicon (Si)-Total	3.10		0.10	mg/L		06-DEC-20	R5308750
Silver (Ag)-Total	<0.000010		0.000010	mg/L		06-DEC-20	R5308750
Sodium (Na)-Total	0.746		0.050	mg/L		06-DEC-20	R5308750
Strontium (Sr)-Total	0.0724		0.00020	mg/L		06-DEC-20	R5308750
Thallium (Tl)-Total	0.000015		0.000010	mg/L		06-DEC-20	R5308750
Tin (Sn)-Total	<0.00010		0.00010	mg/L		06-DEC-20	R5308750
Titanium (Ti)-Total	<0.010		0.010	mg/L		06-DEC-20	R5308750
Uranium (U)-Total	0.000854		0.000010	mg/L		06-DEC-20	R5308750
Vanadium (V)-Total	0.00112		0.00050	mg/L		06-DEC-20	R5308750
Zinc (Zn)-Total	0.0106		0.0030	mg/L		06-DEC-20	R5308750
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.3		1.0	mg/L		04-DEC-20	R5307819
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	268		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-DEC-20	R5307878
Alkalinity, Total (as CaCO3)	268		1.0	mg/L		04-DEC-20	R5307878
Ammonia, Total (as N)							
Ammonia as N	0.0161		0.0050	mg/L		04-DEC-20	R5308341
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		03-DEC-20	R5307797
Chloride in Water by IC							
Chloride (Cl)	0.12		0.10	mg/L		03-DEC-20	R5307797
Electrical Conductivity (EC)							
Conductivity (@ 25C)	423		2.0	uS/cm		04-DEC-20	R5307878
Fluoride in Water by IC							
Fluoride (F)	0.168		0.020	mg/L		03-DEC-20	R5307797
Ion Balance Calculation							
Ion Balance	96.8		-100	%		07-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.6			%		07-DEC-20	
Anion Sum	5.51			meq/L		07-DEC-20	
Cation Sum	5.33			meq/L		07-DEC-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2536431-3 LC_PIZDC1306_WG_Q4-2020_NP Sampled By: S.FOSSEN/D.TYMSTRA on 02-DEC-20 @ 13:40 Matrix: WG							
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.134		0.0050	mg/L		03-DEC-20	R5307797
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		03-DEC-20	R5307797
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0026		0.0010	mg/L		03-DEC-20	R5306317
Oxidation redution potential by elect. ORP	495		-1000	mV		03-DEC-20	R5306322
Phosphorus (P)-Total Phosphorus (P)-Total	0.0047		0.0020	mg/L		08-DEC-20	R5309431
Sulfate in Water by IC Sulfate (SO4)	5.88		0.30	mg/L		03-DEC-20	R5307797
Total Dissolved Solids Total Dissolved Solids	256	DLHC	20	mg/L		09-DEC-20	R5310138
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		09-DEC-20	R5310076
Turbidity Turbidity	1.10		0.10	NTU		03-DEC-20	R5306330
pH pH	8.04		0.10	pH		04-DEC-20	R5307878

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2536431

Report Date: 26-FEB-21

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5307819							
WG3456838-2	LCS							
Acidity (as CaCO3)			105.5		%		85-115	04-DEC-20
WG3456838-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	04-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5307878							
WG3456782-2	LCS							
Alkalinity, Total (as CaCO3)			103.0		%		85-115	04-DEC-20
WG3456782-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5308750							
WG3457331-2	LCS							
Beryllium (Be)-Dissolved			95.4		%		80-120	06-DEC-20
WG3457331-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-DEC-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5308750							
WG3457365-3	DUP	L2536431-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-DEC-20
WG3457365-2	LCS							
Beryllium (Be)-Total			98.1		%		80-120	06-DEC-20
WG3457365-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	06-DEC-20
WG3457365-4	MS	L2536431-2						
Beryllium (Be)-Total			101.3		%		70-130	06-DEC-20
BIC-CL								
	Water							
Batch	R5307878							
WG3456782-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5307797							
WG3456989-2	LCS							
Bromide (Br)			99.1		%		85-115	03-DEC-20
WG3456989-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	03-DEC-20



Quality Control Report

Workorder: L2536431

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5309538							
WG3458251-3	DUP	L2536431-3						
Dissolved Organic Carbon		2.03	2.00		mg/L	1.3	20	07-DEC-20
WG3458251-2	LCS							
Dissolved Organic Carbon			103.8		%		80-120	07-DEC-20
WG3458251-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-DEC-20
WG3458251-4	MS	L2536431-3						
Dissolved Organic Carbon			101.3		%		70-130	07-DEC-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5309538							
WG3458251-3	DUP	L2536431-3						
Total Organic Carbon		1.88	1.92		mg/L	2.1	20	07-DEC-20
WG3458251-2	LCS							
Total Organic Carbon			111.2		%		80-120	07-DEC-20
WG3458251-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-DEC-20
WG3458251-4	MS	L2536431-3						
Total Organic Carbon			113.7		%		70-130	07-DEC-20
CL-L-IC-N-CL								
	Water							
Batch	R5307797							
WG3456989-2	LCS							
Chloride (Cl)			103.8		%		85-115	03-DEC-20
WG3456989-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	03-DEC-20
CO3-CL								
	Water							
Batch	R5307878							
WG3456782-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	04-DEC-20
EC-L-PCT-CL								
	Water							
Batch	R5307878							
WG3456782-2	LCS							
Conductivity (@ 25C)			97.5		%		90-110	04-DEC-20
WG3456782-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-DEC-20
F-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
	Water							
Batch	R5307797							
WG3456989-2	LCS							
Fluoride (F)			106.1		%		90-110	03-DEC-20
WG3456989-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	03-DEC-20
HG-D-CVAA-VA								
	Water							
Batch	R5309746							
WG3458817-2	LCS							
Mercury (Hg)-Dissolved			96.6		%		80-120	09-DEC-20
WG3458817-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5308750							
WG3457331-2	LCS							
Aluminum (Al)-Dissolved			97.7		%		80-120	06-DEC-20
Antimony (Sb)-Dissolved			104.2		%		80-120	06-DEC-20
Arsenic (As)-Dissolved			99.3		%		80-120	06-DEC-20
Barium (Ba)-Dissolved			99.0		%		80-120	06-DEC-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	06-DEC-20
Boron (B)-Dissolved			93.5		%		80-120	06-DEC-20
Cadmium (Cd)-Dissolved			96.5		%		80-120	06-DEC-20
Calcium (Ca)-Dissolved			96.6		%		80-120	06-DEC-20
Chromium (Cr)-Dissolved			99.99		%		80-120	06-DEC-20
Cobalt (Co)-Dissolved			96.9		%		80-120	06-DEC-20
Copper (Cu)-Dissolved			96.8		%		80-120	06-DEC-20
Iron (Fe)-Dissolved			95.1		%		80-120	06-DEC-20
Lead (Pb)-Dissolved			98.1		%		80-120	06-DEC-20
Lithium (Li)-Dissolved			92.3		%		80-120	06-DEC-20
Magnesium (Mg)-Dissolved			100.7		%		80-120	06-DEC-20
Manganese (Mn)-Dissolved			98.4		%		80-120	06-DEC-20
Molybdenum (Mo)-Dissolved			99.6		%		80-120	06-DEC-20
Nickel (Ni)-Dissolved			96.0		%		80-120	06-DEC-20
Potassium (K)-Dissolved			101.1		%		80-120	06-DEC-20
Selenium (Se)-Dissolved			96.4		%		80-120	06-DEC-20
Silicon (Si)-Dissolved			97.8		%		60-140	06-DEC-20
Silver (Ag)-Dissolved			95.4		%		80-120	06-DEC-20
Sodium (Na)-Dissolved			107.3		%		80-120	06-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5308750							
WG3457331-2	LCS							
Strontium (Sr)-Dissolved			101.7		%		80-120	06-DEC-20
Thallium (Tl)-Dissolved			98.2		%		80-120	06-DEC-20
Tin (Sn)-Dissolved			93.6		%		80-120	06-DEC-20
Titanium (Ti)-Dissolved			100.4		%		80-120	06-DEC-20
Uranium (U)-Dissolved			94.3		%		80-120	06-DEC-20
Vanadium (V)-Dissolved			100.6		%		80-120	06-DEC-20
Zinc (Zn)-Dissolved			95.3		%		80-120	06-DEC-20
WG3457331-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5308750							
WG3457331-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-DEC-20
MET-T-CCMS-VA								
	Water							
Batch	R5308750							
WG3457365-3	DUP	L2536431-1						
Aluminum (Al)-Total		0.0061	0.0058		mg/L	6.4	20	06-DEC-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-20
Arsenic (As)-Total		0.00218	0.00220		mg/L	0.6	20	06-DEC-20
Barium (Ba)-Total		0.234	0.245		mg/L	4.8	20	06-DEC-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-DEC-20
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-DEC-20
Calcium (Ca)-Total		47.8	48.7		mg/L	1.8	20	06-DEC-20
Cobalt (Co)-Total		0.00031	0.00031		mg/L	1.1	20	06-DEC-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-DEC-20
Iron (Fe)-Total		1.07	1.07		mg/L	0.2	20	06-DEC-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-20
Lithium (Li)-Total		0.0051	0.0051		mg/L	0.6	20	06-DEC-20
Magnesium (Mg)-Total		18.4	18.2		mg/L	0.8	20	06-DEC-20
Manganese (Mn)-Total		0.0292	0.0295		mg/L	1.0	20	06-DEC-20
Molybdenum (Mo)-Total		0.00349	0.00349		mg/L	0.0	20	06-DEC-20
Nickel (Ni)-Total		0.00130	0.00129		mg/L	0.4	20	06-DEC-20
Potassium (K)-Total		1.50	1.53		mg/L	1.9	20	06-DEC-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-DEC-20
Silicon (Si)-Total		3.52	3.56		mg/L	1.1	20	06-DEC-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-DEC-20
Sodium (Na)-Total		1.07	1.07		mg/L	0.3	20	06-DEC-20
Strontium (Sr)-Total		0.0461	0.0468		mg/L	1.4	20	06-DEC-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-DEC-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-DEC-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-DEC-20
Uranium (U)-Total		0.000537	0.000540		mg/L	0.5	20	06-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5308750							
WG3457365-3	DUP	L2536431-1						
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-DEC-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	06-DEC-20
WG3457365-2	LCS							
Aluminum (Al)-Total			102.7		%		80-120	06-DEC-20
Antimony (Sb)-Total			103.2		%		80-120	06-DEC-20
Arsenic (As)-Total			98.7		%		80-120	06-DEC-20
Barium (Ba)-Total			98.3		%		80-120	06-DEC-20
Bismuth (Bi)-Total			97.6		%		80-120	06-DEC-20
Boron (B)-Total			94.2		%		80-120	06-DEC-20
Cadmium (Cd)-Total			95.8		%		80-120	06-DEC-20
Calcium (Ca)-Total			95.7		%		80-120	06-DEC-20
Chromium (Cr)-Total			99.7		%		80-120	06-DEC-20
Cobalt (Co)-Total			95.1		%		80-120	06-DEC-20
Copper (Cu)-Total			97.1		%		80-120	06-DEC-20
Iron (Fe)-Total			94.3		%		80-120	06-DEC-20
Lead (Pb)-Total			96.4		%		80-120	06-DEC-20
Lithium (Li)-Total			95.3		%		80-120	06-DEC-20
Magnesium (Mg)-Total			99.3		%		80-120	06-DEC-20
Manganese (Mn)-Total			95.7		%		80-120	06-DEC-20
Molybdenum (Mo)-Total			100.0		%		80-120	06-DEC-20
Nickel (Ni)-Total			95.4		%		80-120	06-DEC-20
Potassium (K)-Total			100.1		%		80-120	06-DEC-20
Selenium (Se)-Total			97.7		%		80-120	06-DEC-20
Silicon (Si)-Total			97.4		%		80-120	06-DEC-20
Silver (Ag)-Total			95.0		%		80-120	06-DEC-20
Sodium (Na)-Total			105.3		%		80-120	06-DEC-20
Strontium (Sr)-Total			96.9		%		80-120	06-DEC-20
Thallium (Tl)-Total			99.1		%		80-120	06-DEC-20
Tin (Sn)-Total			93.8		%		80-120	06-DEC-20
Titanium (Ti)-Total			95.3		%		80-120	06-DEC-20
Uranium (U)-Total			91.7		%		80-120	06-DEC-20
Vanadium (V)-Total			99.2		%		80-120	06-DEC-20
Zinc (Zn)-Total			92.7		%		80-120	06-DEC-20
WG3457365-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5308750							
WG3457365-1	MB							
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	06-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	06-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	06-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	06-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-DEC-20
Silicon (Si)-Total			<0.10		mg/L		0.1	06-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	06-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	06-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	06-DEC-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	06-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-DEC-20
WG3457365-4	MS	L2536431-2						
Aluminum (Al)-Total			93.9		%		70-130	06-DEC-20
Antimony (Sb)-Total			99.6		%		70-130	06-DEC-20
Arsenic (As)-Total			99.0		%		70-130	06-DEC-20
Barium (Ba)-Total			N/A	MS-B	%		-	06-DEC-20



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MET-T-CCMS-VA								
	Water							
Batch	R5308750							
WG3457365-4 MS		L2536431-2						
Bismuth (Bi)-Total			88.5		%		70-130	06-DEC-20
Boron (B)-Total			111.8		%		70-130	06-DEC-20
Cadmium (Cd)-Total			97.3		%		70-130	06-DEC-20
Calcium (Ca)-Total			N/A	MS-B	%		-	06-DEC-20
Chromium (Cr)-Total			98.8		%		70-130	06-DEC-20
Cobalt (Co)-Total			92.2		%		70-130	06-DEC-20
Copper (Cu)-Total			93.2		%		70-130	06-DEC-20
Iron (Fe)-Total			N/A	MS-B	%		-	06-DEC-20
Lead (Pb)-Total			88.1		%		70-130	06-DEC-20
Lithium (Li)-Total			N/A	MS-B	%		-	06-DEC-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	06-DEC-20
Manganese (Mn)-Total			N/A	MS-B	%		-	06-DEC-20
Molybdenum (Mo)-Total			N/A	MS-B	%		-	06-DEC-20
Nickel (Ni)-Total			92.5		%		70-130	06-DEC-20
Potassium (K)-Total			N/A	MS-B	%		-	06-DEC-20
Selenium (Se)-Total			101.4		%		70-130	06-DEC-20
Silicon (Si)-Total			92.5		%		70-130	06-DEC-20
Silver (Ag)-Total			94.2		%		70-130	06-DEC-20
Sodium (Na)-Total			N/A	MS-B	%		-	06-DEC-20
Strontium (Sr)-Total			N/A	MS-B	%		-	06-DEC-20
Thallium (Tl)-Total			86.5		%		70-130	06-DEC-20
Tin (Sn)-Total			96.5		%		70-130	06-DEC-20
Titanium (Ti)-Total			99.99		%		70-130	06-DEC-20
Uranium (U)-Total			92.8		%		70-130	06-DEC-20
Vanadium (V)-Total			100.1		%		70-130	06-DEC-20
Zinc (Zn)-Total			91.5		%		70-130	06-DEC-20
Batch	R5309041							
WG3457752-3 DUP		L2536431-1						
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Arsenic (As)-Total		0.00218	0.00211		mg/L	1.5	20	07-DEC-20
Barium (Ba)-Total		0.234	0.236		mg/L	2.7	20	07-DEC-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-DEC-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-DEC-20
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-DEC-20



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MET-T-CCMS-VA								
	Water							
Batch	R5309041							
WG3457752-3 DUP		L2536431-1						
Calcium (Ca)-Total		47.8	50.3		mg/L	0.4	20	07-DEC-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Cobalt (Co)-Total		0.00031	0.00031		mg/L	2.8	20	07-DEC-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-DEC-20
Iron (Fe)-Total		1.07	1.09		mg/L	1.9	20	07-DEC-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-DEC-20
Lithium (Li)-Total		0.0051	0.0049		mg/L	1.3	20	07-DEC-20
Magnesium (Mg)-Total		18.4	17.3		mg/L	2.6	20	07-DEC-20
Manganese (Mn)-Total		0.0292	0.0288		mg/L	0.9	20	07-DEC-20
Molybdenum (Mo)-Total		0.00349	0.00345		mg/L	1.0	20	07-DEC-20
Nickel (Ni)-Total		0.00130	0.00131		mg/L	0.4	20	07-DEC-20
Potassium (K)-Total		1.50	1.44		mg/L	1.8	20	07-DEC-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-DEC-20
Silicon (Si)-Total		3.52	3.50		mg/L	2.0	20	07-DEC-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-DEC-20
Sodium (Na)-Total		1.07	1.02		mg/L	2.7	20	07-DEC-20
Strontium (Sr)-Total		0.0461	0.0480		mg/L	3.6	20	07-DEC-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-DEC-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-DEC-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-DEC-20
Uranium (U)-Total		0.000537	0.000524		mg/L	0.7	20	07-DEC-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-DEC-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	07-DEC-20
WG3457752-2 LCS								
Aluminum (Al)-Total			102.7		%		80-120	07-DEC-20
Antimony (Sb)-Total			109.6		%		80-120	07-DEC-20
Arsenic (As)-Total			100.8		%		80-120	07-DEC-20
Barium (Ba)-Total			105.2		%		80-120	07-DEC-20
Bismuth (Bi)-Total			103.7		%		80-120	07-DEC-20
Boron (B)-Total			99.99		%		80-120	07-DEC-20
Cadmium (Cd)-Total			98.6		%		80-120	07-DEC-20
Calcium (Ca)-Total			104.5		%		80-120	07-DEC-20
Chromium (Cr)-Total			102.1		%		80-120	07-DEC-20
Cobalt (Co)-Total			100.9		%		80-120	07-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5309041							
WG3457752-2	LCS							
Copper (Cu)-Total			98.5		%		80-120	07-DEC-20
Iron (Fe)-Total			99.1		%		80-120	07-DEC-20
Lead (Pb)-Total			104.4		%		80-120	07-DEC-20
Lithium (Li)-Total			97.8		%		80-120	07-DEC-20
Magnesium (Mg)-Total			102.6		%		80-120	07-DEC-20
Manganese (Mn)-Total			99.4		%		80-120	07-DEC-20
Molybdenum (Mo)-Total			103.6		%		80-120	07-DEC-20
Nickel (Ni)-Total			101.1		%		80-120	07-DEC-20
Potassium (K)-Total			100.6		%		80-120	07-DEC-20
Selenium (Se)-Total			99.97		%		80-120	07-DEC-20
Silicon (Si)-Total			103.6		%		80-120	07-DEC-20
Silver (Ag)-Total			99.0		%		80-120	07-DEC-20
Sodium (Na)-Total			107.5		%		80-120	07-DEC-20
Strontium (Sr)-Total			100.7		%		80-120	07-DEC-20
Thallium (Tl)-Total			104.1		%		80-120	07-DEC-20
Tin (Sn)-Total			97.2		%		80-120	07-DEC-20
Titanium (Ti)-Total			100.2		%		80-120	07-DEC-20
Uranium (U)-Total			97.8		%		80-120	07-DEC-20
Vanadium (V)-Total			103.0		%		80-120	07-DEC-20
Zinc (Zn)-Total			106.2		%		80-120	07-DEC-20
WG3457752-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	07-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	07-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	07-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5309041							
WG3457752-1	MB							
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	07-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-DEC-20
Silicon (Si)-Total			<0.10		mg/L		0.1	07-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	07-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-DEC-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-DEC-20
NH3-L-F-CL		Water						
Batch	R5308341							
WG3457173-2	LCS							
Ammonia as N			112.1		%		85-115	04-DEC-20
WG3457173-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-DEC-20
NO2-L-IC-N-CL		Water						
Batch	R5307797							
WG3456989-2	LCS							
Nitrite (as N)			104.3		%		90-110	03-DEC-20
WG3456989-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	03-DEC-20
NO3-L-IC-N-CL		Water						
Batch	R5307797							
WG3456989-2	LCS							
Nitrate (as N)			104.4		%		90-110	03-DEC-20
WG3456989-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	03-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5310138							
WG3458892-4 MB								
Total Dissolved Solids			<10		mg/L		10	09-DEC-20
TKN-L-F-CL		Water						
Batch	R5308435							
WG3457290-12 LCS								
Total Kjeldahl Nitrogen			110.3		%		75-125	05-DEC-20
WG3457290-14 LCS								
Total Kjeldahl Nitrogen			88.2		%		75-125	05-DEC-20
WG3457290-16 LCS								
Total Kjeldahl Nitrogen			87.0		%		75-125	05-DEC-20
WG3457290-2 LCS								
Total Kjeldahl Nitrogen			87.6		%		75-125	05-DEC-20
WG3457290-4 LCS								
Total Kjeldahl Nitrogen			85.9		%		75-125	05-DEC-20
WG3457290-6 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	05-DEC-20
WG3457290-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-15 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
TSS-L-CL		Water						
Batch	R5310076							
WG3458891-6 LCS								
Total Suspended Solids			105.3		%		85-115	09-DEC-20
WG3458891-5 MB								
Total Suspended Solids			<1.0		mg/L		1	09-DEC-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5306330							
WG3455996-21	LCS							
Turbidity			97.9		%		85-115	03-DEC-20
WG3455996-20	MB							
Turbidity			<0.10		NTU		0.1	03-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	02-DEC-20 11:15	03-DEC-20 14:30	0.25	27	hours	EHTR-FM
	2	02-DEC-20 12:40	03-DEC-20 14:30	0.25	26	hours	EHTR-FM
	3	02-DEC-20 13:40	03-DEC-20 14:30	0.25	25	hours	EHTR-FM
pH	1	02-DEC-20 11:15	04-DEC-20 09:00	0.25	46	hours	EHTR-FM
	2	02-DEC-20 12:40	04-DEC-20 09:00	0.25	44	hours	EHTR-FM
	3	02-DEC-20 13:40	04-DEC-20 09:00	0.25	43	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2536431 were received on 03-DEC-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: DC_GW_2021202		TURNAROUND TIME:				RUSH:									
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO							
Facility Name / Job#		Line Creek Operation		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Project Manager		Chris Blurton		Lab Contact		Lyudmyla Shvets		Email 1:		chris.blurton@teck.com	x	x			
Email		chris.blurton@teck.com		Email		Lyudmyla.Shvets@ALSGlobal.com		Email 2:		teckcoal@equisonline.com		x			
Address		Box 2003		Address		2559 29 Street NE		Email 3:		drake.tymstra@teck.com	x	x			
		15km North Hwy 43						Email 4:		shanise.fossen@teck.com	x	x			
City		Sparwood		Province		BC		City		Calgary		Province		AB	
Postal Code		V0B 2G0		Country		Canada		Postal Code		T1Y 7B5		Country		Canada	
Phone Number		250-425-8478		Phone Number		403 407 1794		PO number		VPO00680643					

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	N	Y	Y	N	Y	N	N	N	N	N	NaOH/Zn Ac
								PREP											
								ANALYSIS											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	2-Dec	<i>[Signature]</i>	12/3 906

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	S. Fossen/D. Tymstra		Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	S Fossen		Date/Time
Emergency (1 Business Day) - 100% surcharge				December 2, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



L2536431-COFC



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 11-DEC-20
Report Date: 26-FEB-21 14:38 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2539710
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: DC_GW_20201210
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:20

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2539710-1 to L2539710-4.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-1 LC_PIZP1105_WG_Q4-2020_N							
Sampled By: SF/DT on 10-DEC-20 @ 12:50							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	430		5.0	mg/L		17-DEC-20	R5319497
Carbonate (CO3)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Dissolved Organic Carbon	1.00		0.50	mg/L		18-DEC-20	R5319713
Hydroxide (OH)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Total Kjeldahl Nitrogen	0.63	DLM	0.10	mg/L		15-DEC-20	R5317701
Total Organic Carbon	7.1	DLM	5.0	mg/L		18-DEC-20	R5319713
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	15-DEC-20	15-DEC-20	R5317735
EPH19-32	<0.25		0.25	mg/L	15-DEC-20	15-DEC-20	R5317735
Surrogate: 2-Bromobenzotrifluoride	97.8		60-140	%	15-DEC-20	15-DEC-20	R5317735
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		15-DEC-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	15-DEC-20	15-DEC-20	R5317735
Surrogate: 2-Bromobenzotrifluoride	97.8		60-140	%	15-DEC-20	15-DEC-20	R5317735
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	16-DEC-20	16-DEC-20	R5317857
Dissolved Mercury Filtration Location	FIELD					16-DEC-20	R5317816
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	0.0052		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	0.103		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	0.020		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	0.0992		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	188		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	0.0190		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	55.1		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	0.0507		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	0.000250		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	0.00169		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	1.95		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	0.199		0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	4.99		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	15.5		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	0.417		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	0.000019		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	0.00040		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-1 LC_PIZP1105_WG_Q4-2020_N							
Sampled By: SF/DT on 10-DEC-20 @ 12:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Uranium (U)-Dissolved	0.000348		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	0.0527		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Hardness							
Hardness (as CaCO3)	696		0.50	mg/L		17-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.663		0.020	ug/L		17-DEC-20	R5318934
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000614		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	9.23		0.0030	mg/L		17-DEC-20	R5318934
Antimony (Sb)-Total	0.00081		0.00010	mg/L		17-DEC-20	R5318934
Arsenic (As)-Total	0.00709		0.00010	mg/L		17-DEC-20	R5318934
Barium (Ba)-Total	0.484		0.00010	mg/L		17-DEC-20	R5318934
Bismuth (Bi)-Total	0.000186		0.000050	mg/L		17-DEC-20	R5318934
Boron (B)-Total	0.032		0.010	mg/L		17-DEC-20	R5318934
Cadmium (Cd)-Total	1.48		0.0050	ug/L		17-DEC-20	R5318934
Calcium (Ca)-Total	266		0.050	mg/L		17-DEC-20	R5318934
Chromium (Cr)-Total	0.0177		0.00010	mg/L		17-DEC-20	R5318934
Cobalt (Co)-Total	8.11		0.10	ug/L		17-DEC-20	R5318934
Copper (Cu)-Total	0.0206		0.00050	mg/L		17-DEC-20	R5318934
Iron (Fe)-Total	21.4		0.010	mg/L		17-DEC-20	R5318934
Lead (Pb)-Total	0.00839		0.000050	mg/L		17-DEC-20	R5318934
Lithium (Li)-Total	0.0359		0.0010	mg/L		17-DEC-20	R5318934
Magnesium (Mg)-Total	70.0		0.10	mg/L		17-DEC-20	R5318934
Manganese (Mn)-Total	1.31		0.00010	mg/L		17-DEC-20	R5318934
Molybdenum (Mo)-Total	0.00184		0.000050	mg/L		17-DEC-20	R5318934
Nickel (Ni)-Total	0.0231		0.00050	mg/L		17-DEC-20	R5318934
Potassium (K)-Total	4.48		0.050	mg/L		17-DEC-20	R5318934
Selenium (Se)-Total	0.757		0.050	ug/L		17-DEC-20	R5318934
Silicon (Si)-Total	17.1		0.10	mg/L		17-DEC-20	R5318934
Silver (Ag)-Total	0.000234		0.000010	mg/L		17-DEC-20	R5318934
Sodium (Na)-Total	14.9		0.050	mg/L		17-DEC-20	R5318934
Strontium (Sr)-Total	0.504		0.00020	mg/L		17-DEC-20	R5318934
Thallium (Tl)-Total	0.000510		0.000010	mg/L		17-DEC-20	R5318934
Tin (Sn)-Total	0.00108		0.00010	mg/L		17-DEC-20	R5318934
Titanium (Ti)-Total	0.038		0.010	mg/L		17-DEC-20	R5318934
Uranium (U)-Total	0.00125		0.000010	mg/L		17-DEC-20	R5318934
Vanadium (V)-Total	0.0268		0.00050	mg/L		17-DEC-20	R5318934
Zinc (Zn)-Total	0.139		0.0030	mg/L		17-DEC-20	R5318934
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	48.6		1.0	mg/L		17-DEC-20	R5319584
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	352		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Total (as CaCO3)	352		1.0	mg/L		17-DEC-20	R5319497
Ammonia, Total (as N)							
Ammonia as N	0.0304		0.0050	mg/L		18-DEC-20	R5319315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-1 LC_PIZP1105_WG_Q4-2020_N Sampled By: SF/DT on 10-DEC-20 @ 12:50 Matrix: WG							
Bromide in Water by IC (Low Level) Bromide (Br)	1.88	DLHC	0.25	mg/L		11-DEC-20	R5313337
Chloride in Water by IC Chloride (Cl)	155	DLHC	0.50	mg/L		11-DEC-20	R5313337
Electrical Conductivity (EC) Conductivity (@ 25C)	1060		2.0	uS/cm		17-DEC-20	R5319497
Fluoride in Water by IC Fluoride (F)	0.20	DLHC	0.10	mg/L		11-DEC-20	R5313337
Ion Balance Calculation Ion Balance	108		-100	%		18-DEC-20	
Ion Balance Calculation Cation - Anion Balance	3.7			%		18-DEC-20	
Anion Sum	13.6			meq/L		18-DEC-20	
Cation Sum	14.6			meq/L		18-DEC-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.074	DLHC	0.025	mg/L		11-DEC-20	R5313337
Nitrite in Water by IC (Low Level) Nitrite (as N)	0.0052	DLHC	0.0050	mg/L		11-DEC-20	R5313337
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0067		0.0010	mg/L		11-DEC-20	R5312789
Oxidation redution potential by elect. ORP	421		-1000	mV		18-DEC-20	R5319506
Phosphorus (P)-Total Phosphorus (P)-Total	1.77	DLM	0.20	mg/L		15-DEC-20	R5317617
Sulfate in Water by IC Sulfate (SO4)	104	DLHC	1.5	mg/L		11-DEC-20	R5313337
Total Dissolved Solids Total Dissolved Solids	859	DLHC	20	mg/L		17-DEC-20	R5319384
Total Suspended Solids Total Suspended Solids	1140		1.0	mg/L		17-DEC-20	R5319152
Turbidity Turbidity	821		0.10	NTU		12-DEC-20	R5313536
pH pH	7.69		0.10	pH		17-DEC-20	R5319497
L2539710-2 LC_PIZDC0901_WG_Q4-2020_NP Sampled By: SF/DT on 10-DEC-20 @ 11:15 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	417		5.0	mg/L		17-DEC-20	R5319497
Carbonate (CO3)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Dissolved Organic Carbon	3.49		0.50	mg/L		18-DEC-20	R5319713
Hydroxide (OH)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Total Kjeldahl Nitrogen	0.125		0.050	mg/L		15-DEC-20	R5317701
Total Organic Carbon	3.58		0.50	mg/L		18-DEC-20	R5319713
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	0.00041		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-2 LC_PIZDC0901_WG_Q4-2020_NP							
Sampled By: SF/DT on 10-DEC-20 @ 11:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Arsenic (As)-Dissolved	0.00034		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	0.279		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	0.127		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	113		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	0.00708		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	0.000436		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	0.0033		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	30.3		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	0.00557		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	0.000766		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	0.00113		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	1.49		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	1.87		0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	5.93		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	3.11		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	0.212		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Uranium (U)-Dissolved	0.00333		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	0.00051		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	0.0155		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Hardness							
Hardness (as CaCO3)	407		0.50	mg/L		16-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-20	R5318257
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.216		0.0030	mg/L		16-DEC-20	R5318257
Antimony (Sb)-Total	0.00042		0.00010	mg/L		16-DEC-20	R5318257
Arsenic (As)-Total	0.00052		0.00010	mg/L		16-DEC-20	R5318257
Barium (Ba)-Total	0.321		0.00010	mg/L		16-DEC-20	R5318257
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Boron (B)-Total	0.010		0.010	mg/L		16-DEC-20	R5318257
Cadmium (Cd)-Total	0.157		0.0050	ug/L		16-DEC-20	R5318257
Calcium (Ca)-Total	109		0.050	mg/L		16-DEC-20	R5318257
Chromium (Cr)-Total	0.00063		0.00010	mg/L		16-DEC-20	R5318257
Cobalt (Co)-Total	0.30		0.10	ug/L		16-DEC-20	R5318257
Copper (Cu)-Total	0.00836		0.00050	mg/L		16-DEC-20	R5318257
Iron (Fe)-Total	0.189		0.010	mg/L		16-DEC-20	R5318257
Lead (Pb)-Total	0.000748		0.000050	mg/L		16-DEC-20	R5318257
Lithium (Li)-Total	0.0035		0.0010	mg/L		16-DEC-20	R5318257
Magnesium (Mg)-Total	30.9		0.10	mg/L		16-DEC-20	R5318257
Manganese (Mn)-Total	0.0232		0.00010	mg/L		16-DEC-20	R5318257

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-2 LC_PIZDC0901_WG_Q4-2020_NP							
Sampled By: SF/DT on 10-DEC-20 @ 11:15							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Molybdenum (Mo)-Total	0.000887		0.000050	mg/L		16-DEC-20	R5318257
Nickel (Ni)-Total	0.00188		0.00050	mg/L		16-DEC-20	R5318257
Potassium (K)-Total	1.56		0.050	mg/L		16-DEC-20	R5318257
Selenium (Se)-Total	2.31		0.050	ug/L		16-DEC-20	R5318257
Silicon (Si)-Total	7.02		0.10	mg/L		16-DEC-20	R5318257
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Sodium (Na)-Total	3.47		0.050	mg/L		16-DEC-20	R5318257
Strontium (Sr)-Total	0.192		0.00020	mg/L		16-DEC-20	R5318257
Thallium (Tl)-Total	0.000019		0.000010	mg/L		16-DEC-20	R5318257
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Uranium (U)-Total	0.00317		0.000010	mg/L		16-DEC-20	R5318257
Vanadium (V)-Total	0.00178		0.00050	mg/L		16-DEC-20	R5318257
Zinc (Zn)-Total	0.0198		0.0030	mg/L		16-DEC-20	R5318257
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.9		1.0	mg/L		17-DEC-20	R5319584
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	342		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Total (as CaCO3)	342		1.0	mg/L		17-DEC-20	R5319497
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		18-DEC-20	R5319315
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		11-DEC-20	R5313337
Chloride in Water by IC							
Chloride (Cl)	0.79		0.10	mg/L		11-DEC-20	R5313337
Electrical Conductivity (EC)							
Conductivity (@ 25C)	596		2.0	uS/cm		17-DEC-20	R5319497
Fluoride in Water by IC							
Fluoride (F)	0.078		0.020	mg/L		11-DEC-20	R5313337
Ion Balance Calculation							
Ion Balance	116		-100	%		19-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	7.6			%		18-DEC-20	
Anion Sum	7.13			meq/L		18-DEC-20	
Cation Sum	8.30			meq/L		18-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0744		0.0050	mg/L		11-DEC-20	R5313337
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0014		0.0010	mg/L		11-DEC-20	R5313337
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0163		0.0010	mg/L		11-DEC-20	R5312789
Oxidation redution potential by elect.							
ORP	439		-1000	mV		18-DEC-20	R5319506
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0217		0.0020	mg/L		15-DEC-20	R5317617
Sulfate in Water by IC							
Sulfate (SO4)	12.8		0.30	mg/L		11-DEC-20	R5313337
Total Dissolved Solids							
Total Dissolved Solids	382	DLHC	20	mg/L		17-DEC-20	R5319384

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-2 LC_PIZDC0901_WG_Q4-2020_NP Sampled By: SF/DT on 10-DEC-20 @ 11:15 Matrix: WG							
Total Suspended Solids							
Total Suspended Solids	14.4		1.0	mg/L		17-DEC-20	R5319152
Turbidity							
Turbidity	11.4		0.10	NTU		12-DEC-20	R5313536
pH							
pH	8.11		0.10	pH		17-DEC-20	R5319497
L2539710-3 LC_Q4-2020_11 Sampled By: SF/DT on 10-DEC-20 @ 12:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Carbonate (CO3)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Dissolved Organic Carbon	<0.50		0.50	mg/L		18-DEC-20	R5319713
Hydroxide (OH)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		16-DEC-20	R5317701
Total Organic Carbon	<0.50		0.50	mg/L		18-DEC-20	R5319713
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	16-DEC-20	16-DEC-20	R5317857
Dissolved Mercury Filtration Location	FIELD					16-DEC-20	R5317816
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	<0.050		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-3 LC_Q4-2020_11							
Sampled By: SF/DT on 10-DEC-20 @ 12:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		16-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-20	R5318257
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		16-DEC-20	R5318257
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Arsenic (As)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Barium (Ba)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Boron (B)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-DEC-20	R5318257
Calcium (Ca)-Total	<0.050		0.050	mg/L		16-DEC-20	R5318257
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-DEC-20	R5318257
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Iron (Fe)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Lithium (Li)-Total	<0.0010		0.0010	mg/L		16-DEC-20	R5318257
Magnesium (Mg)-Total	<0.10		0.10	mg/L		16-DEC-20	R5318257
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Potassium (K)-Total	<0.050		0.050	mg/L		16-DEC-20	R5318257
Selenium (Se)-Total	<0.050		0.050	ug/L		16-DEC-20	R5318257
Silicon (Si)-Total	<0.10		0.10	mg/L		16-DEC-20	R5318257
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Sodium (Na)-Total	<0.050		0.050	mg/L		16-DEC-20	R5318257
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		16-DEC-20	R5318257
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Uranium (U)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-DEC-20	R5318257
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319584
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Ammonia, Total (as N)							
Ammonia as N	0.0114	RRV	0.0050	mg/L		18-DEC-20	R5319315
Bromide in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-3 LC_Q4-2020_11 Sampled By: SF/DT on 10-DEC-20 @ 12:50 Matrix: WG							
Bromide in Water by IC (Low Level) Bromide (Br)	<0.050		0.050	mg/L		11-DEC-20	R5313337
Chloride in Water by IC Chloride (Cl)	<0.10		0.10	mg/L		11-DEC-20	R5313337
Electrical Conductivity (EC) Conductivity (@ 25C)	<2.0		2.0	uS/cm		17-DEC-20	R5319497
Fluoride in Water by IC Fluoride (F)	<0.020		0.020	mg/L		11-DEC-20	R5313337
Ion Balance Calculation Cation - Anion Balance	0.0			%		18-DEC-20	
Anion Sum	<0.10			meq/L		18-DEC-20	
Cation Sum	<0.10			meq/L		18-DEC-20	
Ion Balance Calculation Ion Balance	0.0		-100	%		18-DEC-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	<0.0050		0.0050	mg/L		11-DEC-20	R5313337
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		11-DEC-20	R5313337
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		11-DEC-20	R5312789
Oxidation redution potential by elect. ORP	436		-1000	mV		18-DEC-20	R5319506
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		15-DEC-20	R5317617
Sulfate in Water by IC Sulfate (SO4)	<0.30		0.30	mg/L		11-DEC-20	R5313337
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		17-DEC-20	R5319384
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		17-DEC-20	R5319152
Turbidity Turbidity	<0.10		0.10	NTU		12-DEC-20	R5313536
pH pH	5.56		0.10	pH		17-DEC-20	R5319497
L2539710-4 LC_Q4-2020_13 Sampled By: SF/DT on 10-DEC-20 @ 12:50 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	481		5.0	mg/L		17-DEC-20	R5319497
Carbonate (CO3)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Dissolved Organic Carbon	0.72		0.50	mg/L		19-DEC-20	R5319811
Hydroxide (OH)	<5.0		5.0	mg/L		17-DEC-20	R5319497
Total Kjeldahl Nitrogen	0.88	DLM	0.10	mg/L		15-DEC-20	R5317701
Total Organic Carbon	6.1	DLM	5.0	mg/L		18-DEC-20	R5319713
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-DEC-20	16-DEC-20	R5317857
Dissolved Mercury Filtration Location	FIELD					16-DEC-20	R5317816
Dissolved Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-4 LC_Q4-2020_13							
Sampled By: SF/DT on 10-DEC-20 @ 12:50							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	0.0059		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	0.106		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	0.020		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	0.0925		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	190		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	0.0192		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	55.6		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	0.0515		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	0.000262		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	0.00164		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	1.98		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	0.099		0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	5.12		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	15.7		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	0.427		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	0.00041		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Uranium (U)-Dissolved	0.000341		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	0.0561		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Hardness							
Hardness (as CaCO3)	704		0.50	mg/L		16-DEC-20	
Total Metals in Water							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.704		0.020	ug/L		16-DEC-20	R5318257
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.0000655		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	10.0		0.0030	mg/L		16-DEC-20	R5318257
Antimony (Sb)-Total	0.00077		0.00010	mg/L		16-DEC-20	R5318257
Arsenic (As)-Total	0.00726		0.00010	mg/L		16-DEC-20	R5318257
Barium (Ba)-Total	0.547		0.00010	mg/L		16-DEC-20	R5318257
Bismuth (Bi)-Total	0.000203		0.000050	mg/L		16-DEC-20	R5318257
Boron (B)-Total	0.033		0.010	mg/L		16-DEC-20	R5318257
Cadmium (Cd)-Total	1.56		0.0050	ug/L		16-DEC-20	R5318257
Calcium (Ca)-Total	273		0.050	mg/L		16-DEC-20	R5318257
Chromium (Cr)-Total	0.0185		0.00010	mg/L		16-DEC-20	R5318257
Cobalt (Co)-Total	8.57		0.10	ug/L		16-DEC-20	R5318257
Copper (Cu)-Total	0.0217		0.00050	mg/L		16-DEC-20	R5318257
Iron (Fe)-Total	21.8		0.010	mg/L		16-DEC-20	R5318257
Lead (Pb)-Total	0.00862		0.000050	mg/L		16-DEC-20	R5318257

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539710-4 LC_Q4-2020_13							
Sampled By: SF/DT on 10-DEC-20 @ 12:50							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Lithium (Li)-Total	0.0353		0.0010	mg/L		16-DEC-20	R5318257
Magnesium (Mg)-Total	74.9		0.10	mg/L		16-DEC-20	R5318257
Manganese (Mn)-Total	1.37		0.00010	mg/L		16-DEC-20	R5318257
Molybdenum (Mo)-Total	0.00186		0.000050	mg/L		16-DEC-20	R5318257
Nickel (Ni)-Total	0.0240		0.00050	mg/L		16-DEC-20	R5318257
Potassium (K)-Total	4.42		0.050	mg/L		16-DEC-20	R5318257
Selenium (Se)-Total	0.774		0.050	ug/L		16-DEC-20	R5318257
Silicon (Si)-Total	18.2		0.10	mg/L		16-DEC-20	R5318257
Silver (Ag)-Total	0.000244		0.000010	mg/L		16-DEC-20	R5318257
Sodium (Na)-Total	15.2		0.050	mg/L		16-DEC-20	R5318257
Strontium (Sr)-Total	0.518		0.00020	mg/L		16-DEC-20	R5318257
Thallium (Tl)-Total	0.000494		0.000010	mg/L		16-DEC-20	R5318257
Tin (Sn)-Total	0.00106		0.00010	mg/L		16-DEC-20	R5318257
Titanium (Ti)-Total	0.046		0.010	mg/L		16-DEC-20	R5318257
Uranium (U)-Total	0.00124		0.000010	mg/L		16-DEC-20	R5318257
Vanadium (V)-Total	0.0275		0.00050	mg/L		16-DEC-20	R5318257
Zinc (Zn)-Total	0.145		0.0030	mg/L		16-DEC-20	R5318257
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	81.2		1.0	mg/L		17-DEC-20	R5319584
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	394		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-DEC-20	R5319497
Alkalinity, Total (as CaCO3)	394		1.0	mg/L		17-DEC-20	R5319497
Ammonia, Total (as N)							
Ammonia as N	0.0595		0.0050	mg/L		18-DEC-20	R5319315
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.90	DLHC	0.25	mg/L		11-DEC-20	R5313337
Chloride in Water by IC							
Chloride (Cl)	154	DLHC	0.50	mg/L		11-DEC-20	R5313337
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1130		2.0	uS/cm		17-DEC-20	R5319497
Fluoride in Water by IC							
Fluoride (F)	0.19	DLHC	0.10	mg/L		11-DEC-20	R5313337
Ion Balance Calculation							
Cation - Anion Balance	1.6			%		18-DEC-20	
Anion Sum	14.4			meq/L		18-DEC-20	
Cation Sum	14.8			meq/L		18-DEC-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		18-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.061	DLHC	0.025	mg/L		11-DEC-20	R5313337
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		11-DEC-20	R5313337
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0069		0.0010	mg/L		11-DEC-20	R5312789
Oxidation redution potential by elect.							
ORP	416		-1000	mV		18-DEC-20	R5319506
Phosphorus (P)-Total							
Phosphorus (P)-Total	1.86	DLM	0.20	mg/L		15-DEC-20	R5317617
Sulfate in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

DC_GW_20201210

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2539710

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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5319584							
WG3464463-14	LCS							
Acidity (as CaCO3)			106.9		%		85-115	17-DEC-20
WG3464463-13	MB							
Acidity (as CaCO3)			1.4		mg/L		2	17-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5319497							
WG3464423-14	LCS							
Alkalinity, Total (as CaCO3)			102.9		%		85-115	17-DEC-20
WG3464423-18	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	17-DEC-20
WG3464423-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-DEC-20
WG3464423-17	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	16-DEC-20
WG3462459-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-2	LCS							
Beryllium (Be)-Total			107.9		%		80-120	16-DEC-20
WG3462435-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-DEC-20
BIC-CL								
	Water							
Batch	R5319497							
WG3464423-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-DEC-20
WG3464423-17	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5313337							
WG3461016-10	LCS							
Bromide (Br)			102.2		%		85-115	11-DEC-20
WG3461016-9	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Batch R5313337								
WG3461016-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-20
C-DIS-ORG-LOW-CL								
Batch R5319713								
WG3464650-3	DUP	L2539710-3						
Dissolved Organic Carbon		<0.50	0.74	RPD-NA	mg/L	N/A	20	18-DEC-20
WG3464650-2	LCS							
Dissolved Organic Carbon			100.7		%		80-120	18-DEC-20
WG3464650-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-DEC-20
WG3464650-4	MS	L2539710-3						
Dissolved Organic Carbon			107.2		%		70-130	18-DEC-20
Batch R5319811								
WG3464762-2	LCS							
Dissolved Organic Carbon			106.2		%		80-120	19-DEC-20
WG3464762-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-DEC-20
C-TOT-ORG-LOW-CL								
Batch R5319713								
WG3464650-3	DUP	L2539710-3						
Total Organic Carbon		<0.50	0.75	RPD-NA	mg/L	N/A	20	18-DEC-20
WG3464650-2	LCS							
Total Organic Carbon			104.9		%		80-120	18-DEC-20
WG3464650-6	LCS							
Total Organic Carbon			112.8		%		80-120	18-DEC-20
WG3464650-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-DEC-20
WG3464650-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-DEC-20
WG3464650-4	MS	L2539710-3						
Total Organic Carbon			112.9		%		70-130	18-DEC-20
CL-L-IC-N-CL								
Batch R5313337								
WG3461016-10	LCS							
Chloride (Cl)			102.7		%		85-115	11-DEC-20
WG3461016-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	11-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5319497							
WG3464423-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-DEC-20
WG3464423-17 MB								
Carbonate (CO3)			<5.0		mg/L		5	17-DEC-20
EC-L-PCT-CL	Water							
Batch	R5319497							
WG3464423-14 LCS								
Conductivity (@ 25C)			103.6		%		90-110	17-DEC-20
WG3464423-18 LCS								
Conductivity (@ 25C)			106.9		%		90-110	17-DEC-20
WG3464423-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-DEC-20
WG3464423-17 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-DEC-20
F-IC-N-CL	Water							
Batch	R5313337							
WG3461016-10 LCS								
Fluoride (F)			98.3		%		90-110	11-DEC-20
WG3461016-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-DEC-20
HG-D-CVAA-VA	Water							
Batch	R5317857							
WG3462551-2 LCS								
Mercury (Hg)-Dissolved			96.3		%		80-120	16-DEC-20
WG3462551-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-20
WG3462551-4 MS		L2539710-1						
Mercury (Hg)-Dissolved			95.2		%		70-130	16-DEC-20
HG-T-CVAA-VA	Water							
Batch	R5317857							
WG3462605-2 LCS								
Mercury (Hg)-Total			97.9		%		80-120	16-DEC-20
WG3462605-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-DEC-20
WG3462605-4 MS		L2539710-1						
Mercury (Hg)-Total			91.5		%		70-130	16-DEC-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-2	LCS							
Aluminum (Al)-Dissolved			107.5		%		80-120	16-DEC-20
Antimony (Sb)-Dissolved			102.9		%		80-120	16-DEC-20
Arsenic (As)-Dissolved			107.4		%		80-120	16-DEC-20
Barium (Ba)-Dissolved			103.0		%		80-120	16-DEC-20
Bismuth (Bi)-Dissolved			103.7		%		80-120	16-DEC-20
Boron (B)-Dissolved			93.9		%		80-120	16-DEC-20
Cadmium (Cd)-Dissolved			102.2		%		80-120	16-DEC-20
Calcium (Ca)-Dissolved			100.8		%		80-120	16-DEC-20
Chromium (Cr)-Dissolved			105.4		%		80-120	16-DEC-20
Cobalt (Co)-Dissolved			104.5		%		80-120	16-DEC-20
Copper (Cu)-Dissolved			102.2		%		80-120	16-DEC-20
Iron (Fe)-Dissolved			100.6		%		80-120	16-DEC-20
Lead (Pb)-Dissolved			98.8		%		80-120	16-DEC-20
Lithium (Li)-Dissolved			98.1		%		80-120	16-DEC-20
Magnesium (Mg)-Dissolved			102.8		%		80-120	16-DEC-20
Manganese (Mn)-Dissolved			108.2		%		80-120	16-DEC-20
Molybdenum (Mo)-Dissolved			101.2		%		80-120	16-DEC-20
Nickel (Ni)-Dissolved			103.9		%		80-120	16-DEC-20
Potassium (K)-Dissolved			104.4		%		80-120	16-DEC-20
Selenium (Se)-Dissolved			107.3		%		80-120	16-DEC-20
Silicon (Si)-Dissolved			101.9		%		60-140	16-DEC-20
Silver (Ag)-Dissolved			101.1		%		80-120	16-DEC-20
Sodium (Na)-Dissolved			105.3		%		80-120	16-DEC-20
Strontium (Sr)-Dissolved			102.2		%		80-120	16-DEC-20
Thallium (Tl)-Dissolved			97.4		%		80-120	16-DEC-20
Tin (Sn)-Dissolved			101.7		%		80-120	16-DEC-20
Titanium (Ti)-Dissolved			100.6		%		80-120	16-DEC-20
Uranium (U)-Dissolved			95.6		%		80-120	16-DEC-20
Vanadium (V)-Dissolved			105.7		%		80-120	16-DEC-20
Zinc (Zn)-Dissolved			108.1		%		80-120	16-DEC-20
WG3462459-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
MET-T-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-2	LCS							
Aluminum (Al)-Total			112.7		%		80-120	16-DEC-20
Antimony (Sb)-Total			110.6		%		80-120	16-DEC-20
Arsenic (As)-Total			105.7		%		80-120	16-DEC-20
Barium (Ba)-Total			107.0		%		80-120	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5318257							
WG3462435-2 LCS								
Bismuth (Bi)-Total			104.9		%		80-120	16-DEC-20
Boron (B)-Total			102.9		%		80-120	16-DEC-20
Cadmium (Cd)-Total			98.5		%		80-120	16-DEC-20
Calcium (Ca)-Total			105.3		%		80-120	16-DEC-20
Chromium (Cr)-Total			106.7		%		80-120	16-DEC-20
Cobalt (Co)-Total			106.1		%		80-120	16-DEC-20
Copper (Cu)-Total			104.0		%		80-120	16-DEC-20
Iron (Fe)-Total			100.5		%		80-120	16-DEC-20
Lead (Pb)-Total			104.5		%		80-120	16-DEC-20
Lithium (Li)-Total			104.6		%		80-120	16-DEC-20
Magnesium (Mg)-Total			110.9		%		80-120	16-DEC-20
Manganese (Mn)-Total			103.2		%		80-120	16-DEC-20
Molybdenum (Mo)-Total			113.0		%		80-120	16-DEC-20
Nickel (Ni)-Total			102.0		%		80-120	16-DEC-20
Potassium (K)-Total			105.0		%		80-120	16-DEC-20
Selenium (Se)-Total			99.1		%		80-120	16-DEC-20
Silicon (Si)-Total			106.9		%		80-120	16-DEC-20
Silver (Ag)-Total			104.0		%		80-120	16-DEC-20
Sodium (Na)-Total			114.6		%		80-120	16-DEC-20
Strontium (Sr)-Total			106.0		%		80-120	16-DEC-20
Thallium (Tl)-Total			107.3		%		80-120	16-DEC-20
Tin (Sn)-Total			101.9		%		80-120	16-DEC-20
Titanium (Ti)-Total			100.9		%		80-120	16-DEC-20
Uranium (U)-Total			101.7		%		80-120	16-DEC-20
Vanadium (V)-Total			108.0		%		80-120	16-DEC-20
Zinc (Zn)-Total			104.9		%		80-120	16-DEC-20
WG3462435-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	16-DEC-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-DEC-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-DEC-20
NH3-L-F-CL								
	Water							
Batch	R5319315							
WG3464283-7	DUP	L2539710-3						
Ammonia as N		0.0114	0.0142	J	mg/L	0.0028	0.01	18-DEC-20
WG3464283-10	LCS							
Ammonia as N			98.6		%		85-115	18-DEC-20
WG3464283-6	LCS							
Ammonia as N			97.6		%		85-115	18-DEC-20
WG3464283-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-20
WG3464283-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-20



Quality Control Report

Workorder: L2539710

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL Water								
Batch	R5319315							
WG3464283-8	MS	L2539710-3						
Ammonia as N			111.4		%		75-125	18-DEC-20
NO2-L-IC-N-CL Water								
Batch	R5313337							
WG3461016-10	LCS							
Nitrite (as N)			101.9		%		90-110	11-DEC-20
WG3461016-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-20
NO3-L-IC-N-CL Water								
Batch	R5313337							
WG3461016-10	LCS							
Nitrate (as N)			103.8		%		90-110	11-DEC-20
WG3461016-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-20
OH-CL Water								
Batch	R5319497							
WG3464423-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-DEC-20
WG3464423-17	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-DEC-20
ORP-CL Water								
Batch	R5319506							
WG3464454-3	CRM	CL-ORP						
ORP			224		mV		210-230	18-DEC-20
WG3464454-4	DUP	L2539710-4						
ORP		416	423	J	mV	6.5	15	18-DEC-20
P-T-L-COL-CL Water								
Batch	R5317617							
WG3462296-22	LCS							
Phosphorus (P)-Total			99.6		%		80-120	15-DEC-20
WG3462296-26	LCS							
Phosphorus (P)-Total			100.9		%		80-120	15-DEC-20
WG3462296-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-20
WG3462296-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-20



Quality Control Report

Workorder: L2539710

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch R5319497								
WG3464423-14 LCS								
pH			7.00		pH		6.9-7.1	17-DEC-20
WG3464423-18 LCS								
pH			6.99		pH		6.9-7.1	17-DEC-20
PO4-DO-L-COL-CL								
Water								
Batch R5312789								
WG3460863-18 LCS								
Orthophosphate-Dissolved (as P)			102.7		%		80-120	11-DEC-20
WG3460863-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-20
SO4-IC-N-CL								
Water								
Batch R5313337								
WG3461016-10 LCS								
Sulfate (SO4)			104.1		%		90-110	11-DEC-20
WG3461016-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-20
SOLIDS-TDS-CL								
Water								
Batch R5319384								
WG3463284-11 LCS								
Total Dissolved Solids			98.2		%		85-115	17-DEC-20
WG3463284-10 MB								
Total Dissolved Solids			<10		mg/L		10	17-DEC-20
TEH-BC-VA-CL								
Water								
Batch R5317735								
WG3462075-2 LCS								
EPH10-19			100.0		%		70-130	15-DEC-20
EPH19-32			96.6		%		70-130	15-DEC-20
WG3462075-1 MB								
EPH10-19			<0.25		mg/L		0.25	15-DEC-20
EPH19-32			<0.25		mg/L		0.25	15-DEC-20
Surrogate: 2-Bromobenzotrifluoride			94.9		%		60-140	15-DEC-20
TEH-WATER-VA-CL								
Water								
Batch R5317735								
WG3462075-2 LCS								
TEH (C10-C30)			98.9		%		70-130	15-DEC-20
WG3462075-1 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	15-DEC-20



Quality Control Report

Workorder: L2539710

Report Date: 26-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL								
	Water							
Batch	R5317735							
WG3462075-1	MB							
Surrogate: 2-Bromobenzotrifluoride			94.9		%		60-140	15-DEC-20
TKN-L-F-CL								
	Water							
Batch	R5317701							
WG3462410-10	LCS							
Total Kjeldahl Nitrogen			101.8		%		75-125	15-DEC-20
WG3462410-2	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	15-DEC-20
WG3462410-6	LCS							
Total Kjeldahl Nitrogen			97.5		%		75-125	15-DEC-20
WG3462410-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
WG3462410-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
WG3462410-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-DEC-20
TSS-L-CL								
	Water							
Batch	R5319152							
WG3463283-8	LCS							
Total Suspended Solids			91.7		%		85-115	17-DEC-20
WG3463283-7	MB							
Total Suspended Solids			<1.0		mg/L		1	17-DEC-20
TURBIDITY-CL								
	Water							
Batch	R5313536							
WG3461040-11	LCS							
Turbidity			95.9		%		85-115	12-DEC-20
WG3461040-10	MB							
Turbidity			<0.10		NTU		0.1	12-DEC-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2539710

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	10-DEC-20 12:50	18-DEC-20 12:30	0.25	192	hours	EHTR-FM
	2	10-DEC-20 11:15	18-DEC-20 12:30	0.25	193	hours	EHTR-FM
	3	10-DEC-20 12:50	18-DEC-20 12:30	0.25	192	hours	EHTR-FM
	4	10-DEC-20 12:50	18-DEC-20 12:30	0.25	192	hours	EHTR-FM
pH							
	1	10-DEC-20 12:50	17-DEC-20 19:00	0.25	174	hours	EHTR-FM
	2	10-DEC-20 11:15	17-DEC-20 19:00	0.25	176	hours	EHTR-FM
	3	10-DEC-20 12:50	17-DEC-20 19:00	0.25	174	hours	EHTR-FM
	4	10-DEC-20 12:50	17-DEC-20 19:00	0.25	174	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2539710 were received on 11-DEC-20 09:00.

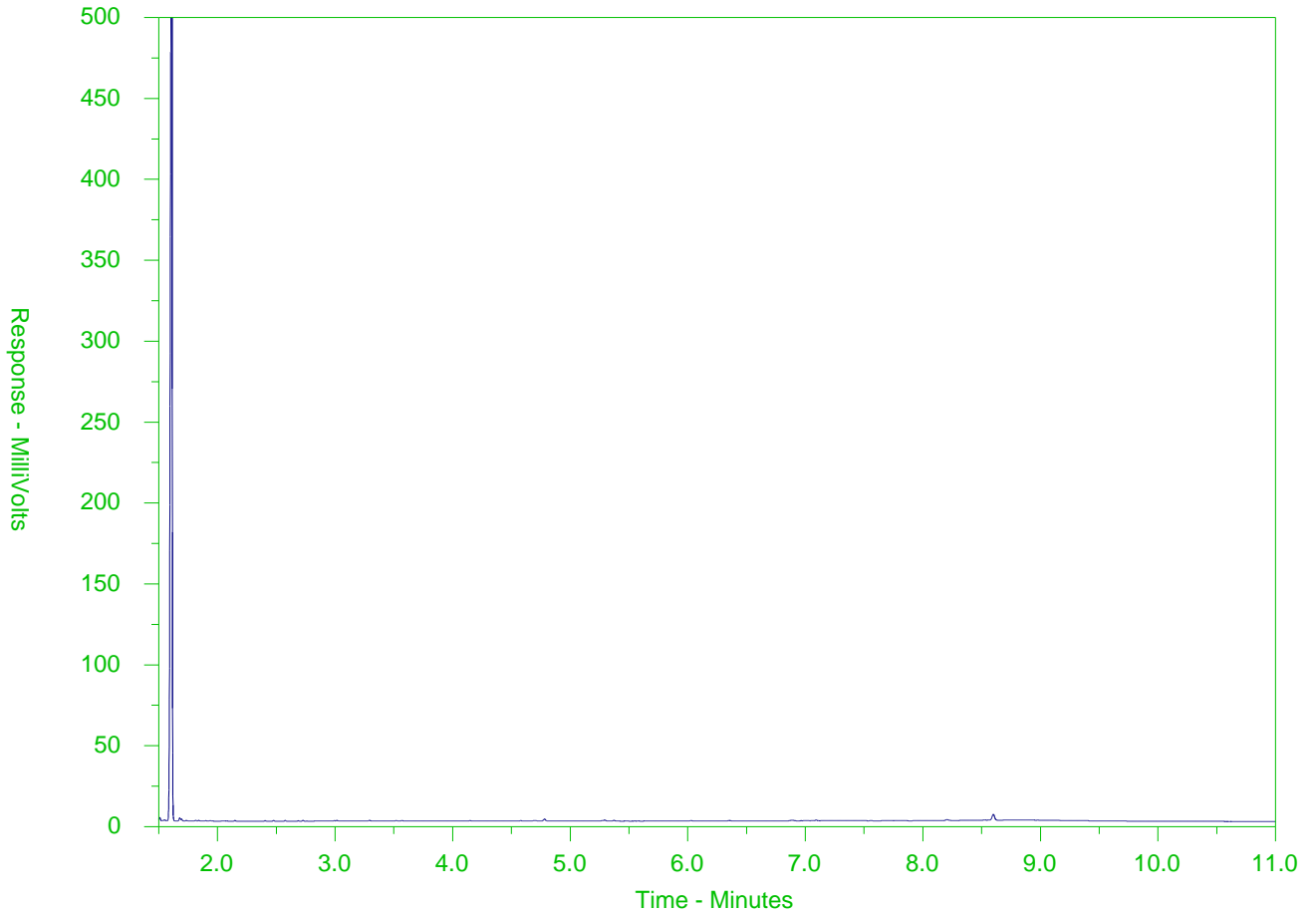
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2539710-1
 Client Sample ID: LC_PIZP1105_WG_Q4-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC29	nC32
174°C	330°C	425°C	467°C
346°F	626°F	813°F	873°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: **DC_GW_20201210**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Line Creek Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Project Manager	Chris Blurton			Lab Contact	Lyudmyla Shvets			Email 1:	chris.blurton@teck.com		x	x	x
Email	chris.blurton@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com				x
Address	Box 2003 15km North Hwy 43			Address	2559 29 Street NE			Email 3:	drake.tymstra@teck.com		x	x	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	shanise.fossen@teck.com		x	x	
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	VPO00680643				
Phone Number	250-425-8478			Phone Number	403 407 1794								

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2539710-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH					
LC_PIZP1105_WG_Q4-2020_N	LC_PIZP1105	WG	No	12/10/2020	12:50	G	9		1	1	1	1	1	1	1	1	2				
LC_PIZDC0901_WG_Q4-2020_NP	LCPIZDC0901	WG	No	12/10/2020	11:15	G	6		1		1	1	1	1	1	1					
LC_Q4-2020_11	LC_PIZP1105	WG	No	12/10/2020	12:50	G	7		1	1	1	1	1	1	1	1					
LC_Q4-2020_13	LC_PIZP1105	WG	No	12/10/2020	12:50	G	7		1	1	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	D.Tymstra/S. Fossen	10-Dec	<i>[Signature]</i>	12/11 900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	S. Fossen/D. Tymstra	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time
	S Fossen	December 10, 2020

[Handwritten mark]



TECK COAL LIMITED (LINE CREEK)
ATTN: Chris Blurton
PO BOX 2003
SPARWOOD BC V0B 2G0

Date Received: 12-DEC-20
Report Date: 09-FEB-21 13:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2539804
Project P.O. #: VPO00680643
Job Reference: LINE CREEK OPERATION
C of C Numbers: LC_GW_20201211
Legal Site Desc:

Comments: ADDITIONAL 01-FEB-21 10:21

9-FEB-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2539804-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-1 LC_MW_ER4A_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 11:05							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	216		5.0	mg/L		18-DEC-20	R5319773
Carbonate (CO3)	<5.0		5.0	mg/L		18-DEC-20	R5319773
Dissolved Organic Carbon	0.74	DTC	0.50	mg/L		21-DEC-20	R5320314
Hydroxide (OH)	<5.0		5.0	mg/L		18-DEC-20	R5319773
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		16-DEC-20	R5318321
Total Organic Carbon	<0.50	DTC	0.50	mg/L		21-DEC-20	R5320314
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
EPH19-32	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
Surrogate: 2-Bromobenzotrifluoride	93.9		60-140	%	14-DEC-20	15-DEC-20	R5316664
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		15-DEC-20	
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
Surrogate: 2-Bromobenzotrifluoride	93.9		60-140	%	14-DEC-20	15-DEC-20	R5316664
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	16-DEC-20	16-DEC-20	R5317857
Dissolved Mercury Filtration Location	FIELD					16-DEC-20	R5317816
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	0.0548		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	<0.0010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	79.0		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	0.128		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	0.0061		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	20.0		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	0.0489		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	0.00445		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	0.566		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	0.203	DTSE	0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	2.45		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	2.82		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	0.338		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-1 LC_MW_ER4A_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 11:05							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Uranium (U)-Dissolved	0.000189		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	280		0.50	mg/L		16-DEC-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-20	R5318257
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0034		0.0030	mg/L		16-DEC-20	R5318257
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Arsenic (As)-Total	0.00017		0.00010	mg/L		16-DEC-20	R5318257
Barium (Ba)-Total	0.0556		0.00010	mg/L		16-DEC-20	R5318257
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Boron (B)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-DEC-20	R5318257
Calcium (Ca)-Total	77.0		0.050	mg/L		16-DEC-20	R5318257
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-DEC-20	R5318257
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Iron (Fe)-Total	0.140		0.010	mg/L		16-DEC-20	R5318257
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Lithium (Li)-Total	0.0061		0.0010	mg/L		16-DEC-20	R5318257
Magnesium (Mg)-Total	21.1		0.10	mg/L		16-DEC-20	R5318257
Manganese (Mn)-Total	0.0479		0.00010	mg/L		16-DEC-20	R5318257
Molybdenum (Mo)-Total	0.00494		0.000050	mg/L		16-DEC-20	R5318257
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Potassium (K)-Total	0.559		0.050	mg/L		16-DEC-20	R5318257
Selenium (Se)-Total	<0.050		0.050	ug/L		16-DEC-20	R5318257
Silicon (Si)-Total	2.59		0.10	mg/L		16-DEC-20	R5318257
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Sodium (Na)-Total	3.06		0.050	mg/L		16-DEC-20	R5318257
Strontium (Sr)-Total	0.339		0.00020	mg/L		16-DEC-20	R5318257
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Uranium (U)-Total	0.000197		0.000010	mg/L		16-DEC-20	R5318257
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-DEC-20	R5318257
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319781
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	177		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Total (as CaCO3)	177		1.0	mg/L		18-DEC-20	R5319773
Ammonia, Total (as N)							
Ammonia as N	0.0517		0.0050	mg/L		20-DEC-20	R5320317

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-1 LC_MW_ER4A_WG_Q4-2020_N Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 11:05 Matrix: WG							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		12-DEC-20	R5315356
Chloride in Water by IC							
Chloride (Cl)	2.39		0.10	mg/L		12-DEC-20	R5315356
Electrical Conductivity (EC)							
Conductivity (@ 25C)	464		2.0	uS/cm		18-DEC-20	R5319773
Fluoride in Water by IC							
Fluoride (F)	0.168		0.020	mg/L		12-DEC-20	R5315356
Ion Balance Calculation							
Ion Balance	103		-100	%		19-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	1.6			%		19-DEC-20	
Anion Sum	5.55			meq/L		19-DEC-20	
Cation Sum	5.73			meq/L		19-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		12-DEC-20	R5315356
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		12-DEC-20	R5315356
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0010		0.0010	mg/L		12-DEC-20	R5313677
Oxidation redution potential by elect.							
ORP	419		-1000	mV		21-DEC-20	R5320271
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-DEC-20	R5318092
Sulfate in Water by IC							
Sulfate (SO4)	93.1		0.30	mg/L		12-DEC-20	R5315356
Total Dissolved Solids							
Total Dissolved Solids	311	DLHC	20	mg/L		18-DEC-20	R5319709
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		18-DEC-20	R5319680
Turbidity							
Turbidity	0.98		0.10	NTU		13-DEC-20	R5313598
pH							
pH	8.23		0.10	pH		18-DEC-20	R5319773
L2539804-2 LC_MW_ER4B_WG_Q4-2020_N Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 12:05 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	235		5.0	mg/L		18-DEC-20	R5319773
Carbonate (CO3)	<5.0		5.0	mg/L		18-DEC-20	R5319773
Dissolved Organic Carbon	0.71	DTC	0.50	mg/L		21-DEC-20	R5320314
Hydroxide (OH)	<5.0		5.0	mg/L		18-DEC-20	R5319773
Total Kjeldahl Nitrogen	0.168	TKNI	0.050	mg/L		16-DEC-20	R5318321
Total Organic Carbon	<0.50	DTC	0.50	mg/L		21-DEC-20	R5320314
EPH Testing for teck Coal							
EPH (C10-C19) & EPH (C19-C32)							
EPH10-19	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
EPH19-32	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
Surrogate: 2-Bromobenzotrifluoride	92.9		60-140	%	14-DEC-20	15-DEC-20	R5316664
Sum of EPH (10-32)							
EPH (C10-C32)	<0.50		0.50	mg/L		15-DEC-20	
TEH (C10-C30)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-2 LC_MW_ER4B_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 12:05							
Matrix: WG							
TEH (C10-C30)							
TEH (C10-C30)	<0.25		0.25	mg/L	14-DEC-20	15-DEC-20	R5316664
Surrogate: 2-Bromobenzotrifluoride	92.9		60-140	%	14-DEC-20	15-DEC-20	R5316664
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-20	16-DEC-20	R5318315
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-DEC-20	16-DEC-20	R5317857
Dissolved Mercury Filtration Location	FIELD					16-DEC-20	R5317816
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					15-DEC-20	R5317733
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-20	16-DEC-20	R5318315
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Barium (Ba)-Dissolved	0.0885		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Boron (B)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cadmium (Cd)-Dissolved	0.0173		0.0050	ug/L	15-DEC-20	16-DEC-20	R5318315
Calcium (Ca)-Dissolved	82.4		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-DEC-20	16-DEC-20	R5318315
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Lithium (Li)-Dissolved	0.0083		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Magnesium (Mg)-Dissolved	22.3		0.10	mg/L	15-DEC-20	16-DEC-20	R5318315
Manganese (Mn)-Dissolved	0.00014		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Molybdenum (Mo)-Dissolved	0.00117		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Nickel (Ni)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-20	16-DEC-20	R5318315
Potassium (K)-Dissolved	0.460		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Selenium (Se)-Dissolved	17.1		0.050	ug/L	15-DEC-20	16-DEC-20	R5318315
Silicon (Si)-Dissolved	2.36		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Sodium (Na)-Dissolved	2.63		0.050	mg/L	15-DEC-20	16-DEC-20	R5318315
Strontium (Sr)-Dissolved	0.268		0.00020	mg/L	15-DEC-20	16-DEC-20	R5318315
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-20	16-DEC-20	R5318315
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-20	16-DEC-20	R5318315
Uranium (U)-Dissolved	0.000977		0.000010	mg/L	15-DEC-20	16-DEC-20	R5318315
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-20	16-DEC-20	R5318315
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	15-DEC-20	16-DEC-20	R5318315
Total Metals in Water							
Hardness							
Hardness (as CaCO3)	297		0.50	mg/L		16-DEC-20	
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-20	R5318257
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		16-DEC-20	R5317857
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0217		0.0030	mg/L		16-DEC-20	R5318257
Antimony (Sb)-Total	0.00012		0.00010	mg/L		16-DEC-20	R5318257
Arsenic (As)-Total	0.00022		0.00010	mg/L		16-DEC-20	R5318257

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-2 LC_MW_ER4B_WG_Q4-2020_N							
Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 12:05							
Matrix: WG							
Total Metals in Water by CRC ICPMS							
Barium (Ba)-Total	0.0905		0.00010	mg/L		16-DEC-20	R5318257
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-20	R5318257
Boron (B)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Cadmium (Cd)-Total	0.0235		0.0050	ug/L		16-DEC-20	R5318257
Calcium (Ca)-Total	82.2		0.050	mg/L		16-DEC-20	R5318257
Chromium (Cr)-Total	0.00022		0.00010	mg/L		16-DEC-20	R5318257
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-DEC-20	R5318257
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Iron (Fe)-Total	0.044		0.010	mg/L		16-DEC-20	R5318257
Lead (Pb)-Total	0.000112		0.000050	mg/L		16-DEC-20	R5318257
Lithium (Li)-Total	0.0085		0.0010	mg/L		16-DEC-20	R5318257
Magnesium (Mg)-Total	23.1		0.10	mg/L		16-DEC-20	R5318257
Manganese (Mn)-Total	0.00218		0.00010	mg/L		16-DEC-20	R5318257
Molybdenum (Mo)-Total	0.00130		0.000050	mg/L		16-DEC-20	R5318257
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-DEC-20	R5318257
Potassium (K)-Total	0.467		0.050	mg/L		16-DEC-20	R5318257
Selenium (Se)-Total	13.9		0.050	ug/L		16-DEC-20	R5318257
Silicon (Si)-Total	2.44		0.10	mg/L		16-DEC-20	R5318257
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Sodium (Na)-Total	2.81		0.050	mg/L		16-DEC-20	R5318257
Strontium (Sr)-Total	0.264		0.00020	mg/L		16-DEC-20	R5318257
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-DEC-20	R5318257
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-20	R5318257
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-20	R5318257
Uranium (U)-Total	0.00108		0.000010	mg/L		16-DEC-20	R5318257
Vanadium (V)-Total	0.00052		0.00050	mg/L		16-DEC-20	R5318257
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-DEC-20	R5318257
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319781
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	193		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-DEC-20	R5319773
Alkalinity, Total (as CaCO3)	193		1.0	mg/L		18-DEC-20	R5319773
Ammonia, Total (as N)							
Ammonia as N	0.0132		0.0050	mg/L		20-DEC-20	R5320317
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		12-DEC-20	R5315356
Chloride in Water by IC							
Chloride (Cl)	2.70		0.10	mg/L		12-DEC-20	R5315356
Electrical Conductivity (EC)							
Conductivity (@ 25C)	492		2.0	uS/cm		18-DEC-20	R5319773
Fluoride in Water by IC							
Fluoride (F)	0.166		0.020	mg/L		12-DEC-20	R5315356
Ion Balance Calculation							
Ion Balance	104		-100	%		19-DEC-20	
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		19-DEC-20	
Anion Sum	5.86			meq/L		19-DEC-20	
Cation Sum	6.07			meq/L		19-DEC-20	
Nitrate in Water by IC (Low Level)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2539804-2 LC_MW_ER4B_WG_Q4-2020_N Sampled By: S. Fossen/D. Tymstra on 11-DEC-20 @ 12:05 Matrix: WG							
Nitrate in Water by IC (Low Level) Nitrate (as N)	2.65		0.0050	mg/L		12-DEC-20	R5315356
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		12-DEC-20	R5315356
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		12-DEC-20	R5313677
Oxidation redution potential by elect. ORP	422		-1000	mV		21-DEC-20	R5320271
Phosphorus (P)-Total Phosphorus (P)-Total	0.0073		0.0020	mg/L		16-DEC-20	R5318092
Sulfate in Water by IC Sulfate (SO4)	83.2		0.30	mg/L		12-DEC-20	R5315356
Total Dissolved Solids Total Dissolved Solids	327	DLHC	20	mg/L		18-DEC-20	R5319709
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		18-DEC-20	R5319680
Turbidity Turbidity	0.44		0.10	NTU		13-DEC-20	R5313598
pH pH	8.28		0.10	pH		18-DEC-20	R5319773

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

LC_GW_20201211

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: TECK COAL LIMITED (LINE CREEK)
 PO BOX 2003
 SPARWOOD BC V0B 2G0

Contact: Chris Blurton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5319781							
WG3464739-11	LCS							
Acidity (as CaCO3)			106.7		%		85-115	18-DEC-20
WG3464739-10	MB							
Acidity (as CaCO3)			1.1		mg/L		2	18-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5319773							
WG3464718-11	LCS							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	18-DEC-20
WG3464718-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	16-DEC-20
WG3462459-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-2	LCS							
Beryllium (Be)-Total			107.9		%		80-120	16-DEC-20
WG3462435-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-DEC-20
BIC-CL								
	Water							
Batch	R5319773							
WG3464718-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5315356							
WG3461576-10	LCS							
Bromide (Br)			106.5		%		85-115	12-DEC-20
WG3461576-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-DEC-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5320314							
WG3465367-2 LCS								
Dissolved Organic Carbon			100.2		%		80-120	21-DEC-20
WG3465367-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-DEC-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5320314							
WG3465367-2 LCS								
Total Organic Carbon			102.9		%		80-120	21-DEC-20
WG3465367-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5315356							
WG3461576-10 LCS								
Chloride (Cl)			104.6		%		85-115	12-DEC-20
WG3461576-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	12-DEC-20
CO3-CL	Water							
Batch	R5319773							
WG3464718-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	18-DEC-20
EC-L-PCT-CL	Water							
Batch	R5319773							
WG3464718-11 LCS								
Conductivity (@ 25C)			101.0		%		90-110	18-DEC-20
WG3464718-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-DEC-20
F-IC-N-CL	Water							
Batch	R5315356							
WG3461576-10 LCS								
Fluoride (F)			107.5		%		90-110	12-DEC-20
WG3461576-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-DEC-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5317857							
WG3462551-2	LCS							
Mercury (Hg)-Dissolved			96.3		%		80-120	16-DEC-20
WG3462551-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-20
HG-T-CVAA-VA								
Water								
Batch	R5317857							
WG3462605-3	DUP	L2539804-2						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	16-DEC-20
WG3462605-2	LCS							
Mercury (Hg)-Total			97.9		%		80-120	16-DEC-20
WG3462605-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-DEC-20
MET-D-CCMS-VA								
Water								
Batch	R5318315							
WG3462459-2	LCS							
Aluminum (Al)-Dissolved			107.5		%		80-120	16-DEC-20
Antimony (Sb)-Dissolved			102.9		%		80-120	16-DEC-20
Arsenic (As)-Dissolved			107.4		%		80-120	16-DEC-20
Barium (Ba)-Dissolved			103.0		%		80-120	16-DEC-20
Bismuth (Bi)-Dissolved			103.7		%		80-120	16-DEC-20
Boron (B)-Dissolved			93.9		%		80-120	16-DEC-20
Cadmium (Cd)-Dissolved			102.2		%		80-120	16-DEC-20
Calcium (Ca)-Dissolved			100.8		%		80-120	16-DEC-20
Chromium (Cr)-Dissolved			105.4		%		80-120	16-DEC-20
Cobalt (Co)-Dissolved			104.5		%		80-120	16-DEC-20
Copper (Cu)-Dissolved			102.2		%		80-120	16-DEC-20
Iron (Fe)-Dissolved			100.6		%		80-120	16-DEC-20
Lead (Pb)-Dissolved			98.8		%		80-120	16-DEC-20
Lithium (Li)-Dissolved			98.1		%		80-120	16-DEC-20
Magnesium (Mg)-Dissolved			102.8		%		80-120	16-DEC-20
Manganese (Mn)-Dissolved			108.2		%		80-120	16-DEC-20
Molybdenum (Mo)-Dissolved			101.2		%		80-120	16-DEC-20
Nickel (Ni)-Dissolved			103.9		%		80-120	16-DEC-20
Potassium (K)-Dissolved			104.4		%		80-120	16-DEC-20
Selenium (Se)-Dissolved			107.3		%		80-120	16-DEC-20
Silicon (Si)-Dissolved			101.9		%		60-140	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-2	LCS							
Silver (Ag)-Dissolved			101.1		%		80-120	16-DEC-20
Sodium (Na)-Dissolved			105.3		%		80-120	16-DEC-20
Strontium (Sr)-Dissolved			102.2		%		80-120	16-DEC-20
Thallium (Tl)-Dissolved			97.4		%		80-120	16-DEC-20
Tin (Sn)-Dissolved			101.7		%		80-120	16-DEC-20
Titanium (Ti)-Dissolved			100.6		%		80-120	16-DEC-20
Uranium (U)-Dissolved			95.6		%		80-120	16-DEC-20
Vanadium (V)-Dissolved			105.7		%		80-120	16-DEC-20
Zinc (Zn)-Dissolved			108.1		%		80-120	16-DEC-20
WG3462459-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318315							
WG3462459-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-20
MET-T-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-2	LCS							
Aluminum (Al)-Total			112.7		%		80-120	16-DEC-20
Antimony (Sb)-Total			110.6		%		80-120	16-DEC-20
Arsenic (As)-Total			105.7		%		80-120	16-DEC-20
Barium (Ba)-Total			107.0		%		80-120	16-DEC-20
Bismuth (Bi)-Total			104.9		%		80-120	16-DEC-20
Boron (B)-Total			102.9		%		80-120	16-DEC-20
Cadmium (Cd)-Total			98.5		%		80-120	16-DEC-20
Calcium (Ca)-Total			105.3		%		80-120	16-DEC-20
Chromium (Cr)-Total			106.7		%		80-120	16-DEC-20
Cobalt (Co)-Total			106.1		%		80-120	16-DEC-20
Copper (Cu)-Total			104.0		%		80-120	16-DEC-20
Iron (Fe)-Total			100.5		%		80-120	16-DEC-20
Lead (Pb)-Total			104.5		%		80-120	16-DEC-20
Lithium (Li)-Total			104.6		%		80-120	16-DEC-20
Magnesium (Mg)-Total			110.9		%		80-120	16-DEC-20
Manganese (Mn)-Total			103.2		%		80-120	16-DEC-20
Molybdenum (Mo)-Total			113.0		%		80-120	16-DEC-20
Nickel (Ni)-Total			102.0		%		80-120	16-DEC-20
Potassium (K)-Total			105.0		%		80-120	16-DEC-20
Selenium (Se)-Total			99.1		%		80-120	16-DEC-20
Silicon (Si)-Total			106.9		%		80-120	16-DEC-20
Silver (Ag)-Total			104.0		%		80-120	16-DEC-20
Sodium (Na)-Total			114.6		%		80-120	16-DEC-20
Strontium (Sr)-Total			106.0		%		80-120	16-DEC-20
Thallium (Tl)-Total			107.3		%		80-120	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5318257							
WG3462435-2	LCS							
Tin (Sn)-Total			101.9		%		80-120	16-DEC-20
Titanium (Ti)-Total			100.9		%		80-120	16-DEC-20
Uranium (U)-Total			101.7		%		80-120	16-DEC-20
Vanadium (V)-Total			108.0		%		80-120	16-DEC-20
Zinc (Zn)-Total			104.9		%		80-120	16-DEC-20
WG3462435-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-DEC-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Boron (B)-Total			<0.010		mg/L		0.01	16-DEC-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-DEC-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-DEC-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-DEC-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-DEC-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-DEC-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-DEC-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-DEC-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-DEC-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-DEC-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-DEC-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-DEC-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-DEC-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-DEC-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-DEC-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
Water								
Batch R5318257								
WG3462435-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-DEC-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-DEC-20
NH3-L-F-CL								
Water								
Batch R5320317								
WG3465357-2 LCS								
Ammonia as N			108.0		%		85-115	20-DEC-20
WG3465357-6 LCS								
Ammonia as N			104.0		%		85-115	20-DEC-20
WG3465357-1 MB								
Ammonia as N			<0.0050		mg/L		0.005	20-DEC-20
WG3465357-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	20-DEC-20
NO2-L-IC-N-CL								
Water								
Batch R5315356								
WG3461576-10 LCS								
Nitrite (as N)			106.3		%		90-110	12-DEC-20
WG3461576-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	12-DEC-20
NO3-L-IC-N-CL								
Water								
Batch R5315356								
WG3461576-10 LCS								
Nitrate (as N)			105.3		%		90-110	12-DEC-20
WG3461576-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	12-DEC-20
OH-CL								
Water								
Batch R5319773								
WG3464718-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	18-DEC-20
ORP-CL								
Water								
Batch R5320271								
WG3465305-5 CRM				CL-ORP				
ORP			227		mV		210-230	21-DEC-20
P-T-L-COL-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5318092							
WG3462856-4	LCS							
Phosphorus (P)-Total			95.9		%		80-120	16-DEC-20
WG3462856-3	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-DEC-20
PH-CL	Water							
Batch	R5319773							
WG3464718-11	LCS							
pH			7.01		pH		6.9-7.1	18-DEC-20
PO4-DO-L-COL-CL	Water							
Batch	R5313677							
WG3461081-6	LCS							
Orthophosphate-Dissolved (as P)			98.2		%		80-120	12-DEC-20
WG3461081-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-DEC-20
SO4-IC-N-CL	Water							
Batch	R5315356							
WG3461576-10	LCS							
Sulfate (SO4)			102.6		%		90-110	12-DEC-20
WG3461576-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5319709							
WG3464197-14	LCS							
Total Dissolved Solids			102.2		%		85-115	18-DEC-20
WG3464197-13	MB							
Total Dissolved Solids			<10		mg/L		10	18-DEC-20
TEH-BC-VA-CL	Water							
Batch	R5316664							
WG3462052-2	LCS							
EPH10-19			116.0		%		70-130	14-DEC-20
EPH19-32			123.0		%		70-130	14-DEC-20
WG3462052-1	MB							
EPH10-19			<0.25		mg/L		0.25	14-DEC-20
EPH19-32			<0.25		mg/L		0.25	14-DEC-20
Surrogate: 2-Bromobenzotrifluoride			76.5		%		60-140	14-DEC-20
TEH-WATER-VA-CL	Water							



Quality Control Report

Workorder: L2539804

Report Date: 09-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TEH-WATER-VA-CL								
Water								
Batch R5316664								
WG3462052-2 LCS								
TEH (C10-C30)			118.0		%		70-130	14-DEC-20
WG3462052-1 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	14-DEC-20
Surrogate: 2-Bromobenzotrifluoride			76.5		%		60-140	14-DEC-20
TKN-L-F-CL								
Water								
Batch R5318321								
WG3463110-6 LCS								
Total Kjeldahl Nitrogen			96.8		%		75-125	16-DEC-20
WG3463110-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-DEC-20
TSS-L-CL								
Water								
Batch R5319680								
WG3464196-4 LCS								
Total Suspended Solids			99.3		%		85-115	18-DEC-20
WG3464196-3 MB								
Total Suspended Solids			<1.0		mg/L		1	18-DEC-20
TURBIDITY-CL								
Water								
Batch R5313598								
WG3461082-5 LCS								
Turbidity			96.4		%		85-115	13-DEC-20
WG3461082-4 MB								
Turbidity			<0.10		NTU		0.1	13-DEC-20

Quality Control Report

Workorder: L2539804

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2539804

Report Date: 09-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-DEC-20 11:05	21-DEC-20 13:50	0.25	243	hours	EHTR-FM
	2	11-DEC-20 12:05	21-DEC-20 13:50	0.25	242	hours	EHTR-FM
pH	1	11-DEC-20 11:05	18-DEC-20 13:00	0.25	170	hours	EHTR-FM
	2	11-DEC-20 12:05	18-DEC-20 13:00	0.25	169	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2539804 were received on 12-DEC-20 08:20.

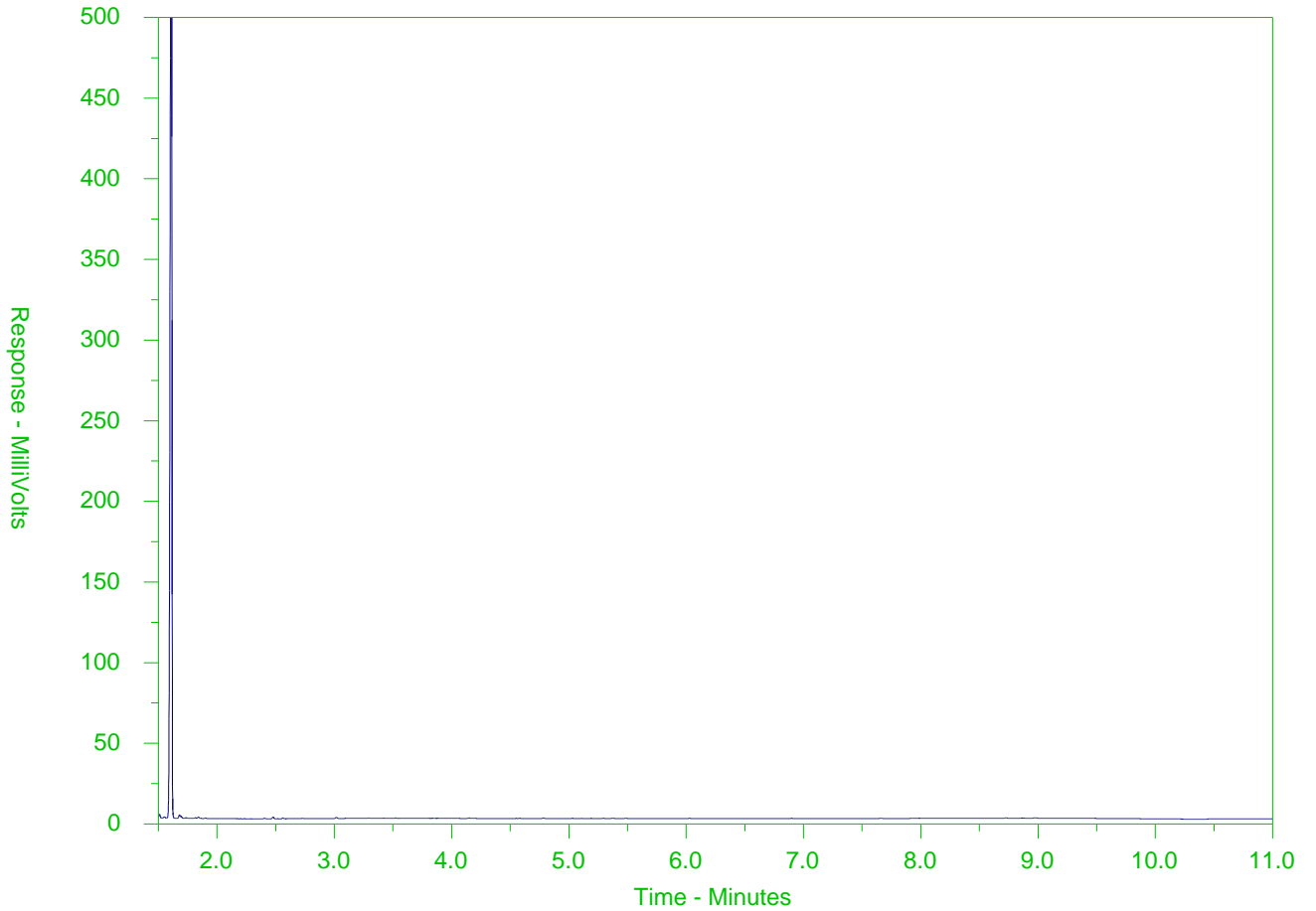
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2539804-1
 Client Sample ID: LC_MW_ER4A_WG_Q4-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC29	nC32
174°C	330°C	426°C	467°C
346°F	626°F	811°F	873°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

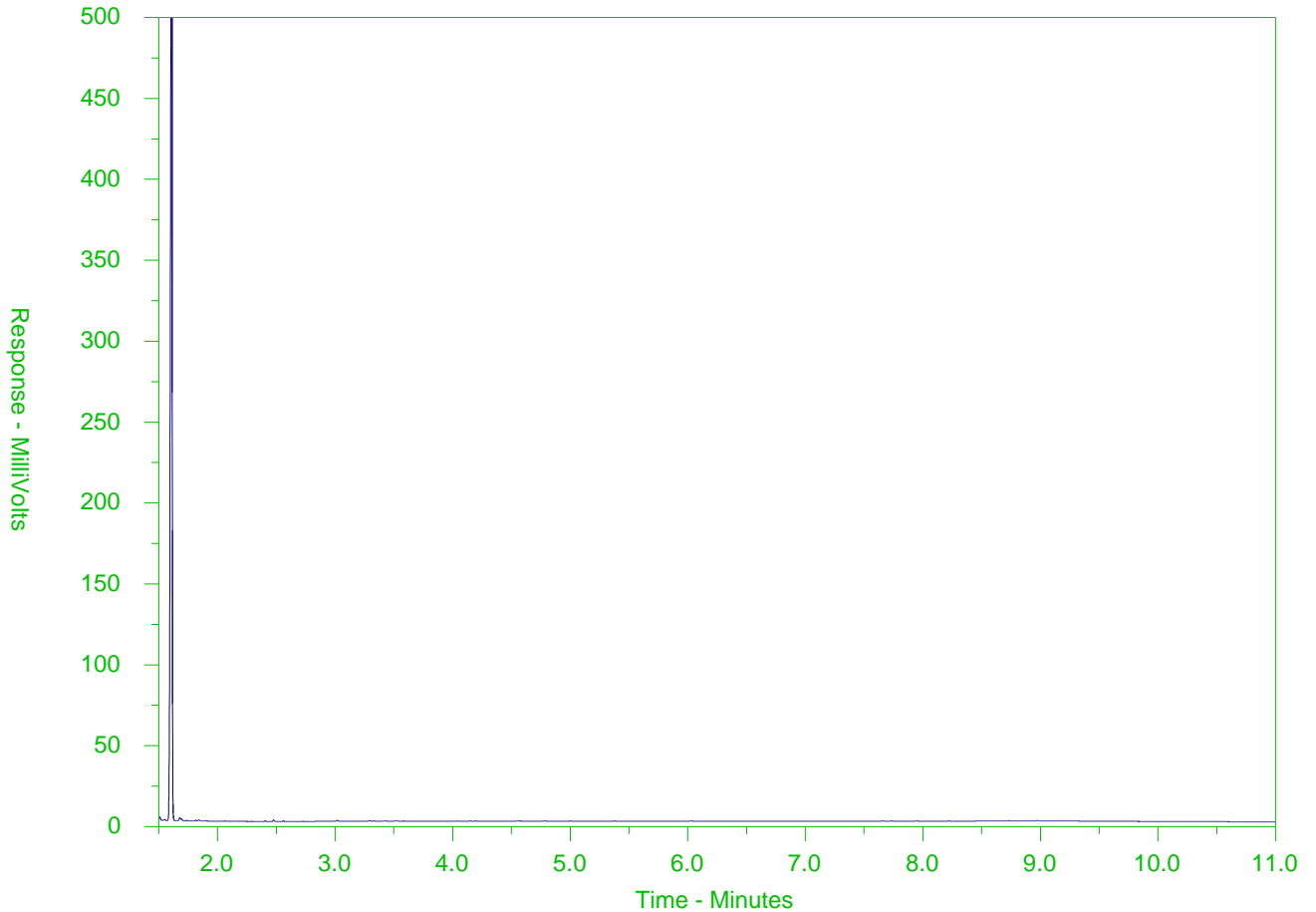
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2539804-2
 Client Sample ID: LC_MW_ER4B_WG_Q4-2020_N



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC29	nC32
174°C	330°C	426°C	467°C
346°F	626°F	811°F	873°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			


The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: LC_GW_20201211		TURNAROUND TIME:				RUSH:																
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO														
Facility Name / Job# Line Creek Operation				Lab Name ALS Calgary				Report Format / Distribution														
Project Manager Chris Blurton				Lab Contact Lyudmyla Shvets				Email 1: chris.blurton@teck.com		Excel	PDF	EDD										
Email chris.blurton@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: teckcoal@equisonline.com														
Address Box 2003				Address 2559 29 Street NE				Email 3: drake.tymstra@teck.com														
15km North Hwy 43								Email 4: shanise.fossen@teck.com														
City Sparwood		Province BC		City Calgary		Province AB		Email 4:														
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada		PO number VPO00680643														
Phone Number 250-425-8478				Phone Number 403 407 1794																		
SAMPLE DETAILS								ANALYSIS REQUESTED														
 L2539804-COFC Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None														
								PRESERV.		ANALYSIS												
LC_MW_ER4A_WG_Q4-2020_N	LC_MW_ER4A	WG	No	12/11/2020	11:05	G	9	ALS_Package-BOD	ALS_Package-DOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Package-EPH						
LC_MW_ER4B_WG_Q4-2020_N	LC_MW_ER4B	WG	No	12/11/2020	12:05	G	9															
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS								RELINQUISHED BY/AFFILIATION				DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME						
								D.Tymstra/S. Fossen				11-Dec		Dh		12/11/2020						
								SERVICE REQUEST (rush subject to availability)														
Regular (default) X								Sampler's Name				S. Fossen/D. Tymstra		Mobile #								
Priority (2-3 business days) - 50% surcharge																						
Emergency (1 Business Day) - 100% surcharge								Sampler's Signature				S Fossen		Date/Time		December 11, 2020						
For Emergency <1 Day, ASAP or Weekend - Contact ALS																						

3°C

Elkview Operations





Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 24-JAN-20
Report Date: 11-DEC-20 15:11 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2409402
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200123Q1GW
Legal Site Desc:

Comments:

11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2409402-1 WG 23-JAN-20 14:35 EV_BALGW_WG_ 2020_Q1_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	777			
	Hardness (as CaCO3) (mg/L)	379			
	pH (pH)	7.58			
	ORP (mV)	370			
	Total Suspended Solids (mg/L)	31.5			
	Total Dissolved Solids (mg/L)	492	DLHC		
	Turbidity (NTU)	26.8			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	23.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	356			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	356			
	Ammonia as N (mg/L)	0.113			
	Bicarbonate (HCO3) (mg/L)	434			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.81			
	Fluoride (F) (mg/L)	0.193			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	99.7			
	Nitrate (as N) (mg/L)	0.0329			
	Nitrite (as N) (mg/L)	0.0024			
	Total Kjeldahl Nitrogen (mg/L)	0.285			
	Total Nitrogen (mg/L)	0.321			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0029			
	Phosphorus (P)-Total (mg/L)	0.0351			
	Sulfate (SO4) (mg/L)	97.3			
	Anion Sum (meq/L)	9.21			
	Cation Sum (meq/L)	9.18			
	Cation - Anion Balance (%)	-0.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.46			
	Total Organic Carbon (mg/L)	2.15			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2409402-1 WG 23-JAN-20 14:35 EV_BALGW_WG_ 2020_Q1_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00019			
	Barium (Ba)-Dissolved (mg/L)	0.0388			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.198			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	98.1			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.19			
	Copper (Cu)-Dissolved (mg/L)	0.00025			
	Iron (Fe)-Dissolved (mg/L)	0.089			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.125			
	Magnesium (Mg)-Dissolved (mg/L)	32.6			
	Manganese (Mn)-Dissolved (mg/L)	0.0267			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000284			
	Nickel (Ni)-Dissolved (mg/L)	0.00174			
	Potassium (K)-Dissolved (mg/L)	2.88			
	Selenium (Se)-Dissolved (ug/L)	0.212			
	Silicon (Si)-Dissolved (mg/L)	5.08			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	34.7			
	Strontium (Sr)-Dissolved (mg/L)	2.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000109			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0070			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200123Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4980047							
WG3264354-2	LCS							
Acidity (as CaCO3)			97.8		%		85-115	24-JAN-20
WG3264354-1	MB							
Acidity (as CaCO3)			1.1		mg/L		2	24-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4980074							
WG3264364-5	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	24-JAN-20
WG3264364-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-2	LCS							
Beryllium (Be)-Dissolved			94.6		%		80-120	27-JAN-20
WG3264695-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-JAN-20
BIC-CL								
	Water							
Batch	R4980074							
WG3264364-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4981868							
WG3265069-2	LCS							
Bromide (Br)			99.0		%		85-115	24-JAN-20
WG3265069-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-6	LCS							
Dissolved Organic Carbon			112.2		%		80-120	24-JAN-20
WG3263672-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4979529							
WG3263672-6	LCS							
Total Organic Carbon			111.3		%		80-120	24-JAN-20
WG3263672-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
CL-IC-N-CL	Water							
Batch	R4981868							
WG3265069-2	LCS							
Chloride (Cl)			102.0		%		90-110	24-JAN-20
WG3265069-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	24-JAN-20
CO3-CL	Water							
Batch	R4980074							
WG3264364-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	24-JAN-20
EC-L-PCT-CL	Water							
Batch	R4980074							
WG3264364-5	LCS							
Conductivity (@ 25C)			97.2		%		90-110	24-JAN-20
WG3264364-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-JAN-20
F-IC-N-CL	Water							
Batch	R4981868							
WG3265069-2	LCS							
Fluoride (F)			104.6		%		90-110	24-JAN-20
WG3265069-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4981097							
WG3265044-3	DUP	L2409402-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	28-JAN-20
WG3265044-2	LCS							
Mercury (Hg)-Dissolved			99.2		%		80-120	28-JAN-20
WG3265044-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	28-JAN-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-2	LCS							
Aluminum (Al)-Dissolved			100.7		%		80-120	27-JAN-20
Antimony (Sb)-Dissolved			100.3		%		80-120	27-JAN-20
Arsenic (As)-Dissolved			98.1		%		80-120	27-JAN-20
Barium (Ba)-Dissolved			105.3		%		80-120	27-JAN-20
Bismuth (Bi)-Dissolved			97.8		%		80-120	27-JAN-20
Boron (B)-Dissolved			90.9		%		80-120	27-JAN-20
Cadmium (Cd)-Dissolved			99.0		%		80-120	27-JAN-20
Calcium (Ca)-Dissolved			93.0		%		80-120	27-JAN-20
Chromium (Cr)-Dissolved			99.6		%		80-120	27-JAN-20
Cobalt (Co)-Dissolved			99.0		%		80-120	27-JAN-20
Copper (Cu)-Dissolved			97.9		%		80-120	27-JAN-20
Iron (Fe)-Dissolved			94.2		%		80-120	27-JAN-20
Lead (Pb)-Dissolved			94.9		%		80-120	27-JAN-20
Lithium (Li)-Dissolved			90.7		%		80-120	27-JAN-20
Magnesium (Mg)-Dissolved			97.8		%		80-120	27-JAN-20
Manganese (Mn)-Dissolved			98.2		%		80-120	27-JAN-20
Molybdenum (Mo)-Dissolved			103.7		%		80-120	27-JAN-20
Nickel (Ni)-Dissolved			100.1		%		80-120	27-JAN-20
Potassium (K)-Dissolved			102.9		%		80-120	27-JAN-20
Selenium (Se)-Dissolved			100.8		%		80-120	27-JAN-20
Silicon (Si)-Dissolved			104.8		%		60-140	27-JAN-20
Silver (Ag)-Dissolved			99.8		%		80-120	27-JAN-20
Sodium (Na)-Dissolved			100.3		%		80-120	27-JAN-20
Strontium (Sr)-Dissolved			103.1		%		80-120	27-JAN-20
Thallium (Tl)-Dissolved			93.2		%		80-120	27-JAN-20
Tin (Sn)-Dissolved			96.3		%		80-120	27-JAN-20
Titanium (Ti)-Dissolved			99.7		%		80-120	27-JAN-20
Uranium (U)-Dissolved			92.1		%		80-120	27-JAN-20
Vanadium (V)-Dissolved			101.3		%		80-120	27-JAN-20
Zinc (Zn)-Dissolved			101.7		%		80-120	27-JAN-20
WG3264695-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4981926							
WG3264695-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979959							
WG3264171-6	LCS							
Ammonia as N			104.2		%		85-115	26-JAN-20
WG3264171-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-JAN-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R4981868							
WG3265069-2	LCS							
Nitrite (as N)			97.8		%		90-110	24-JAN-20
WG3265069-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-JAN-20
NO3-L-IC-N-CL	Water							
Batch	R4981868							
WG3265069-2	LCS							
Nitrate (as N)			101.5		%		90-110	24-JAN-20
WG3265069-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-JAN-20
OH-CL	Water							
Batch	R4980074							
WG3264364-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-JAN-20
ORP-CL	Water							
Batch	R4981547							
WG3263751-3	CRM	CL-ORP						
ORP			222		mV		210-230	25-JAN-20
P-T-L-COL-CL	Water							
Batch	R4980066							
WG3264299-7	DUP	L2409402-1						
Phosphorus (P)-Total		0.0351	0.0308		mg/L	13	20	27-JAN-20
WG3264299-6	LCS							
Phosphorus (P)-Total			101.5		%		80-120	27-JAN-20
WG3264299-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JAN-20
WG3264299-8	MS	L2409402-1						
Phosphorus (P)-Total			78.5		%		70-130	27-JAN-20
P-TD-L-COL-CL	Water							
Batch	R4980066							
WG3264299-7	DUP	L2409402-1						
Phosphorus (P)-Total Dissolved		0.0029	0.0025		mg/L	15	20	27-JAN-20
WG3264299-6	LCS							
Phosphorus (P)-Total Dissolved			101.5		%		80-120	27-JAN-20
WG3264299-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-TD-L-COL-CL	Water							
Batch	R4980066							
WG3264299-5 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	27-JAN-20
WG3264299-8 MS		L2409402-1						
Phosphorus (P)-Total Dissolved			77.2		%		70-130	27-JAN-20
PH-CL	Water							
Batch	R4980074							
WG3264364-5 LCS								
pH			7.02		pH		6.9-7.1	24-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4979382							
WG3263257-2 LCS								
Orthophosphate-Dissolved (as P)			101.7		%		80-120	24-JAN-20
WG3263257-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-20
SO4-IC-N-CL	Water							
Batch	R4981868							
WG3265069-2 LCS								
Sulfate (SO4)			102.8		%		90-110	24-JAN-20
WG3265069-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-JAN-20
SOLIDS-TDS-CL	Water							
Batch	R4981936							
WG3264177-11 LCS								
Total Dissolved Solids			100.4		%		85-115	27-JAN-20
WG3264177-10 MB								
Total Dissolved Solids			<10		mg/L		10	27-JAN-20
TKN-L-F-CL	Water							
Batch	R4979597							
WG3263649-2 LCS								
Total Kjeldahl Nitrogen			95.0		%		75-125	25-JAN-20
WG3263649-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-JAN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R4982648							
WG3264264-4	LCS							
Total Suspended Solids			90.9		%		85-115	27-JAN-20
WG3264264-3	MB							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-20
TURBIDITY-CL	Water							
Batch	R4979687							
WG3263754-2	LCS							
Turbidity			103.5		%		85-115	25-JAN-20
WG3263754-1	MB							
Turbidity			<0.10		NTU		0.1	25-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	23-JAN-20 14:35	25-JAN-20 09:30	0.25	43	hours	EHTR-FM
pH	1	23-JAN-20 14:35	24-JAN-20 13:00	0.25	22	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2409402 were received on 24-JAN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

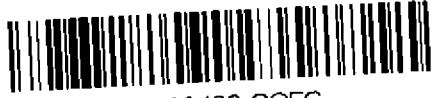
COC ID: **20200123Q1GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_BALgw_WG_2020_Q1_NP	EV_BALgw	WG	N	1/23/2020	14:35	G	5	1	1	1		1					1		
							Total	5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were perserved other than EPH Bottles.	Jason Gravelle	January 23, 2020	<i>[Signature]</i>	1/24 2020

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jason Gravelle	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	January 23, 2020



L2409402-COFC



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 28-JAN-20
Report Date: 29-DEC-20 12:08 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2410752
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200127Q1GW
Legal Site Desc:

Comments: ADDITIONAL 20-DEC-20 16:03
ADDITIONAL 04-FEB-20 14:59

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2410752-1 WG 27-JAN-20 09:55 EV_OCGW_WG_2 020_Q1_NP	L2410752-2 WG 27-JAN-20 10:00 EV_MC5GW_WG_ 2020_Q1_NP	L2410752-3 WG 27-JAN-20 10:05 EV_MC6GW_WG_ 2020_Q1_NP	L2410752-4 WG 27-JAN-20 10:15 EV_MC7GW_WG_ 2020_Q1_NP	L2410752-5 WG 27-JAN-20 11:25 EV_RCSGW_WG_ 2020_Q1_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	458	452	<2.0	<2.0	2340
	Hardness (as CaCO3) (mg/L)	143	141	<0.50	<0.50	1540
	pH (pH)	8.12	8.09	5.47	5.34	7.82
	ORP (mV)	289	363	431	447	430
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	309 ^{DLHC}	306 ^{DLHC}	<10	<10	2260 ^{DLHC}
	Turbidity (NTU)	1.16	1.22	<0.10 ^{RRV}	<0.10 ^{RRV}	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	2.1	2.1	6.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	186	183	<1.0	<1.0	300
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	186	183	<1.0	<1.0	300
	Ammonia as N (mg/L)	0.0796	0.0802	<0.0050	<0.0050	0.0061
	Bicarbonate (HCO3) (mg/L)	227	223	<5.0	<5.0	366
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25 ^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.10	2.17	<0.50	<0.50	14.8 ^{DLHC}
	Fluoride (F) (mg/L)	1.01	1.06	<0.020	<0.020	0.16 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	97.4	96.3	0.0	0.0	90.8
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	32.8 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	0.105	0.090	<0.050	<0.050	<0.050 ^{TKNI}
	Total Nitrogen (mg/L)	0.105	0.090	<0.050	<0.050	32.8
	Orthophosphate-Dissolved (as P) (mg/L)	0.0101	0.0091	<0.0010	<0.0010	0.0033
	Phosphorus (P)-Total Dissolved (mg/L)	0.0134	0.0216 ^{DLM}	<0.0020	<0.0020	0.0065 ^{DLM}
	Phosphorus (P)-Total (mg/L)	0.0135	0.022 ^{DLM}	<0.0020	<0.0020	0.0060 ^{DLM}
	Sulfate (SO4) (mg/L)	65.5	69.2	<0.30	<0.30	1230 ^{DLHC}
	Anion Sum (meq/L)	5.19	5.22	<0.10	<0.10	34.5
Cation Sum (meq/L)	5.06	5.02	<0.10	<0.10	31.3	
Cation - Anion Balance (%)	-1.3	-1.9	0.0	0.0	-4.8	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.23
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.35
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	LAB	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	LAB	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2410752-6 WG 27-JAN-20 11:20 EV_HW1_WG_202 0_Q1_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1140			
	Hardness (as CaCO3) (mg/L)	625			
	pH (pH)	7.65			
	ORP (mV)	429			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	934	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	246			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	246			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	300	DLHC		
	Bromide (Br) (mg/L)	0.84	DLHC		
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	33.3	DLHC		
	Fluoride (F) (mg/L)	0.14	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	90.5			
	Nitrate (as N) (mg/L)	7.40	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	7.40			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0028			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0054	DLM		
	Phosphorus (P)-Total (mg/L)	0.0055	DLM		
	Sulfate (SO4) (mg/L)	386	DLHC		
	Anion Sum (meq/L)	14.4			
	Cation Sum (meq/L)	13.1			
	Cation - Anion Balance (%)	-5.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.64			
	Total Organic Carbon (mg/L)	0.57			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2410752-1 WG 27-JAN-20 09:55 EV_OCGW_WG_2 2020_Q1_NP	L2410752-2 WG 27-JAN-20 10:00 EV_MC5GW_WG_ 2020_Q1_NP	L2410752-3 WG 27-JAN-20 10:05 EV_MC6GW_WG_ 2020_Q1_NP	L2410752-4 WG 27-JAN-20 10:15 EV_MC7GW_WG_ 2020_Q1_NP	L2410752-5 WG 27-JAN-20 11:25 EV_RCSGW_WG_ 2020_Q1_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00022
	Arsenic (As)-Dissolved (mg/L)	0.00137	0.00139	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0502	0.0500	<0.00010	<0.00010	0.0429
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.128	0.130	<0.010	<0.010	0.022
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.254
	Calcium (Ca)-Dissolved (mg/L)	26.4	26.1	<0.050	<0.050	320
	Chromium (Cr)-Dissolved (mg/L)	0.00010	<0.00010	<0.00010	<0.00010	0.00013
	Cobalt (Co)-Dissolved (ug/L)	0.11	0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	0.0671
	Iron (Fe)-Dissolved (mg/L)	0.209	0.204	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000344
	Lithium (Li)-Dissolved (mg/L)	0.0255	0.0253	<0.0010	<0.0010	0.0753
	Magnesium (Mg)-Dissolved (mg/L)	18.8	18.5	<0.10	<0.10	181
	Manganese (Mn)-Dissolved (mg/L)	0.0875	0.0868	<0.00010	<0.00010	0.00052
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Mercury (Hg)-Dissolved (ug/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0140	0.0142	<0.000050	<0.000050	0.00137
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00728
	Potassium (K)-Dissolved (mg/L)	1.59	1.60	<0.050	<0.050	3.88
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	253
	Silicon (Si)-Dissolved (mg/L)	4.83	4.80	<0.050	<0.050	4.74
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	49.2	49.3	<0.050	<0.050	7.11
	Strontium (Sr)-Dissolved (mg/L)	0.374	0.373	<0.00020	<0.00020	0.421
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000017
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00115	0.00113	<0.000010	<0.000010	0.00835
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.277
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Hydrocarbons	EPH10-19 (mg/L)	<0.25	<0.25	<0.25	<0.25	
	EPH (C10-C32) (mg/L)	<0.50	<0.50	<0.50	<0.50	
	EPH19-32 (mg/L)	<0.25	<0.25	<0.25	<0.25	
	TEH (C10-C30) (mg/L)	<0.25	<0.25	<0.25	<0.25	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2410752-6 WG 27-JAN-20 11:20 EV_HW1_WG_202 0_Q1_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0591			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.026			
	Cadmium (Cd)-Dissolved (ug/L)	0.0873			
	Calcium (Ca)-Dissolved (mg/L)	147			
	Chromium (Cr)-Dissolved (mg/L)	0.00014			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.0352			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000184			
	Lithium (Li)-Dissolved (mg/L)	0.0529			
	Magnesium (Mg)-Dissolved (mg/L)	62.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00017			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000660			
	Nickel (Ni)-Dissolved (mg/L)	0.00080			
	Potassium (K)-Dissolved (mg/L)	2.12			
	Selenium (Se)-Dissolved (ug/L)	53.0			
	Silicon (Si)-Dissolved (mg/L)	3.67			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	11.7			
	Strontium (Sr)-Dissolved (mg/L)	0.333			
	Thallium (Tl)-Dissolved (mg/L)	0.000023			
	Tin (Sn)-Dissolved (mg/L)	0.00019			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00161			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0297			
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)				
Hydrocarbons	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2410752-1 WG 27-JAN-20 09:55 EV_OCGW_WG_2020_Q1_NP	L2410752-2 WG 27-JAN-20 10:00 EV_MC5GW_WG_2020_Q1_NP	L2410752-3 WG 27-JAN-20 10:05 EV_MC6GW_WG_2020_Q1_NP	L2410752-4 WG 27-JAN-20 10:15 EV_MC7GW_WG_2020_Q1_NP	L2410752-5 WG 27-JAN-20 11:25 EV_RCSGW_WG_2020_Q1_NP
Grouping	Analyte					
WATER						
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)	76.5	77.1	74.8	75.8	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

<p>Sample ID L2410752-6 Description WG Sampled Date 27-JAN-20 Sampled Time 11:20 Client ID EV_HW1_WG_202 0_Q1_NP</p>					
<p>Grouping Analyte</p>					
<p>WATER</p>					
<p>Hydrocarbons Surrogate: 2-Bromobenzotrifluoride (%)</p>					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - -4 D-MET & D-NUT FILTERED AND PRESERVED AT THE LAB

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2410752-4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2410752-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2410752-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2410752-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2410752-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2410752-1, -2, -3, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a			

Reference Information

halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

CR6-D-IC-ED Water Chromium, Dissolved Hexavalent (Cr +6) APHA 3500-Cr C (Ion Chromatography)

This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Results are based on a field-filtered, field-preserved sample.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Reference Information

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200127Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2410752

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R4986307							
WG3268004-2	LCS							
Acidity (as CaCO3)			103.4		%		85-115	31-JAN-20
WG3268004-5	LCS							
Acidity (as CaCO3)			101.0		%		85-115	31-JAN-20
WG3268004-1	MB							
Acidity (as CaCO3)			2.0		mg/L		2	31-JAN-20
WG3268004-4	MB							
Acidity (as CaCO3)			1.0		mg/L		2	31-JAN-20
ALK-MAN-CL		Water						
Batch	R4985627							
WG3267435-2	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	30-JAN-20
WG3267435-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-20
BE-D-L-CCMS-VA		Water						
Batch	R4985944							
WG3267066-2	LCS							
Beryllium (Be)-Dissolved			100.3		%		80-120	31-JAN-20
WG3267066-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-JAN-20
Batch	R4986100							
WG3266966-2	LCS							
Beryllium (Be)-Dissolved			93.6		%		80-120	31-JAN-20
WG3266966-1	MB	LF						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-JAN-20
BR-L-IC-N-CL		Water						
Batch	R4983120							
WG3265851-8	LCS							
Bromide (Br)			103.7		%		85-115	28-JAN-20
WG3265851-7	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-JAN-20
C-DIS-ORG-LOW-CL		Water						
Batch	R4985586							
WG3267222-2	LCS							
Dissolved Organic Carbon			107.1		%		80-120	30-JAN-20
WG3267222-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-JAN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R4985586							
WG3267222-2	LCS							
Total Organic Carbon			101.8		%		80-120	30-JAN-20
WG3267222-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-JAN-20
CL-IC-N-CL Water								
Batch	R4983120							
WG3265851-8	LCS							
Chloride (Cl)			104.3		%		90-110	28-JAN-20
WG3265851-7	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-JAN-20
CR6-D-IC-ED Water								
Batch	R4985817							
WG3266910-3	DUP	L2410752-1						
Hexavalent Chromium-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-FEB-20
WG3266910-2	LCS							
Hexavalent Chromium-Dissolved			100.6		%		80-120	01-FEB-20
WG3266910-7	LCS							
Hexavalent Chromium-Dissolved			100.7		%		80-120	01-FEB-20
WG3266910-1	MB							
Hexavalent Chromium-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
WG3266910-8	MB							
Hexavalent Chromium-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
WG3266910-4	MS	L2410752-1						
Hexavalent Chromium-Dissolved			100.6		%		70-130	01-FEB-20
EC-L-PCT-CL Water								
Batch	R4985627							
WG3267435-2	LCS							
Conductivity (@ 25C)			99.8		%		90-110	30-JAN-20
WG3267435-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-20
F-IC-N-CL Water								
Batch	R4983120							
WG3265851-8	LCS							
Fluoride (F)			107.6		%		90-110	28-JAN-20
WG3265851-7	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-JAN-20
HG-D-CVAA-VA Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4983529							
WG3266899-2	LCS							
Mercury (Hg)-Dissolved			96.2		%		80-120	30-JAN-20
WG3266899-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JAN-20
WG3266899-4	MS	L2410752-5						
Mercury (Hg)-Dissolved			88.9		%		70-130	30-JAN-20
HG-D-U-CVAF-VA								
Water								
Batch	R4986332							
WG3267900-3	DUP	L2410752-1						
Mercury (Hg)-Dissolved		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	01-FEB-20
WG3267900-2	LCS							
Mercury (Hg)-Dissolved			107.6		%		80-120	01-FEB-20
WG3267900-1	MB	NP						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	01-FEB-20
WG3267900-4	MS	L2410752-2						
Mercury (Hg)-Dissolved			109.3		%		70-130	01-FEB-20
Batch	R4988526							
WG3269353-2	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	04-FEB-20
WG3269353-1	MB	LF						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	04-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4985944							
WG3267066-2	LCS							
Aluminum (Al)-Dissolved			105.8		%		80-120	31-JAN-20
Antimony (Sb)-Dissolved			97.5		%		80-120	31-JAN-20
Arsenic (As)-Dissolved			99.8		%		80-120	31-JAN-20
Barium (Ba)-Dissolved			98.3		%		80-120	31-JAN-20
Bismuth (Bi)-Dissolved			100.1		%		80-120	31-JAN-20
Boron (B)-Dissolved			100.8		%		80-120	31-JAN-20
Cadmium (Cd)-Dissolved			98.8		%		80-120	31-JAN-20
Calcium (Ca)-Dissolved			99.0		%		80-120	31-JAN-20
Chromium (Cr)-Dissolved			105.4		%		80-120	31-JAN-20
Cobalt (Co)-Dissolved			101.5		%		80-120	31-JAN-20
Copper (Cu)-Dissolved			102.5		%		80-120	31-JAN-20
Iron (Fe)-Dissolved			104.2		%		80-120	31-JAN-20
Lead (Pb)-Dissolved			102.4		%		80-120	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-2	LCS							
Lithium (Li)-Dissolved			99.4		%		80-120	31-JAN-20
Magnesium (Mg)-Dissolved			99.5		%		80-120	31-JAN-20
Manganese (Mn)-Dissolved			101.9		%		80-120	31-JAN-20
Molybdenum (Mo)-Dissolved			95.6		%		80-120	31-JAN-20
Nickel (Ni)-Dissolved			101.5		%		80-120	31-JAN-20
Potassium (K)-Dissolved			101.8		%		80-120	31-JAN-20
Selenium (Se)-Dissolved			110.2		%		80-120	31-JAN-20
Silicon (Si)-Dissolved			111.1		%		60-140	31-JAN-20
Silver (Ag)-Dissolved			98.6		%		80-120	31-JAN-20
Sodium (Na)-Dissolved			104.7		%		80-120	31-JAN-20
Strontium (Sr)-Dissolved			101.0		%		80-120	31-JAN-20
Thallium (Tl)-Dissolved			101.6		%		80-120	31-JAN-20
Tin (Sn)-Dissolved			98.8		%		80-120	31-JAN-20
Titanium (Ti)-Dissolved			94.1		%		80-120	31-JAN-20
Uranium (U)-Dissolved			100.1		%		80-120	31-JAN-20
Vanadium (V)-Dissolved			103.7		%		80-120	31-JAN-20
Zinc (Zn)-Dissolved			97.2		%		80-120	31-JAN-20
WG3267066-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Batch	R4986100							
WG3266966-2	LCS							
Aluminum (Al)-Dissolved			110.4		%		80-120	31-JAN-20
Antimony (Sb)-Dissolved			94.6		%		80-120	31-JAN-20
Arsenic (As)-Dissolved			102.0		%		80-120	31-JAN-20
Barium (Ba)-Dissolved			107.1		%		80-120	31-JAN-20
Bismuth (Bi)-Dissolved			97.4		%		80-120	31-JAN-20
Boron (B)-Dissolved			95.6		%		80-120	31-JAN-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	31-JAN-20
Calcium (Ca)-Dissolved			95.8		%		80-120	31-JAN-20
Chromium (Cr)-Dissolved			105.0		%		80-120	31-JAN-20
Cobalt (Co)-Dissolved			103.6		%		80-120	31-JAN-20
Copper (Cu)-Dissolved			102.6		%		80-120	31-JAN-20
Iron (Fe)-Dissolved			96.8		%		80-120	31-JAN-20
Lead (Pb)-Dissolved			96.1		%		80-120	31-JAN-20
Lithium (Li)-Dissolved			89.1		%		80-120	31-JAN-20
Magnesium (Mg)-Dissolved			101.1		%		80-120	31-JAN-20
Manganese (Mn)-Dissolved			107.7		%		80-120	31-JAN-20
Molybdenum (Mo)-Dissolved			100.9		%		80-120	31-JAN-20
Nickel (Ni)-Dissolved			102.8		%		80-120	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986100							
WG3266966-2	LCS							
Potassium (K)-Dissolved			105.9		%		80-120	31-JAN-20
Selenium (Se)-Dissolved			95.3		%		80-120	31-JAN-20
Silicon (Si)-Dissolved			107.4		%		60-140	31-JAN-20
Silver (Ag)-Dissolved			101.0		%		80-120	31-JAN-20
Sodium (Na)-Dissolved			110.7		%		80-120	31-JAN-20
Strontium (Sr)-Dissolved			98.3		%		80-120	31-JAN-20
Thallium (Tl)-Dissolved			99.2		%		80-120	31-JAN-20
Tin (Sn)-Dissolved			96.9		%		80-120	31-JAN-20
Titanium (Ti)-Dissolved			97.7		%		80-120	31-JAN-20
Uranium (U)-Dissolved			92.1		%		80-120	31-JAN-20
Vanadium (V)-Dissolved			104.0		%		80-120	31-JAN-20
Zinc (Zn)-Dissolved			104.3		%		80-120	31-JAN-20
WG3266966-1	MB	LF						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986100							
WG3266966-1	MB	LF						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4986982							
WG3267704-2	LCS							
Ammonia as N			104.8		%		85-115	31-JAN-20
WG3267704-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4983120							
WG3265851-8	LCS							
Nitrite (as N)			100.6		%		90-110	28-JAN-20
WG3265851-7	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4983120							
WG3265851-8	LCS							
Nitrate (as N)			105.7		%		90-110	28-JAN-20
WG3265851-7	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-JAN-20
ORP-CL								
	Water							
Batch	R4985048							
WG3265673-1	CRM	CL-ORP						
ORP			224		mV		210-230	29-JAN-20
WG3265673-3	CRM	CL-ORP						
ORP			223		mV		210-230	29-JAN-20
P-T-L-COL-CL								
	Water							



Quality Control Report

Workorder: L2410752

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R4983128							
WG3265762-11	DUP	L2410752-6						
Phosphorus (P)-Total		0.0055	0.0053		mg/L	5.0	20	29-JAN-20
WG3265762-10	LCS							
Phosphorus (P)-Total			105.7		%		80-120	29-JAN-20
WG3265762-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-JAN-20
WG3265762-12	MS	L2410752-6						
Phosphorus (P)-Total			119.6		%		70-130	29-JAN-20
P-TD-L-COL-CL								
Water								
Batch	R4983128							
WG3265762-11	DUP	L2410752-6						
Phosphorus (P)-Total Dissolved		0.0054	0.0055		mg/L	2.7	20	29-JAN-20
WG3265762-10	LCS							
Phosphorus (P)-Total Dissolved			105.7		%		80-120	29-JAN-20
WG3265762-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	29-JAN-20
WG3265762-12	MS	L2410752-6						
Phosphorus (P)-Total Dissolved			81.5		%		70-130	29-JAN-20
PH-CL								
Water								
Batch	R4985627							
WG3267435-2	LCS							
pH			6.99		pH		6.9-7.1	30-JAN-20
PO4-DO-L-COL-CL								
Water								
Batch	R4982569							
WG3265217-6	LCS							
Orthophosphate-Dissolved (as P)			100.3		%		80-120	28-JAN-20
WG3265217-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-JAN-20
SO4-IC-N-CL								
Water								
Batch	R4983120							
WG3265851-8	LCS							
Sulfate (SO4)			102.0		%		90-110	28-JAN-20
WG3265851-7	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-JAN-20
SOLIDS-TDS-CL								
Water								



Quality Control Report

Workorder: L2410752

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R4985408							
WG3266483-2	LCS							
Total Dissolved Solids			100.5		%		85-115	30-JAN-20
WG3266483-1	MB							
Total Dissolved Solids			<10		mg/L		10	30-JAN-20
TEH-BC-VA-CL								
Water								
Batch	R4986393							
WG3266534-2	LCS							
EPH10-19			93.6		%		70-130	01-FEB-20
EPH19-32			85.6		%		70-130	01-FEB-20
WG3266534-1	MB							
EPH10-19			<0.25		mg/L		0.25	01-FEB-20
EPH19-32			<0.25		mg/L		0.25	01-FEB-20
Surrogate: 2-Bromobenzotrifluoride			94.1		%		60-140	01-FEB-20
TEH-WATER-VA-CL								
Water								
Batch	R4986393							
WG3266534-2	LCS							
TEH (C10-C30)			91.6		%		70-130	01-FEB-20
WG3266534-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	01-FEB-20
Surrogate: 2-Bromobenzotrifluoride			94.1		%		60-140	01-FEB-20
TKN-L-F-CL								
Water								
Batch	R4985736							
WG3267323-3	DUP	L2410752-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3267323-2	LCS							
Total Kjeldahl Nitrogen			101.8		%		75-125	31-JAN-20
WG3267323-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-JAN-20
WG3267323-4	MS	L2410752-3						
Total Kjeldahl Nitrogen			110.0		%		70-130	31-JAN-20
TSS-L-CL								
Water								
Batch	R4985815							
WG3266485-2	LCS							
Total Suspended Solids			103.4		%		85-115	30-JAN-20
WG3266485-1	MB							
Total Suspended Solids			<1.0		mg/L		1	30-JAN-20
TURBIDITY-CL								
Water								



Quality Control Report

Workorder: L2410752

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R4982945							
WG3265672-3	DUP	L2410752-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	29-JAN-20
WG3265672-2	LCS							
Turbidity			105.0		%		85-115	29-JAN-20
WG3265672-1	MB							
Turbidity			<0.10		NTU		0.1	29-JAN-20

Quality Control Report

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Report Date: 29-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2410752

Report Date: 29-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	27-JAN-20 09:55	29-JAN-20 07:45	0.25	46	hours	EHTR-FM
	2	27-JAN-20 10:00	29-JAN-20 07:45	0.25	46	hours	EHTR-FM
	3	27-JAN-20 10:05	29-JAN-20 07:45	0.25	46	hours	EHTR-FM
	4	27-JAN-20 10:15	29-JAN-20 07:45	0.25	46	hours	EHTR-FM
	5	27-JAN-20 11:25	29-JAN-20 07:45	0.25	44	hours	EHTR-FM
	6	27-JAN-20 11:20	29-JAN-20 07:45	0.25	44	hours	EHTR-FM
pH							
	1	27-JAN-20 09:55	30-JAN-20 11:00	0.25	73	hours	EHTR-FM
	2	27-JAN-20 10:00	30-JAN-20 11:00	0.25	73	hours	EHTR-FM
	3	27-JAN-20 10:05	30-JAN-20 11:00	0.25	73	hours	EHTR-FM
	4	27-JAN-20 10:15	30-JAN-20 11:00	0.25	73	hours	EHTR-FM
	5	27-JAN-20 11:25	30-JAN-20 11:00	0.25	72	hours	EHTR-FM
	6	27-JAN-20 11:20	30-JAN-20 11:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2410752 were received on 28-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

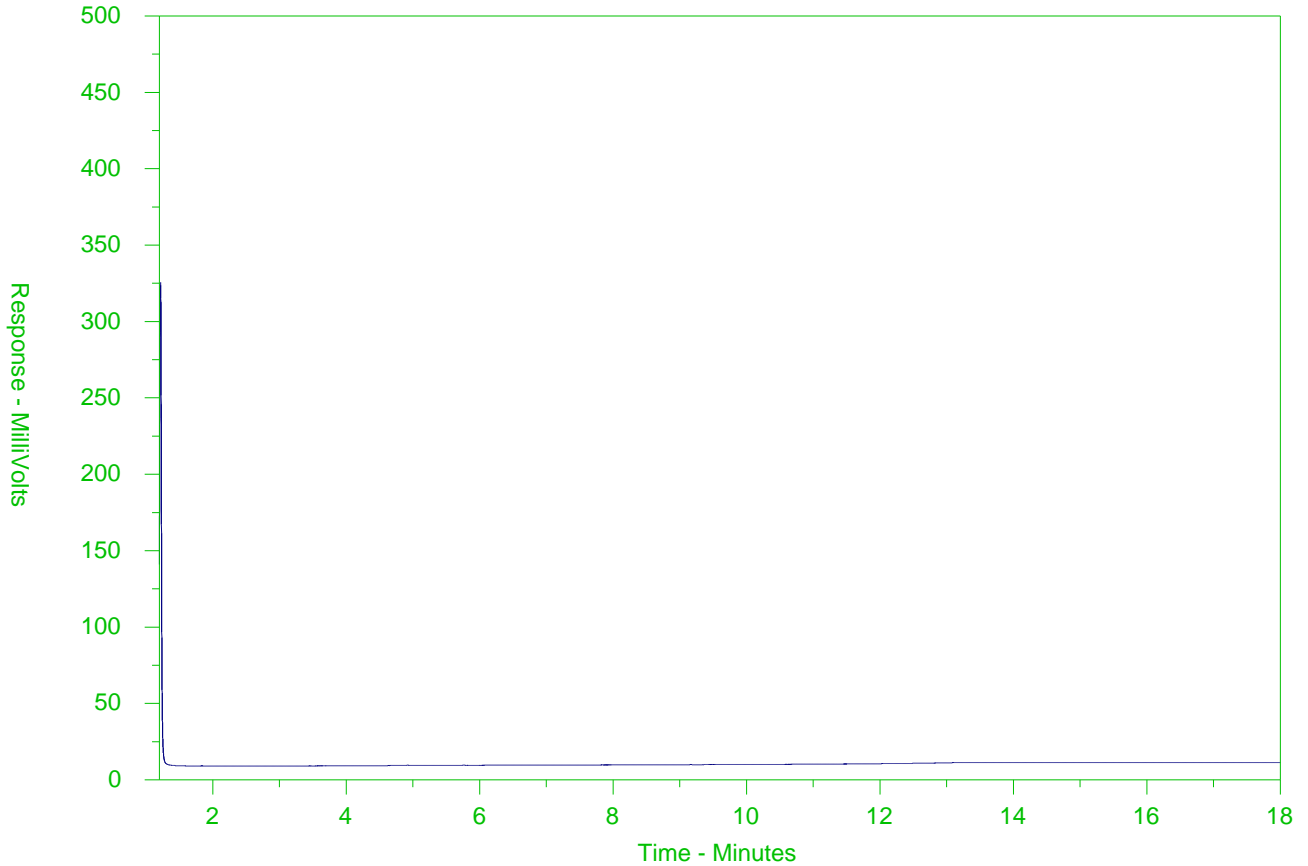
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2410752-1
 Client Sample ID: EV_OCGW_WG_2020_Q1_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

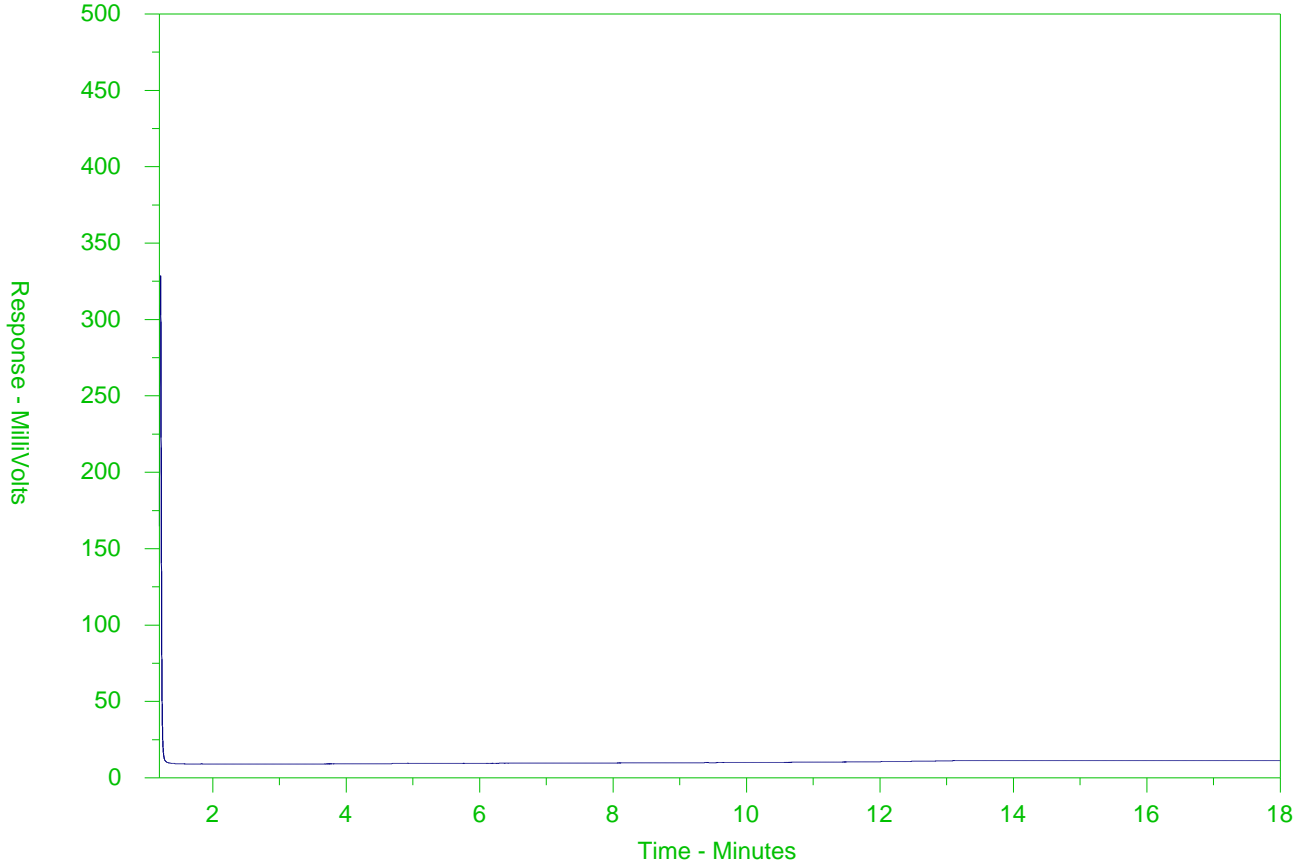
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2410752-2
 Client Sample ID: EV_MC5GW_WG_2020_Q1_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

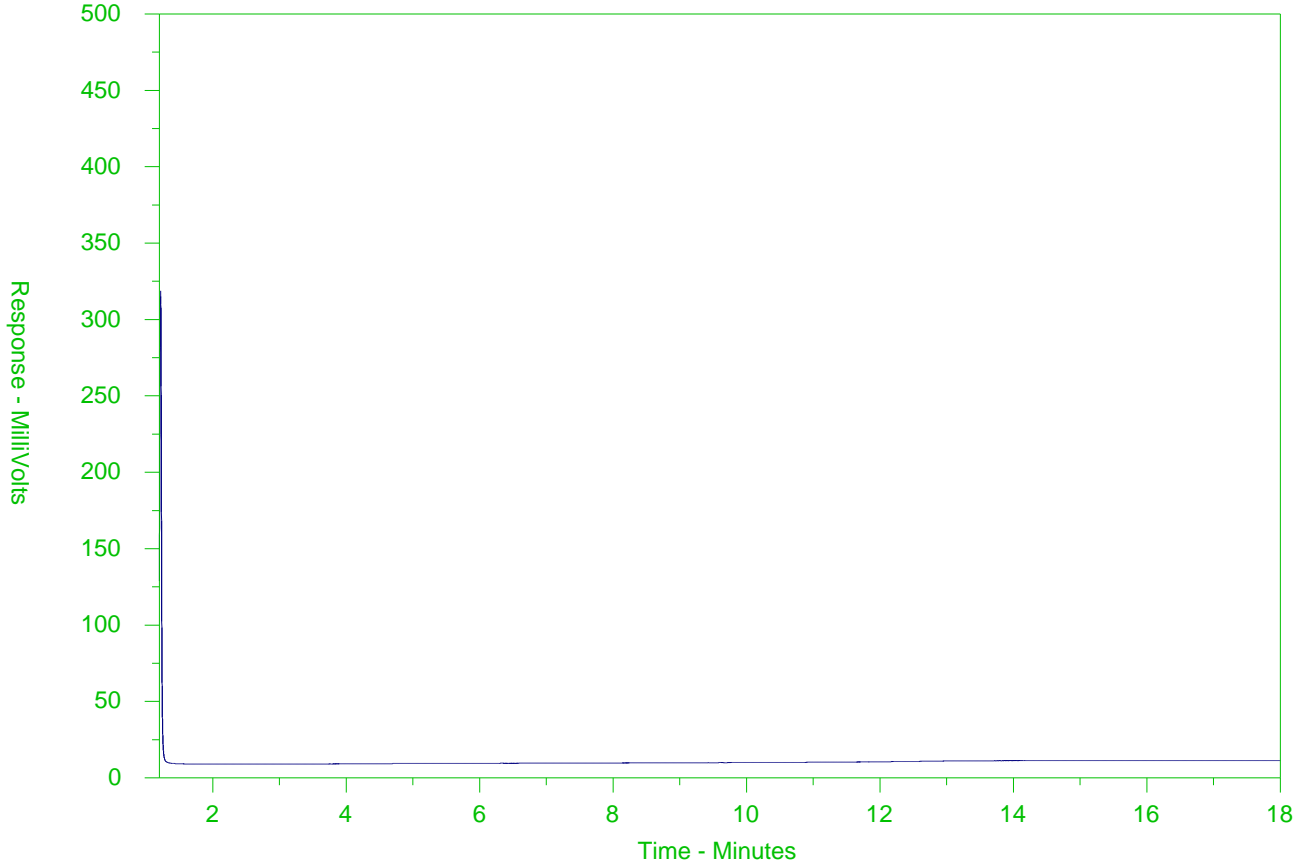
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2410752-3
 Client Sample ID: EV_MC6GW_WG_2020_Q1_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

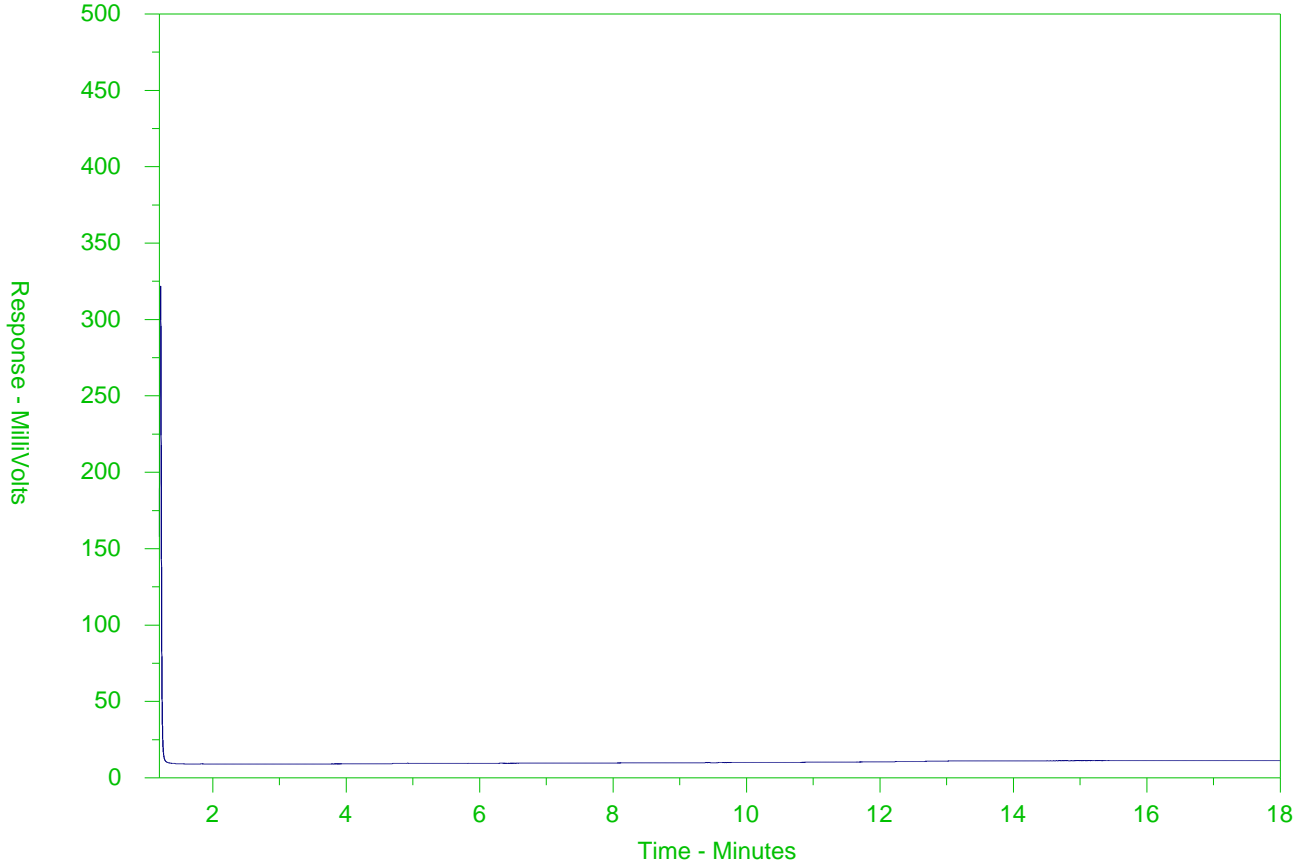
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2410752-4
 Client Sample ID: EV_MC7GW_WG_2020_Q1_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	20200127Q1GW			TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS **ANALYSIS REQUESTED**



L2410752-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Dissolved Chromium VI	
EV_OCGW_WG_2020_Q1_NP	EV_OCGW	WG	N	1/27/2020	9:55	G	8	1	1	1	1	1	1	2	1				
EV_MCSGW_WG_2020_Q1_NP	EV_MCSGW	WG	N	1/27/2020	10:00	G	8												
EV_MC6GW_WG_2020_Q1_NP	EV_MC6GW	WG	N	1/27/2020	10:05	G	8												
EV_MC7GW_WG_2020_Q1_NP	EV_MC7GW	WG	N	1/27/2020	10:10	G	8												
EV_RCSGW_WG_2020_Q1_NP	EV_RCSGW	WG	N	1/27/2020	11:25	G	5	1	1	1	1			1					
EV_HWI_WG_2020_Q1_NP	EV_HWI	WG	N	1/27/2020	11:20	G	5	1	1	1	1			1					
							Total											42	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were perserved other than EPH Bottles.	Kimberley Hackett	January 27, 2020	<i>DK</i>	1/28 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett	
	Sampler's Signature	Date/Time
	<i>Kimberley Hackett</i>	January 27, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 29-JAN-20
Report Date: 18-DEC-20 14:15 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2411072
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200128Q1GW
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:21

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2411072-1 WG 28-JAN-20 15:20 EV_WH50GW_WG _2020_Q1_NP	L2411072-2 WG 28-JAN-20 13:15 EV_GCGW_WG_2 020_Q1_NP	L2411072-3 WG 28-JAN-20 14:15 EV_BCGW_WG_2 020_Q1_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	517	427	595	
	Hardness (as CaCO3) (mg/L)	302	234	333	
	pH (pH)	7.95	7.90	7.84	
	ORP (mV)	431	391	452	
	Total Suspended Solids (mg/L)	6.9	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	313 ^{DLHC}	270 ^{DLHC}	401 ^{DLHC}	
	Turbidity (NTU)	9.36	3.07	<0.10	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	181	172	185	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	181	172	185	
	Ammonia as N (mg/L)	<0.0050	0.0309	<0.0050	
	Bicarbonate (HCO3) (mg/L)	221	210	226	
	Bromide (Br) (mg/L)	<0.050	<0.050	0.108	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	2.79	4.31	3.88	
	Fluoride (F) (mg/L)	0.110	0.445	0.135	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	100	99.3	95.6	
	Nitrate (as N) (mg/L)	1.54	0.0067	1.98	
	Nitrite (as N) (mg/L)	<0.0010	0.0017	0.0012	
	Total Kjeldahl Nitrogen (mg/L)	0.327	<0.050	0.278	
	Total Nitrogen (mg/L)	1.87	<0.050	2.26	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0040	0.0015	0.0035	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0056 ^{DLM}	<0.0020	0.0043 ^{DLM}	
	Phosphorus (P)-Total (mg/L)	0.022 ^{DLM}	<0.0020	0.0048 ^{DLM}	
	Sulfate (SO4) (mg/L)	114	64.2	154	
	Anion Sum (meq/L)	6.19	4.93	7.16	
	Cation Sum (meq/L)	6.22	4.89	6.85	
	Cation - Anion Balance (%)	0.2	-0.4	-2.3	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.05	<0.50	1.07	
	Total Organic Carbon (mg/L)	0.71 ^{DTC}	<0.50	0.56 ^{DTC}	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2411072-1 WG 28-JAN-20 15:20 EV_WH50GW_WG _2020_Q1_NP	L2411072-2 WG 28-JAN-20 13:15 EV_GCGW_WG_2 020_Q1_NP	L2411072-3 WG 28-JAN-20 14:15 EV_BCGW_WG_2 020_Q1_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00013	<0.00010	0.00012	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00184	0.00011	
	Barium (Ba)-Dissolved (mg/L)	0.119	0.0723	0.0343	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.012	0.013	
	Cadmium (Cd)-Dissolved (ug/L)	0.0333	<0.0050	0.0330	
	Calcium (Ca)-Dissolved (mg/L)	74.6	63.5	80.3	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.20	<0.10	
	Copper (Cu)-Dissolved (mg/L)	0.00046	<0.00020	0.00167	
	Iron (Fe)-Dissolved (mg/L)	0.022	0.245	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0088	0.0070	0.0170	
	Magnesium (Mg)-Dissolved (mg/L)	28.2	18.4	32.2	
	Manganese (Mn)-Dissolved (mg/L)	0.00262	0.0878	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000910	0.00232	0.00101	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00062	<0.00050	
	Potassium (K)-Dissolved (mg/L)	0.878	0.740	1.03	
	Selenium (Se)-Dissolved (ug/L)	11.9	<0.050	16.0	
	Silicon (Si)-Dissolved (mg/L)	2.09	3.98	2.59	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.52	4.02	3.77	
	Strontium (Sr)-Dissolved (mg/L)	0.163	0.254	0.153	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000026	0.000011	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00125	0.00110	0.00116	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0017	0.0033	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2411072-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2411072-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2411072-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2411072-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2411072-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2411072-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200128Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2411072

Report Date: 18-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4983968							
WG3266824-5	LCS							
Acidity (as CaCO3)			95.4		%		85-115	29-JAN-20
WG3266824-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	29-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4983827							
WG3266611-15	DUP	L2411072-3						
Alkalinity, Total (as CaCO3)		185	185		mg/L	0.2	20	29-JAN-20
WG3266611-14	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	29-JAN-20
WG3266611-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4986451							
WG3267741-2	LCS							
Beryllium (Be)-Dissolved			94.3		%		80-120	01-FEB-20
WG3267741-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-FEB-20
BIC-CL								
	Water							
Batch	R4983827							
WG3266611-15	DUP	L2411072-3						
Bicarbonate (HCO3)		226	225		mg/L	0.2	20	29-JAN-20
WG3266611-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4983823							
WG3266676-10	LCS							
Bromide (Br)			101.7		%		85-115	29-JAN-20
WG3266676-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4985586							
WG3267222-2	LCS							
Dissolved Organic Carbon			107.1		%		80-120	30-JAN-20
WG3267222-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-JAN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4985586							
WG3267222-2 LCS								
Total Organic Carbon			101.8		%		80-120	30-JAN-20
WG3267222-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	30-JAN-20
CL-IC-N-CL	Water							
Batch	R4983823							
WG3266676-10 LCS								
Chloride (Cl)			103.0		%		90-110	29-JAN-20
WG3266676-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	29-JAN-20
CO3-CL	Water							
Batch	R4983827							
WG3266611-15 DUP		L2411072-3						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	29-JAN-20
WG3266611-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	29-JAN-20
EC-L-PCT-CL	Water							
Batch	R4983827							
WG3266611-15 DUP		L2411072-3						
Conductivity (@ 25C)		595	599		uS/cm	0.7	10	29-JAN-20
WG3266611-14 LCS								
Conductivity (@ 25C)			100.7		%		90-110	29-JAN-20
WG3266611-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JAN-20
F-IC-N-CL	Water							
Batch	R4983823							
WG3266676-10 LCS								
Fluoride (F)			105.3		%		90-110	29-JAN-20
WG3266676-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	29-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4983529							
WG3266899-2 LCS								
Mercury (Hg)-Dissolved			96.2		%		80-120	30-JAN-20
WG3266899-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JAN-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986451							
WG3267741-2	LCS							
Aluminum (Al)-Dissolved			102.1		%		80-120	01-FEB-20
Antimony (Sb)-Dissolved			94.1		%		80-120	01-FEB-20
Arsenic (As)-Dissolved			99.0		%		80-120	01-FEB-20
Barium (Ba)-Dissolved			105.0		%		80-120	01-FEB-20
Bismuth (Bi)-Dissolved			99.0		%		80-120	01-FEB-20
Boron (B)-Dissolved			96.3		%		80-120	01-FEB-20
Cadmium (Cd)-Dissolved			104.0		%		80-120	01-FEB-20
Calcium (Ca)-Dissolved			98.8		%		80-120	01-FEB-20
Chromium (Cr)-Dissolved			99.8		%		80-120	01-FEB-20
Cobalt (Co)-Dissolved			100.2		%		80-120	01-FEB-20
Copper (Cu)-Dissolved			98.7		%		80-120	01-FEB-20
Iron (Fe)-Dissolved			98.0		%		80-120	01-FEB-20
Lead (Pb)-Dissolved			99.6		%		80-120	01-FEB-20
Lithium (Li)-Dissolved			91.5		%		80-120	01-FEB-20
Magnesium (Mg)-Dissolved			103.9		%		80-120	01-FEB-20
Manganese (Mn)-Dissolved			96.6		%		80-120	01-FEB-20
Molybdenum (Mo)-Dissolved			94.0		%		80-120	01-FEB-20
Nickel (Ni)-Dissolved			98.4		%		80-120	01-FEB-20
Potassium (K)-Dissolved			99.1		%		80-120	01-FEB-20
Selenium (Se)-Dissolved			104.1		%		80-120	01-FEB-20
Silicon (Si)-Dissolved			105.5		%		60-140	01-FEB-20
Silver (Ag)-Dissolved			93.5		%		80-120	01-FEB-20
Sodium (Na)-Dissolved			105.6		%		80-120	01-FEB-20
Strontium (Sr)-Dissolved			97.5		%		80-120	01-FEB-20
Thallium (Tl)-Dissolved			98.2		%		80-120	01-FEB-20
Tin (Sn)-Dissolved			94.3		%		80-120	01-FEB-20
Titanium (Ti)-Dissolved			95.5		%		80-120	01-FEB-20
Uranium (U)-Dissolved			99.9		%		80-120	01-FEB-20
Vanadium (V)-Dissolved			102.4		%		80-120	01-FEB-20
Zinc (Zn)-Dissolved			102.0		%		80-120	01-FEB-20
WG3267741-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986451							
WG3267741-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4986982							
WG3267704-3	DUP	L2411072-3						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3267704-2	LCS							
Ammonia as N			104.8		%		85-115	31-JAN-20
WG3267704-6	LCS							
Ammonia as N			110.6		%		85-115	31-JAN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R4986982								
WG3267704-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
WG3267704-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
WG3267704-4	MS	L2411072-3						
Ammonia as N			98.9		%		75-125	31-JAN-20
NO2-L-IC-N-CL								
Water								
Batch R4983823								
WG3266676-10	LCS							
Nitrite (as N)			101.2		%		90-110	29-JAN-20
WG3266676-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-JAN-20
NO3-L-IC-N-CL								
Water								
Batch R4983823								
WG3266676-10	LCS							
Nitrate (as N)			104.4		%		90-110	29-JAN-20
WG3266676-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	29-JAN-20
OH-CL								
Water								
Batch R4983827								
WG3266611-15	DUP	L2411072-3						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	29-JAN-20
WG3266611-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	29-JAN-20
ORP-CL								
Water								
Batch R4985069								
WG3266875-1	CRM	CL-ORP						
ORP			221		mV		210-230	30-JAN-20
P-T-L-COL-CL								
Water								
Batch R4983861								
WG3266605-2	LCS							
Phosphorus (P)-Total			105.5		%		80-120	30-JAN-20
WG3266605-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-JAN-20
P-TD-L-COL-CL								
Water								



Quality Control Report

Workorder: L2411072

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R4987950							
WG3268394-2	LCS							
Total Suspended Solids			99.5		%		85-115	03-FEB-20
WG3268394-1	MB							
Total Suspended Solids			<1.0		mg/L		1	03-FEB-20
TURBIDITY-CL	Water							
Batch	R4984990							
WG3266165-2	LCS							
Turbidity			104.0		%		85-115	29-JAN-20
WG3266165-1	MB							
Turbidity			<0.10		NTU		0.1	29-JAN-20

Quality Control Report

Workorder: L2411072

Report Date: 18-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2411072

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	28-JAN-20 15:20	30-JAN-20 08:00	0.25	41	hours	EHTR-FM
	2	28-JAN-20 13:15	30-JAN-20 08:00	0.25	43	hours	EHTR-FM
	3	28-JAN-20 14:15	30-JAN-20 08:00	0.25	42	hours	EHTR-FM
pH	1	28-JAN-20 15:20	29-JAN-20 15:00	0.25	24	hours	EHTR-FM
	2	28-JAN-20 13:15	29-JAN-20 15:00	0.25	26	hours	EHTR-FM
	3	28-JAN-20 14:15	29-JAN-20 15:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2411072 were received on 29-JAN-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200128Q1GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filter	No	Yes	Yes	No	No	No	No	Yes	Yes		
								PRESERVE		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphite	HCl	NAOH		
								ANALYSIS	TECKCOAL-ROUTINE VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 450-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Dissovlved Chromium VI
EV_WH50GW_WG_2020_Q1_NP	EV_WH50GW	WG	N	1/28/2020	15:20	G	5		1	1	1		1				1		
EV_GCGW_WG_2020_Q1_NP	EV_GCGW	WG	N	1/28/2020	13:15	G	5		1	1	1		1				1		
EV_BCGW_WG_2020_Q1_NP	EV_BCGW	WG	N	1/28/2020	14:15	G	5		1	1	1		1				1		
							Total												15

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were preserved other than EPH Bottles.	Jason Gravelle	January 28, 2020	<i>D/K</i>	1/29 0920

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jason Gravelle		<i>Jason Gravelle</i>	January 28, 2020

AG



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 30-JAN-20
Report Date: 29-DEC-20 12:10 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2411515
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200129Q1GW
Legal Site Desc:

Comments: 29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2411515-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2411515-1 WG 29-JAN-20 11:10 EV_MW_MC4_WG _2020_Q1_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	862			
	Hardness (as CaCO3) (mg/L)	499			
	pH (pH)	7.57			
	ORP (mV)	451			
	Total Suspended Solids (mg/L)	2.1			
	Total Dissolved Solids (mg/L)	549	DLHC		
	Turbidity (NTU)	4.30			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	5.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	361			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	361			
	Ammonia as N (mg/L)	0.0103			
	Bicarbonate (HCO3) (mg/L)	440			
	Bromide (Br) (mg/L)	0.182			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	31.8			
	Fluoride (F) (mg/L)	0.222			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.9			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0027			
	Phosphorus (P)-Total (mg/L)	0.0029			
	Sulfate (SO4) (mg/L)	115			
	Anion Sum (meq/L)	10.5			
	Cation Sum (meq/L)	10.4			
Cation - Anion Balance (%)	-0.5				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.36			
	Total Organic Carbon (mg/L)	1.33			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2411515-1 WG 29-JAN-20 11:10 EV_MW_MC4_WG _2020_Q1_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00049			
	Barium (Ba)-Dissolved (mg/L)	0.111			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.042			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	137			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.52			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.436			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0234			
	Magnesium (Mg)-Dissolved (mg/L)	38.2			
	Manganese (Mn)-Dissolved (mg/L)	0.0677			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00405			
	Nickel (Ni)-Dissolved (mg/L)	0.00315			
	Potassium (K)-Dissolved (mg/L)	2.42			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	4.95			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.99			
	Strontium (Sr)-Dissolved (mg/L)	0.626			
	Thallium (Tl)-Dissolved (mg/L)	0.000021			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00129			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0041			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2411515-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2411515-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2411515-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2411515-1
Matrix Spike	Ammonia as N	MS-B	L2411515-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200129Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2411515

Report Date: 29-DEC-20

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4986307							
WG3268004-8	LCS							
Acidity (as CaCO3)			102.6		%		85-115	31-JAN-20
WG3268004-7	MB							
Acidity (as CaCO3)			2.0		mg/L		2	31-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4985627							
WG3267435-8	LCS							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	30-JAN-20
WG3267435-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4987064							
WG3268006-2	LCS							
Beryllium (Be)-Dissolved			103.2		%		80-120	02-FEB-20
WG3268006-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Bromide (Br)			103.2		%		85-115	30-JAN-20
WG3267575-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4986463							
WG3267859-6	LCS							
Dissolved Organic Carbon			100.8		%		80-120	01-FEB-20
WG3267859-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4986463							
WG3267859-6	LCS							
Total Organic Carbon			103.3		%		80-120	01-FEB-20
WG3267859-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	01-FEB-20
CL-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Batch R4985922								
WG3267575-2	LCS							
Chloride (Cl)			102.3		%		90-110	30-JAN-20
WG3267575-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-JAN-20
EC-L-PCT-CL								
Batch R4985627								
WG3267435-8	LCS							
Conductivity (@ 25C)			98.8		%		90-110	30-JAN-20
WG3267435-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-20
F-IC-N-CL								
Batch R4985922								
WG3267575-2	LCS							
Fluoride (F)			101.9		%		90-110	30-JAN-20
WG3267575-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-JAN-20
HG-D-CVAA-VA								
Batch R4986471								
WG3268139-7	DUP	L2411515-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-FEB-20
WG3268139-6	LCS							
Mercury (Hg)-Dissolved			90.7		%		80-120	02-FEB-20
WG3268139-5	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	02-FEB-20
MET-D-CCMS-VA								
Batch R4987064								
WG3268006-2	LCS							
Aluminum (Al)-Dissolved			104.8		%		80-120	02-FEB-20
Antimony (Sb)-Dissolved			100.0		%		80-120	02-FEB-20
Arsenic (As)-Dissolved			99.9		%		80-120	02-FEB-20
Barium (Ba)-Dissolved			103.1		%		80-120	02-FEB-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	02-FEB-20
Boron (B)-Dissolved			104.0		%		80-120	02-FEB-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	02-FEB-20
Calcium (Ca)-Dissolved			109.8		%		80-120	02-FEB-20
Chromium (Cr)-Dissolved			104.4		%		80-120	02-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4987064							
WG3268006-2	LCS							
Cobalt (Co)-Dissolved			99.6		%		80-120	02-FEB-20
Copper (Cu)-Dissolved			99.2		%		80-120	02-FEB-20
Iron (Fe)-Dissolved			105.5		%		80-120	02-FEB-20
Lead (Pb)-Dissolved			100.9		%		80-120	02-FEB-20
Lithium (Li)-Dissolved			106.6		%		80-120	02-FEB-20
Magnesium (Mg)-Dissolved			103.7		%		80-120	02-FEB-20
Manganese (Mn)-Dissolved			105.2		%		80-120	02-FEB-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	02-FEB-20
Nickel (Ni)-Dissolved			99.4		%		80-120	02-FEB-20
Potassium (K)-Dissolved			108.0		%		80-120	02-FEB-20
Selenium (Se)-Dissolved			97.7		%		80-120	02-FEB-20
Silicon (Si)-Dissolved			103.9		%		60-140	02-FEB-20
Silver (Ag)-Dissolved			105.8		%		80-120	02-FEB-20
Sodium (Na)-Dissolved			106.7		%		80-120	02-FEB-20
Strontium (Sr)-Dissolved			105.2		%		80-120	02-FEB-20
Thallium (Tl)-Dissolved			102.6		%		80-120	02-FEB-20
Tin (Sn)-Dissolved			99.5		%		80-120	02-FEB-20
Titanium (Ti)-Dissolved			103.2		%		80-120	02-FEB-20
Uranium (U)-Dissolved			98.0		%		80-120	02-FEB-20
Vanadium (V)-Dissolved			103.8		%		80-120	02-FEB-20
Zinc (Zn)-Dissolved			97.7		%		80-120	02-FEB-20
WG3268006-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4987064							
WG3268006-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4986982							
WG3267704-14	LCS							
Ammonia as N			115.0		%		85-115	31-JAN-20
WG3267704-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Nitrite (as N)			98.5		%		90-110	30-JAN-20
WG3267575-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Nitrate (as N)			106.2		%		90-110	30-JAN-20
WG3267575-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch	R4984187							
WG3266850-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-JAN-20
SO4-IC-N-CL Water								
Batch	R4985922							
WG3267575-2	LCS							
Sulfate (SO4)			106.9		%		90-110	30-JAN-20
WG3267575-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-JAN-20
SOLIDS-TDS-CL Water								
Batch	R4990224							
WG3269461-2	LCS							
Total Dissolved Solids			101.3		%		85-115	04-FEB-20
WG3269461-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-FEB-20
TKN-L-F-CL Water								
Batch	R4985736							
WG3267323-18	LCS							
Total Kjeldahl Nitrogen			89.2		%		75-125	31-JAN-20
WG3267323-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-JAN-20
TSS-L-CL Water								
Batch	R4990118							
WG3269126-2	LCS							
Total Suspended Solids			98.7		%		85-115	04-FEB-20
WG3269126-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-FEB-20
TURBIDITY-CL Water								
Batch	R4985026							
WG3266460-8	LCS							
Turbidity			104.5		%		85-115	30-JAN-20
WG3266460-7	MB							
Turbidity			<0.10		NTU		0.1	30-JAN-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2411515

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	29-JAN-20 11:10	01-FEB-20 12:30	0.25	73	hours	EHTR-FM
pH	1	29-JAN-20 11:10	30-JAN-20 11:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2411515 were received on 30-JAN-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 06-FEB-20
Report Date: 21-DEC-20 16:21 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2414125
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200205Q1GW
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2414125-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2414125-1 WG 05-FEB-20 14:15 EV_MW_MC3_WG _2020_Q1_NP	L2414125-2 WG 05-FEB-20 12:30 EV_LSGW_WG_20 20_Q1_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	662	907		
	Hardness (as CaCO3) (mg/L)	55.5	559		
	pH (pH)	8.72	8.33		
	ORP (mV)	296	248		
	Total Suspended Solids (mg/L)	2.3	3.0		
	Total Dissolved Solids (mg/L)	440	609		
	Turbidity (NTU)	2.95	26.9		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	16.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	344	491		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	30.4	8.8		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	374	499		
	Ammonia as N (mg/L)	0.0367	0.141		
	Bicarbonate (HCO3) (mg/L)	419	598		
	Bromide (Br) (mg/L)	<0.050	<0.25	DLHC	
	Carbonate (CO3) (mg/L)	18.2	5.3		
	Chloride (Cl) (mg/L)	3.58	8.2	DLHC	
	Fluoride (F) (mg/L)	1.86	0.33	DLHC	
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	92.5	102		
	Nitrate (as N) (mg/L)	<0.0050	0.062	DLHC	
	Nitrite (as N) (mg/L)	<0.0010	<0.0050	DLHC	
	Total Kjeldahl Nitrogen (mg/L)	0.172	0.267		
	Total Nitrogen (mg/L)	0.172	0.330		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0309	0.0014		
	Phosphorus (P)-Total Dissolved (mg/L)	0.027	0.015	DLM	
	Phosphorus (P)-Total (mg/L)	0.039	0.023	DLM	
	Sulfate (SO4) (mg/L)	11.4	64.3	DLHC	
	Anion Sum (meq/L)	7.91	11.6		
	Cation Sum (meq/L)	7.32	11.8		
Cation - Anion Balance (%)	-3.9	1.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.73	2.39	DTC	
	Total Organic Carbon (mg/L)	1.40	1.98	DTC	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0031	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2414125-1 WG 05-FEB-20 14:15 EV_MW_MC3_WG _2020_Q1_NP	L2414125-2 WG 05-FEB-20 12:30 EV_LSGW_WG_20 20_Q1_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00142	0.00133		
	Barium (Ba)-Dissolved (mg/L)	0.257	0.207		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.096	0.041		
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	12.8	109		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	1.31		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.042	2.18		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.126	0.0615		
	Magnesium (Mg)-Dissolved (mg/L)	5.75	69.9		
	Manganese (Mn)-Dissolved (mg/L)	0.0373	0.903		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0313	0.00219		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00384		
	Potassium (K)-Dissolved (mg/L)	0.725	3.78		
	Selenium (Se)-Dissolved (ug/L)	0.179	0.060		
	Silicon (Si)-Dissolved (mg/L)	2.77	4.29		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	142	9.33		
	Strontium (Sr)-Dissolved (mg/L)	0.135	0.444		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000033		
	Tin (Sn)-Dissolved (mg/L)	0.00020	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000827	0.00204		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0014		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2414125-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2414125-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200205Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2414125

Report Date: 21-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4991463							
WG3271586-8	LCS							
Acidity (as CaCO3)			100.8		%		85-115	06-FEB-20
WG3271586-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	06-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4991963							
WG3272155-5	LCS							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	07-FEB-20
WG3272155-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4996687							
WG3275879-3	DUP	L2414125-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3275879-2	LCS							
Beryllium (Be)-Dissolved			101.0		%		80-120	14-FEB-20
WG3275879-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
WG3275879-4	MS	L2414125-2						
Beryllium (Be)-Dissolved			104.4		%		70-130	14-FEB-20
BIC-CL								
	Water							
Batch	R4991963							
WG3272155-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4991749							
WG3271901-6	LCS							
Bromide (Br)			98.6		%		85-115	06-FEB-20
WG3271901-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4995923							
WG3274431-2	LCS							
Dissolved Organic Carbon			109.2		%		80-120	12-FEB-20
WG3274431-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4995923							
WG3274431-2 LCS								
Total Organic Carbon			111.7		%		80-120	12-FEB-20
WG3274431-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	12-FEB-20
CL-IC-N-CL	Water							
Batch	R4991749							
WG3271901-6 LCS								
Chloride (Cl)			98.1		%		90-110	06-FEB-20
WG3271901-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	06-FEB-20
CO3-CL	Water							
Batch	R4991963							
WG3272155-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	07-FEB-20
EC-L-PCT-CL	Water							
Batch	R4991963							
WG3272155-5 LCS								
Conductivity (@ 25C)			100.3		%		90-110	07-FEB-20
WG3272155-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-FEB-20
F-IC-N-CL	Water							
Batch	R4991749							
WG3271901-6 LCS								
Fluoride (F)			102.6		%		90-110	06-FEB-20
WG3271901-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	06-FEB-20
HG-D-CVAA-VA	Water							
Batch	R4991908							
WG3272199-26 LCS								
Mercury (Hg)-Dissolved			97.4		%		80-120	08-FEB-20
WG3272199-25 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-FEB-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996687							
WG3275879-3	DUP	L2414125-1						
Aluminum (Al)-Dissolved		0.0031	0.0037		mg/L	17	20	14-FEB-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-FEB-20
Arsenic (As)-Dissolved		0.00142	0.00147		mg/L	3.1	20	14-FEB-20
Barium (Ba)-Dissolved		0.257	0.260		mg/L	1.4	20	14-FEB-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-FEB-20
Boron (B)-Dissolved		0.096	0.099		mg/L	3.4	20	14-FEB-20
Cadmium (Cd)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-FEB-20
Calcium (Ca)-Dissolved		12.8	13.2		mg/L	3.7	20	14-FEB-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-FEB-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-FEB-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-FEB-20
Iron (Fe)-Dissolved		0.042	0.042		mg/L	0.3	20	14-FEB-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	14-FEB-20
Lithium (Li)-Dissolved		0.126	0.130		mg/L	3.4	20	14-FEB-20
Magnesium (Mg)-Dissolved		5.75	5.92		mg/L	2.9	20	14-FEB-20
Manganese (Mn)-Dissolved		0.0373	0.0378		mg/L	1.3	20	14-FEB-20
Molybdenum (Mo)-Dissolved		0.0313	0.0310		mg/L	1.1	20	14-FEB-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-FEB-20
Potassium (K)-Dissolved		0.725	0.737		mg/L	1.6	20	14-FEB-20
Selenium (Se)-Dissolved		0.000179	0.000172		mg/L	3.6	20	14-FEB-20
Silicon (Si)-Dissolved		2.77	2.76		mg/L	0.3	20	14-FEB-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-FEB-20
Sodium (Na)-Dissolved		142	143		mg/L	0.8	20	14-FEB-20
Strontium (Sr)-Dissolved		0.135	0.132		mg/L	2.3	20	14-FEB-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	14-FEB-20
Tin (Sn)-Dissolved		0.00020	0.00019		mg/L	3.2	20	14-FEB-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	14-FEB-20
Uranium (U)-Dissolved		0.000827	0.000829		mg/L	0.2	20	14-FEB-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-FEB-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3275879-2	LCS							
Aluminum (Al)-Dissolved			104.0		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			95.8		%		80-120	14-FEB-20
Arsenic (As)-Dissolved			99.1		%		80-120	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996687							
WG3275879-2	LCS							
Barium (Ba)-Dissolved			102.8		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	14-FEB-20
Boron (B)-Dissolved			97.9		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			99.9		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			102.0		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			101.8		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			101.8		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			99.3		%		80-120	14-FEB-20
Iron (Fe)-Dissolved			101.6		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			98.5		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			100.4		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			102.5		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			100.2		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			100.2		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			100.2		%		80-120	14-FEB-20
Potassium (K)-Dissolved			108.0		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			97.3		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			102.1		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			99.5		%		80-120	14-FEB-20
Sodium (Na)-Dissolved			104.0		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			102.6		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			102.1		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			98.8		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			97.1		%		80-120	14-FEB-20
Uranium (U)-Dissolved			100.3		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			102.3		%		80-120	14-FEB-20
Zinc (Zn)-Dissolved			103.0		%		80-120	14-FEB-20
WG3275879-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996687							
WG3275879-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
WG3275879-4	MS	L2414125-2						
Aluminum (Al)-Dissolved			99.9		%		70-130	14-FEB-20
Antimony (Sb)-Dissolved			97.9		%		70-130	14-FEB-20
Arsenic (As)-Dissolved			105.4		%		70-130	14-FEB-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Bismuth (Bi)-Dissolved			88.9		%		70-130	14-FEB-20
Boron (B)-Dissolved			106.5		%		70-130	14-FEB-20
Cadmium (Cd)-Dissolved			96.0		%		70-130	14-FEB-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Chromium (Cr)-Dissolved			99.7		%		70-130	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996687							
WG3275879-4	MS	L2414125-2						
Cobalt (Co)-Dissolved			94.2		%		70-130	14-FEB-20
Copper (Cu)-Dissolved			89.1		%		70-130	14-FEB-20
Iron (Fe)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Lead (Pb)-Dissolved			90.9		%		70-130	14-FEB-20
Lithium (Li)-Dissolved			105.3		%		70-130	14-FEB-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Molybdenum (Mo)-Dissolved			106.0		%		70-130	14-FEB-20
Nickel (Ni)-Dissolved			92.3		%		70-130	14-FEB-20
Potassium (K)-Dissolved			93.9		%		70-130	14-FEB-20
Selenium (Se)-Dissolved			113.1		%		70-130	14-FEB-20
Silicon (Si)-Dissolved			98.2		%		70-130	14-FEB-20
Silver (Ag)-Dissolved			98.9		%		70-130	14-FEB-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	14-FEB-20
Thallium (Tl)-Dissolved			92.9		%		70-130	14-FEB-20
Tin (Sn)-Dissolved			99.9		%		70-130	14-FEB-20
Titanium (Ti)-Dissolved			98.0		%		70-130	14-FEB-20
Uranium (U)-Dissolved			92.2		%		70-130	14-FEB-20
Vanadium (V)-Dissolved			102.7		%		70-130	14-FEB-20
Zinc (Zn)-Dissolved			94.1		%		70-130	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4993670							
WG3273075-26	LCS							
Ammonia as N			97.2		%		85-115	10-FEB-20
WG3273075-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4991749							
WG3271901-6	LCS							
Nitrite (as N)			96.5		%		90-110	06-FEB-20
WG3271901-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-FEB-20
NO3-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2414125

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R4991749							
WG3271901-6	LCS							
Nitrate (as N)			105.9		%		90-110	06-FEB-20
WG3271901-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-FEB-20
OH-CL	Water							
Batch	R4991963							
WG3272155-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-FEB-20
ORP-CL	Water							
Batch	R4992109							
WG3272288-3	CRM	CL-ORP						
ORP			218		mV		210-230	08-FEB-20
P-T-L-COL-CL	Water							
Batch	R4995417							
WG3274307-2	LCS							
Phosphorus (P)-Total			98.6		%		80-120	12-FEB-20
WG3274307-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-FEB-20
P-TD-L-COL-CL	Water							
Batch	R4995417							
WG3274307-2	LCS							
Phosphorus (P)-Total Dissolved			98.6		%		80-120	12-FEB-20
WG3274307-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	12-FEB-20
PH-CL	Water							
Batch	R4991963							
WG3272155-5	LCS							
pH			7.08		pH		6.9-7.1	07-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4991220							
WG3271125-8	DUP	L2414125-1						
Orthophosphate-Dissolved (as P)		0.0309	0.0305		mg/L	1.2	20	06-FEB-20
WG3271125-7	LCS							
Orthophosphate-Dissolved (as P)			103.7		%		80-120	06-FEB-20



Quality Control Report

Workorder: L2414125

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch	R4991220							
WG3271125-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-FEB-20
SO4-IC-N-CL Water								
Batch	R4991749							
WG3271901-6	LCS							
Sulfate (SO4)			98.7		%		90-110	06-FEB-20
WG3271901-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	06-FEB-20
SOLIDS-TDS-CL Water								
Batch	R4996165							
WG3273894-2	LCS							
Total Dissolved Solids			98.9		%		85-115	12-FEB-20
WG3273894-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-FEB-20
TKN-L-F-CL Water								
Batch	R4991803							
WG3271636-18	LCS							
Total Kjeldahl Nitrogen			110.5		%		75-125	07-FEB-20
WG3271636-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-FEB-20
TSS-L-CL Water								
Batch	R4996203							
WG3273888-2	LCS							
Total Suspended Solids			95.5		%		85-115	12-FEB-20
WG3273888-1	MB							
Total Suspended Solids			<1.0		mg/L		1	12-FEB-20
TURBIDITY-CL Water								
Batch	R4991769							
WG3271846-5	LCS							
Turbidity			104.0		%		85-115	07-FEB-20
WG3271846-4	MB							
Turbidity			<0.10		NTU		0.1	07-FEB-20

Quality Control Report

Workorder: L2414125

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2414125

Report Date: 21-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	05-FEB-20 14:15	08-FEB-20 08:00	0.25	66	hours	EHTR-FM
	2	05-FEB-20 12:30	08-FEB-20 08:00	0.25	67	hours	EHTR-FM
pH	1	05-FEB-20 14:15	07-FEB-20 14:00	0.25	48	hours	EHTR-FM
	2	05-FEB-20 12:30	07-FEB-20 14:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2414125 were received on 06-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2414125-COFC

COC ID: **20200205Q1GW**

TURNAROUND TIME:

PROJECT/CLIENT INFO				LABOR				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			ion	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.alan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_MW_MC3_WG_2020_Q1_NP	EV_MW_MC3	WG	N	2/5/2020	14:15	G	5	1	1	1	1	1	1				1		
EV_LSGW_WG_2020_Q1_NP	EV_LSGW	WG	N	2/5/2020	12:30														
							Total	5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were preserved other than EPH Bottles.	Kimberley Hackett	February 5, 2020		2/6 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Kimberley Hackett	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

Sampler's Signature	Date/Time
	February 5, 2020

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Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 11-FEB-20
Report Date: 21-DEC-20 16:23 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2415760
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: RG_DW-T_Q1-2020
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2415760-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415760-1 WP 10-FEB-20 12:00 RG_DW- T_WP_Q1- 2020_NP-02-10			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.19			
	ORP (mV)	478			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10 ^{HTD}			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415760-1 WP 10-FEB-20 12:00 RG_DW- T_WP_Q1- 2020_NP-02-10			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			
	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2415760-1 WP 10-FEB-20 12:00 RG_DW- T_WP_Q1- 2020_NP-02-10				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	0.00015 ^{RRV}			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Strontium (Sr)-Total	MES	L2415760-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2415760-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2415760-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2415760-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2415760-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2415760-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2415760-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2415760-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2415760-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2415760-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2415760-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2415760-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2415760-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2415760-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2415760-1
Matrix Spike	Uranium (U)-Total	MS-B	L2415760-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)

Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

Reference Information

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

RG_DW-T_Q1-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2415760

Report Date: 21-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995579							
WG3274615-11	LCS							
Acidity (as CaCO3)			105.0		%		85-115	11-FEB-20
WG3274615-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	11-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995344							
WG3274378-15	DUP	L2415760-1						
Alkalinity, Total (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	11-FEB-20
WG3274378-14	LCS							
Alkalinity, Total (as CaCO3)			103.6		%		85-115	11-FEB-20
WG3274378-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Beryllium (Be)-Dissolved			109.1		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-2	LCS							
Beryllium (Be)-Total			99.97		%		80-120	14-FEB-20
WG3275324-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-FEB-20
BIC-CL								
	Water							
Batch	R4995344							
WG3274378-15	DUP	L2415760-1						
Bicarbonate (HCO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	11-FEB-20
WG3274378-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-6	LCS							
Bromide (Br)			104.2		%		85-115	11-FEB-20
WG3274649-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-6 LCS								
Dissolved Organic Carbon			100.4		%		80-120	17-FEB-20
WG3276670-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-6 LCS								
Total Organic Carbon			103.6		%		80-120	17-FEB-20
WG3276670-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
CL-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6 LCS								
Chloride (Cl)			100.9		%		90-110	11-FEB-20
WG3274649-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	11-FEB-20
CO3-CL	Water							
Batch	R4995344							
WG3274378-15 DUP		L2415760-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	11-FEB-20
WG3274378-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	11-FEB-20
EC-L-PCT-CL	Water							
Batch	R4995344							
WG3274378-15 DUP		L2415760-1						
Conductivity (@ 25C)		<2.0	<2.0	RPD-NA	uS/cm	N/A	10	11-FEB-20
WG3274378-14 LCS								
Conductivity (@ 25C)			97.7		%		90-110	11-FEB-20
WG3274378-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-FEB-20
F-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6 LCS								
Fluoride (F)			107.8		%		90-110	11-FEB-20
WG3274649-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	11-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4995743							
WG3275217-11	DUP	L2415760-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-FEB-20
WG3275217-10	LCS							
Mercury (Hg)-Dissolved			93.6		%		80-120	13-FEB-20
WG3275217-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-FEB-20
HG-T-CVAA-VA								
Water								
Batch	R4996424							
WG3275678-2	LCS							
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4997263							
WG3275455-2	LCS							
Aluminum (Al)-Dissolved			99.9		%		80-120	15-FEB-20
Antimony (Sb)-Dissolved			92.1		%		80-120	15-FEB-20
Arsenic (As)-Dissolved			95.4		%		80-120	15-FEB-20
Barium (Ba)-Dissolved			101.7		%		80-120	15-FEB-20
Bismuth (Bi)-Dissolved			113.8		%		80-120	15-FEB-20
Boron (B)-Dissolved			99.8		%		80-120	15-FEB-20
Cadmium (Cd)-Dissolved			103.5		%		80-120	15-FEB-20
Calcium (Ca)-Dissolved			96.0		%		80-120	15-FEB-20
Chromium (Cr)-Dissolved			98.7		%		80-120	15-FEB-20
Cobalt (Co)-Dissolved			98.6		%		80-120	15-FEB-20
Copper (Cu)-Dissolved			96.9		%		80-120	15-FEB-20
Iron (Fe)-Dissolved			84.2		%		80-120	15-FEB-20
Lead (Pb)-Dissolved			102.6		%		80-120	15-FEB-20
Lithium (Li)-Dissolved			95.9		%		80-120	15-FEB-20
Magnesium (Mg)-Dissolved			93.8		%		80-120	15-FEB-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	15-FEB-20
Nickel (Ni)-Dissolved			98.6		%		80-120	15-FEB-20
Potassium (K)-Dissolved			98.2		%		80-120	15-FEB-20
Selenium (Se)-Dissolved			96.9		%		80-120	15-FEB-20
Silicon (Si)-Dissolved			96.4		%		60-140	15-FEB-20
Silver (Ag)-Dissolved			93.4		%		80-120	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Sodium (Na)-Dissolved			98.4		%		80-120	15-FEB-20
Strontium (Sr)-Dissolved			94.5		%		80-120	15-FEB-20
Thallium (Tl)-Dissolved			98.0		%		80-120	15-FEB-20
Tin (Sn)-Dissolved			94.9		%		80-120	15-FEB-20
Titanium (Ti)-Dissolved			92.5		%		80-120	15-FEB-20
Uranium (U)-Dissolved			103.5		%		80-120	15-FEB-20
Vanadium (V)-Dissolved			100.2		%		80-120	15-FEB-20
Zinc (Zn)-Dissolved			95.6		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Batch	R4997923							
WG3276666-2	LCS							
Aluminum (Al)-Dissolved			105.4		%		80-120	18-FEB-20
Antimony (Sb)-Dissolved			96.7		%		80-120	18-FEB-20
Arsenic (As)-Dissolved			99.2		%		80-120	18-FEB-20
Barium (Ba)-Dissolved			98.1		%		80-120	18-FEB-20
Bismuth (Bi)-Dissolved			106.9		%		80-120	18-FEB-20
Boron (B)-Dissolved			97.6		%		80-120	18-FEB-20
Cadmium (Cd)-Dissolved			101.8		%		80-120	18-FEB-20
Calcium (Ca)-Dissolved			100.6		%		80-120	18-FEB-20
Chromium (Cr)-Dissolved			102.0		%		80-120	18-FEB-20
Cobalt (Co)-Dissolved			100.1		%		80-120	18-FEB-20
Copper (Cu)-Dissolved			98.6		%		80-120	18-FEB-20
Iron (Fe)-Dissolved			96.8		%		80-120	18-FEB-20
Lead (Pb)-Dissolved			102.3		%		80-120	18-FEB-20
Lithium (Li)-Dissolved			100.5		%		80-120	18-FEB-20
Magnesium (Mg)-Dissolved			101.0		%		80-120	18-FEB-20
Manganese (Mn)-Dissolved			104.2		%		80-120	18-FEB-20
Molybdenum (Mo)-Dissolved			97.9		%		80-120	18-FEB-20
Nickel (Ni)-Dissolved			98.8		%		80-120	18-FEB-20
Potassium (K)-Dissolved			105.5		%		80-120	18-FEB-20
Selenium (Se)-Dissolved			95.5		%		80-120	18-FEB-20
Silicon (Si)-Dissolved			106.4		%		60-140	18-FEB-20
Silver (Ag)-Dissolved			98.2		%		80-120	18-FEB-20
Sodium (Na)-Dissolved			106.5		%		80-120	18-FEB-20
Strontium (Sr)-Dissolved			100.8		%		80-120	18-FEB-20
Thallium (Tl)-Dissolved			102.4		%		80-120	18-FEB-20
Tin (Sn)-Dissolved			98.8		%		80-120	18-FEB-20
Titanium (Ti)-Dissolved			105.8		%		80-120	18-FEB-20
Uranium (U)-Dissolved			105.6		%		80-120	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997923							
WG3276666-2	LCS							
Vanadium (V)-Dissolved			102.8		%		80-120	18-FEB-20
Zinc (Zn)-Dissolved			100.2		%		80-120	18-FEB-20
WG3276666-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20

MET-T-CCMS-VA

Water



Quality Control Report

Workorder: L2415760

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-2	LCS							
Aluminum (Al)-Total			99.99		%		80-120	14-FEB-20
Antimony (Sb)-Total			101.4		%		80-120	14-FEB-20
Arsenic (As)-Total			93.6		%		80-120	14-FEB-20
Barium (Ba)-Total			90.5		%		80-120	14-FEB-20
Bismuth (Bi)-Total			106.3		%		80-120	14-FEB-20
Boron (B)-Total			102.0		%		80-120	14-FEB-20
Cadmium (Cd)-Total			92.7		%		80-120	14-FEB-20
Calcium (Ca)-Total			109.9		%		80-120	14-FEB-20
Chromium (Cr)-Total			98.9		%		80-120	14-FEB-20
Cobalt (Co)-Total			96.3		%		80-120	14-FEB-20
Copper (Cu)-Total			94.1		%		80-120	14-FEB-20
Iron (Fe)-Total			88.9		%		80-120	14-FEB-20
Lead (Pb)-Total			98.8		%		80-120	14-FEB-20
Lithium (Li)-Total			100.6		%		80-120	14-FEB-20
Magnesium (Mg)-Total			96.3		%		80-120	14-FEB-20
Manganese (Mn)-Total			96.8		%		80-120	14-FEB-20
Molybdenum (Mo)-Total			101.8		%		80-120	14-FEB-20
Nickel (Ni)-Total			96.1		%		80-120	14-FEB-20
Potassium (K)-Total			96.1		%		80-120	14-FEB-20
Selenium (Se)-Total			95.6		%		80-120	14-FEB-20
Silicon (Si)-Total			98.6		%		80-120	14-FEB-20
Silver (Ag)-Total			101.1		%		80-120	14-FEB-20
Sodium (Na)-Total			103.2		%		80-120	14-FEB-20
Strontium (Sr)-Total			121.2	MES	%		80-120	14-FEB-20
Thallium (Tl)-Total			98.1		%		80-120	14-FEB-20
Tin (Sn)-Total			95.5		%		80-120	14-FEB-20
Titanium (Ti)-Total			96.2		%		80-120	14-FEB-20
Uranium (U)-Total			99.5		%		80-120	14-FEB-20
Vanadium (V)-Total			99.5		%		80-120	14-FEB-20
Zinc (Zn)-Total			95.7		%		80-120	14-FEB-20
WG3275324-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-FEB-20



Quality Control Report

Workorder: L2415760

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-1	MB							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4995857							
WG3273769-39	DUP	L2415760-1						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-FEB-20
WG3273769-38	LCS							
Ammonia as N			99.8		%		85-115	11-FEB-20
WG3273769-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R4995344							
WG3274378-14	LCS							
pH			7.05		pH		6.9-7.1	11-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4994448							
WG3273573-10	LCS							
Orthophosphate-Dissolved (as P)			105.2		%		80-120	11-FEB-20
WG3273573-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995596							
WG3274649-6	LCS							
Sulfate (SO4)			102.8		%		90-110	11-FEB-20
WG3274649-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4997726							
WG3276594-8	LCS							
Total Dissolved Solids			106.5		%		85-115	16-FEB-20
WG3276594-7	MB							
Total Dissolved Solids			<10		mg/L		10	16-FEB-20
TKN-L-F-CL	Water							
Batch	R4996729							
WG3275909-10	LCS							
Total Kjeldahl Nitrogen			99.9		%		75-125	14-FEB-20
WG3275909-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL	Water							
Batch	R4997794							
WG3276593-4	LCS							
Total Suspended Solids			87.6		%		85-115	16-FEB-20
WG3276593-3	MB							
Total Suspended Solids			<1.0		mg/L		1	16-FEB-20
TURBIDITY-CL	Water							



Quality Control Report

Workorder: L2415760

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4995869							
WG3275044-2	LCS							
Turbidity			105.0		%		85-115	13-FEB-20
WG3275044-1	MB							
Turbidity			<0.10		NTU		0.1	13-FEB-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2415760

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	10-FEB-20 12:00	18-FEB-20 16:00	0.25	196	hours	EHTR-FM
Total Dissolved Solids	1	10-FEB-20 12:00	19-FEB-20 09:30	7	9	days	EHT
pH	1	10-FEB-20 12:00	11-FEB-20 14:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2415760 were received on 11-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **RG_DW-T_Q1-2020**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, I: Field & Lab, N: None



L2415760-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-T_WP_Q1-2020_NP-02-10	RG_DW-T	WP	N	Feb 10 2020		G	7	(1)	(1)	(1)	(1)	(1)	(1)	(1)

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELIQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

[Signature] 2/11/2020

SERVICE REQUEST (rush - subject to availability)

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Jennifer de Werk

Mobile #

250-910-7287

Sampler's Signature

[Signature]

Date/Time

Feb, 10, 2020

9"



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 11-FEB-20
Report Date: 18-DEC-20 14:17 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2415785
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-40_Q1-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:39

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415785-1 WP 10-FEB-20 10:50 RG_DW-02- 40_WP_Q1- 2020_NP-02-10			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	831			
	Hardness (as CaCO3) (mg/L)	508			
	pH (pH)	7.91			
	ORP (mV)	489			
	Total Suspended Solids (mg/L)	1.1			
	Total Dissolved Solids (mg/L)	517			
	Turbidity (NTU)	0.16			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	374			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	374			
	Ammonia as N (mg/L)	0.0645			
	Bicarbonate (HCO3) (mg/L)	456			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	36.9			
	Fluoride (F) (mg/L)	0.065			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	108			
	Nitrate (as N) (mg/L)	0.973			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.212			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	58.1			
	Anion Sum (meq/L)	9.79			
	Cation Sum (meq/L)	10.6			
	Cation - Anion Balance (%)	3.8			
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.85		
Total Organic Carbon (mg/L)		0.83			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.123			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415785-1 WP 10-FEB-20 10:50 RG_DW-02- 40_WP_Q1- 2020_NP-02-10			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.020			
	Cadmium (Cd)-Total (ug/L)	0.0443			
	Calcium (Ca)-Total (mg/L)	127			
	Chromium (Cr)-Total (mg/L)	0.00017			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00399			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000066			
	Lithium (Li)-Total (mg/L)	0.0074			
	Magnesium (Mg)-Total (mg/L)	41.3			
	Manganese (Mn)-Total (mg/L)	0.00018			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00415			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.957			
	Selenium (Se)-Total (ug/L)	1.48			
	Silicon (Si)-Total (mg/L)	6.49			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	8.51			
	Strontium (Sr)-Total (mg/L)	0.333			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00160			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0123			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.150			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.018			
	Cadmium (Cd)-Dissolved (ug/L)	0.0518			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2415785-1 WP 10-FEB-20 10:50 RG_DW-02- 40_WP_Q1- 2020_NP-02-10			
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	128			
	Chromium (Cr)-Dissolved (mg/L)	0.00019			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00251			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0069			
	Magnesium (Mg)-Dissolved (mg/L)	45.4			
	Manganese (Mn)-Dissolved (mg/L)	0.00013			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00398			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.10			
	Selenium (Se)-Dissolved (ug/L)	1.66			
	Silicon (Si)-Dissolved (mg/L)	6.26			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.08			
	Strontium (Sr)-Dissolved (mg/L)	0.348			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00174			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0106			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Strontium (Sr)-Total	MES	L2415785-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2415785-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2415785-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2415785-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2415785-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2415785-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2415785-1
Matrix Spike	Uranium (U)-Total	MS-B	L2415785-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2415785-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
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Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
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Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
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Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
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ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
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This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL	Water	pH	APHA 4500 H-Electrode
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pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended

Reference Information

hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C
 A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)
 This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric
 This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer
 This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-40_Q1-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2415785

Report Date: 18-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995579							
WG3274615-11	LCS							
Acidity (as CaCO3)			105.0		%		85-115	11-FEB-20
WG3274615-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	11-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995344							
WG3274378-17	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	11-FEB-20
WG3274378-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Beryllium (Be)-Dissolved			109.1		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-2	LCS							
Beryllium (Be)-Total			99.97		%		80-120	14-FEB-20
WG3275324-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-FEB-20
BIC-CL								
	Water							
Batch	R4995344							
WG3274378-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	11-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-10	LCS							
Bromide (Br)			103.8		%		85-115	11-FEB-20
WG3274649-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	11-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4997320							
WG3276670-8	DUP	L2415785-1						
Dissolved Organic Carbon		0.85	0.79		mg/L	7.1	20	17-FEB-20
WG3276670-6	LCS							
Dissolved Organic Carbon			100.4		%		80-120	17-FEB-20
WG3276670-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
WG3276670-7	MS	L2415785-1						
Dissolved Organic Carbon			114.2		%		70-130	17-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4997320							
WG3276670-8	DUP	L2415785-1						
Total Organic Carbon		0.83	0.88		mg/L	5.1	20	17-FEB-20
WG3276670-6	LCS							
Total Organic Carbon			103.6		%		80-120	17-FEB-20
WG3276670-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-FEB-20
WG3276670-7	MS	L2415785-1						
Total Organic Carbon			114.0		%		70-130	17-FEB-20
CL-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-10	LCS							
Chloride (Cl)			100.8		%		90-110	11-FEB-20
WG3274649-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	11-FEB-20
CO3-CL								
	Water							
Batch	R4995344							
WG3274378-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	11-FEB-20
EC-L-PCT-CL								
	Water							
Batch	R4995344							
WG3274378-17	LCS							
Conductivity (@ 25C)			97.2		%		90-110	11-FEB-20
WG3274378-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-FEB-20
F-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R4995596								
WG3274649-10	LCS							
Fluoride (F)			107.4		%		90-110	11-FEB-20
WG3274649-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	11-FEB-20
HG-D-CVAA-VA								
Batch R4995743								
WG3275217-10	LCS							
Mercury (Hg)-Dissolved			93.6		%		80-120	13-FEB-20
WG3275217-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	13-FEB-20
HG-T-CVAA-VA								
Batch R4996424								
WG3275678-2	LCS							
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Batch R4997263								
WG3275455-2	LCS							
Aluminum (Al)-Dissolved			99.9		%		80-120	15-FEB-20
Antimony (Sb)-Dissolved			92.1		%		80-120	15-FEB-20
Arsenic (As)-Dissolved			95.4		%		80-120	15-FEB-20
Barium (Ba)-Dissolved			101.7		%		80-120	15-FEB-20
Bismuth (Bi)-Dissolved			113.8		%		80-120	15-FEB-20
Boron (B)-Dissolved			99.8		%		80-120	15-FEB-20
Cadmium (Cd)-Dissolved			103.5		%		80-120	15-FEB-20
Calcium (Ca)-Dissolved			96.0		%		80-120	15-FEB-20
Chromium (Cr)-Dissolved			98.7		%		80-120	15-FEB-20
Cobalt (Co)-Dissolved			98.6		%		80-120	15-FEB-20
Copper (Cu)-Dissolved			96.9		%		80-120	15-FEB-20
Iron (Fe)-Dissolved			84.2		%		80-120	15-FEB-20
Lead (Pb)-Dissolved			102.6		%		80-120	15-FEB-20
Lithium (Li)-Dissolved			95.9		%		80-120	15-FEB-20
Magnesium (Mg)-Dissolved			93.8		%		80-120	15-FEB-20
Manganese (Mn)-Dissolved			94.5		%		80-120	15-FEB-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-2	LCS							
Nickel (Ni)-Dissolved			98.6		%		80-120	15-FEB-20
Potassium (K)-Dissolved			98.2		%		80-120	15-FEB-20
Selenium (Se)-Dissolved			96.9		%		80-120	15-FEB-20
Silicon (Si)-Dissolved			96.4		%		60-140	15-FEB-20
Silver (Ag)-Dissolved			93.4		%		80-120	15-FEB-20
Sodium (Na)-Dissolved			98.4		%		80-120	15-FEB-20
Strontium (Sr)-Dissolved			94.5		%		80-120	15-FEB-20
Thallium (Tl)-Dissolved			98.0		%		80-120	15-FEB-20
Tin (Sn)-Dissolved			94.9		%		80-120	15-FEB-20
Titanium (Ti)-Dissolved			92.5		%		80-120	15-FEB-20
Uranium (U)-Dissolved			103.5		%		80-120	15-FEB-20
Vanadium (V)-Dissolved			100.2		%		80-120	15-FEB-20
Zinc (Zn)-Dissolved			95.6		%		80-120	15-FEB-20
WG3275455-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997263							
WG3275455-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-2	LCS							
Aluminum (Al)-Total			99.99		%		80-120	14-FEB-20
Antimony (Sb)-Total			101.4		%		80-120	14-FEB-20
Arsenic (As)-Total			93.6		%		80-120	14-FEB-20
Barium (Ba)-Total			90.5		%		80-120	14-FEB-20
Bismuth (Bi)-Total			106.3		%		80-120	14-FEB-20
Boron (B)-Total			102.0		%		80-120	14-FEB-20
Cadmium (Cd)-Total			92.7		%		80-120	14-FEB-20
Calcium (Ca)-Total			109.9		%		80-120	14-FEB-20
Chromium (Cr)-Total			98.9		%		80-120	14-FEB-20
Cobalt (Co)-Total			96.3		%		80-120	14-FEB-20
Copper (Cu)-Total			94.1		%		80-120	14-FEB-20
Iron (Fe)-Total			88.9		%		80-120	14-FEB-20
Lead (Pb)-Total			98.8		%		80-120	14-FEB-20
Lithium (Li)-Total			100.6		%		80-120	14-FEB-20
Magnesium (Mg)-Total			96.3		%		80-120	14-FEB-20
Manganese (Mn)-Total			96.8		%		80-120	14-FEB-20
Molybdenum (Mo)-Total			101.8		%		80-120	14-FEB-20
Nickel (Ni)-Total			96.1		%		80-120	14-FEB-20
Potassium (K)-Total			96.1		%		80-120	14-FEB-20
Selenium (Se)-Total			95.6		%		80-120	14-FEB-20
Silicon (Si)-Total			98.6		%		80-120	14-FEB-20



Quality Control Report

Workorder: L2415785

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4996988							
WG3275324-2	LCS							
Silver (Ag)-Total			101.1		%		80-120	14-FEB-20
Sodium (Na)-Total			103.2		%		80-120	14-FEB-20
Strontium (Sr)-Total			121.2	MES	%		80-120	14-FEB-20
Thallium (Tl)-Total			98.1		%		80-120	14-FEB-20
Tin (Sn)-Total			95.5		%		80-120	14-FEB-20
Titanium (Ti)-Total			96.2		%		80-120	14-FEB-20
Uranium (U)-Total			99.5		%		80-120	14-FEB-20
Vanadium (V)-Total			99.5		%		80-120	14-FEB-20
Zinc (Zn)-Total			95.7		%		80-120	14-FEB-20
WG3275324-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-FEB-20



Quality Control Report

Workorder: L2415785

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4996988							
WG3275324-1	MB							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4996802							
WG3274428-10	LCS							
Ammonia as N			99.7		%		85-115	12-FEB-20
WG3274428-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-10	LCS							
Nitrite (as N)			105.2		%		90-110	11-FEB-20
WG3274649-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	11-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4995596							
WG3274649-10	LCS							
Nitrate (as N)			102.8		%		90-110	11-FEB-20
WG3274649-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	11-FEB-20
OH-CL								
	Water							
Batch	R4995344							
WG3274378-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	11-FEB-20
ORP-CL								
	Water							
Batch	R4997929							
WG3277355-7	CRM	CL-ORP						
ORP			226		mV		210-230	18-FEB-20
P-T-L-COL-CL								
	Water							



Quality Control Report

Workorder: L2415785

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch R4997881								
WG3277143-14 LCS								
Phosphorus (P)-Total			112.3		%		80-120	18-FEB-20
WG3277143-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-FEB-20
PH-CL								
Water								
Batch R4995344								
WG3274378-17 LCS								
pH			7.05		pH		6.9-7.1	11-FEB-20
PO4-DO-L-COL-CL								
Water								
Batch R4994448								
WG3273573-10 LCS								
Orthophosphate-Dissolved (as P)			105.2		%		80-120	11-FEB-20
WG3273573-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-FEB-20
SO4-IC-N-CL								
Water								
Batch R4995596								
WG3274649-10 LCS								
Sulfate (SO4)			102.6		%		90-110	11-FEB-20
WG3274649-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-FEB-20
SOLIDS-TDS-CL								
Water								
Batch R4997726								
WG3276594-8 LCS								
Total Dissolved Solids			106.5		%		85-115	16-FEB-20
WG3276594-7 MB								
Total Dissolved Solids			<10		mg/L		10	16-FEB-20
TKN-L-F-CL								
Water								
Batch R4996729								
WG3275909-15 DUP								
Total Kjeldahl Nitrogen		L2415785-1	0.210		mg/L	0.9	20	14-FEB-20
WG3275909-14 LCS								
Total Kjeldahl Nitrogen			98.3		%		75-125	14-FEB-20
WG3275909-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
WG3275909-16 MS								
Total Kjeldahl Nitrogen		L2415785-1	109.6		%		70-130	14-FEB-20



Quality Control Report

Workorder: L2415785

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R4997794							
WG3276593-6	LCS							
Total Suspended Solids			93.7		%		85-115	16-FEB-20
WG3276593-5	MB							
Total Suspended Solids			<1.0		mg/L		1	16-FEB-20
TURBIDITY-CL	Water							
Batch	R4995869							
WG3275044-2	LCS							
Turbidity			105.0		%		85-115	13-FEB-20
WG3275044-1	MB							
Turbidity			<0.10		NTU		0.1	13-FEB-20

Quality Control Report

Workorder: L2415785

Report Date: 18-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Quality Control Report

Workorder: L2415785

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	10-FEB-20 10:50	18-FEB-20 16:00	0.25	197	hours	EHTR-FM
pH	1	10-FEB-20 10:50	11-FEB-20 14:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2415785 were received on 11-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-40_Q1-2020**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0R 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	F	N	F	N	F	N	
																				ALS_Package-DOC
RG_DW-02-40_WP_Q1-2020_NP-02-10	RG_DW-02-40	WP	N	Feb 10 2020	10:50	G	7	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

REINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Jan 2/11/20

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
				Sampler's Signature	<i>Jennifer de Werk</i>	Date/Time	Feb 10 2020 / 10:50

9



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 12-FEB-20
Report Date: 18-DEC-20 14:17 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2416223
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200211Q1GW
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 13:44

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

18-DEC-20 14:17 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID	L2416223-1 WG 11-FEB-20 10:35 EV_GV3GW_WG_ 2020_Q1_NP	L2416223-2 WG 11-FEB-20 13:20 EV_MW_AQ1_WG_ 2020_Q1_NP	L2416223-3 WG 11-FEB-20 13:55 EV_MW_AQ2_WG_ 2020_Q1_NP	L2416223-4 WG 11-FEB-20 10:50 EV_MCGWD_WG_ 2020_Q1_NP	L2416223-5 WG 11-FEB-20 14:50 EV_BRGW_WG_2 020_Q1_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	598	834	1050	580	1140
	Hardness (as CaCO3) (mg/L)	357	508	645	224	699
	pH (pH)	7.96	7.70	7.66	7.98	7.70
	ORP (mV)	454	320	464	267	301
	Total Suspended Solids (mg/L)	<1.0	2.6	8.2	433	<1.0
	Total Dissolved Solids (mg/L)	411 ^{DLHC}	539 ^{DLHC}	727 ^{DLHC}	439 ^{DLHC}	856 ^{DLHC}
	Turbidity (NTU)	<0.10	2.43	5.87	383	0.15
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.8	19.8	22.6	3.1	10.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	202	360	487	258	294
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	202	360	487	258	294
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0461	0.270	<0.0050
	Bicarbonate (HCO3) (mg/L)	246	439	594	314	358
	Bromide (Br) (mg/L)	<0.050	0.144	<0.050	<0.050	0.505
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.61	33.0	14.2	2.03	32.0
	Fluoride (F) (mg/L)	0.394	0.164	0.125	0.917	0.092
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	101	103	101	94.0	98.4
	Nitrate (as N) (mg/L)	0.139	0.894	<0.0050	0.0083	2.76
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0023	0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.303	0.096	0.838	0.231 ^{TKNI}
	Total Nitrogen (mg/L)	0.139	1.20	0.096	0.849	3.00
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	0.0163	<0.0010	0.0054	0.0022
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.017 ^{DLM}	<0.0020	0.0063	<0.0020
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0156	0.0067	0.597 ^{DLHC}	<0.0020
	Sulfate (SO4) (mg/L)	151	92.5	169	83.5	369
	Anion Sum (meq/L)	7.24	10.1	13.7	6.99	14.7
	Cation Sum (meq/L)	7.31	10.4	13.8	6.58	14.4
Cation - Anion Balance (%)	0.5	1.6	0.6	-3.1	-0.8	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.80	0.91	2.23	0.65
	Total Organic Carbon (mg/L)	<0.50	1.04	1.09	8.67	0.58
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0322	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2416223-1 WG 11-FEB-20 10:35 EV_GV3GW_WG_ 2020_Q1_NP	L2416223-2 WG 11-FEB-20 13:20 EV_MW_AQ1_WG_ 2020_Q1_NP	L2416223-3 WG 11-FEB-20 13:55 EV_MW_AQ2_WG_ 2020_Q1_NP	L2416223-4 WG 11-FEB-20 10:50 EV_MCGWD_WG_ 2020_Q1_NP	L2416223-5 WG 11-FEB-20 14:50 EV_BRGW_WG_2 020_Q1_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00031	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00011	0.00014	0.00088	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0183	0.199	0.0197	0.0656	0.0656
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.013	0.025	0.105	0.075	0.043
	Cadmium (Cd)-Dissolved (ug/L)	0.0156	0.0432	<0.0050	<0.015 ^{DLM}	0.0586
	Calcium (Ca)-Dissolved (mg/L)	89.9	124	162	49.1	186
	Chromium (Cr)-Dissolved (mg/L)	0.00023	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.10	0.43	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00027	0.00058	<0.00020	0.00034	0.00030
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.577	0.067	0.014
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0158	0.0200	0.0579	0.0118	0.0518
	Magnesium (Mg)-Dissolved (mg/L)	32.2	48.0	58.4	24.6	57.0
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00016	0.0872	0.412	0.00328
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00100	0.000345	0.000364	0.0146	0.000638
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00070	0.00338	0.00207
	Potassium (K)-Dissolved (mg/L)	1.05	1.69	2.12	1.67	2.27
	Selenium (Se)-Dissolved (ug/L)	4.34	4.93	<0.050	0.063	15.4
	Silicon (Si)-Dissolved (mg/L)	3.48	4.20	6.79	5.52	3.46
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.41	5.69	19.7	46.9	9.14
	Strontium (Sr)-Dissolved (mg/L)	0.607	0.379	1.25	0.494	0.373
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00176	0.000495	0.000120	0.00362	0.00174
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0022	<0.0010	0.0022	0.0033

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Bromide (Br)	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Ammonia as N	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Nitrate (as N)	MS-B	L2416223-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L2416223-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

Reference Information

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200211Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2416223

Report Date: 18-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995820							
WG3274970-8	LCS							
Acidity (as CaCO3)			101.7		%		85-115	12-FEB-20
WG3274970-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	12-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995809							
WG3274952-9	DUP	L2416223-5						
Alkalinity, Total (as CaCO3)		294	283		mg/L	3.8	20	12-FEB-20
WG3274952-8	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	12-FEB-20
WG3274952-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997585							
WG3276056-2	LCS							
Beryllium (Be)-Dissolved			102.2		%		80-120	18-FEB-20
WG3276056-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-FEB-20
BIC-CL								
	Water							
Batch	R4995809							
WG3274952-9	DUP	L2416223-5						
Bicarbonate (HCO3)		358	345		mg/L	3.8	20	12-FEB-20
WG3274952-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995918							
WG3275091-7	DUP	L2416223-5						
Bromide (Br)		0.505	0.497		mg/L	1.5	20	12-FEB-20
WG3275091-6	LCS							
Bromide (Br)			108.4		%		85-115	12-FEB-20
WG3275091-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-FEB-20
WG3275091-8	MS	L2416223-5						
Bromide (Br)			N/A	MS-B	%		-	12-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-14 LCS								
Dissolved Organic Carbon			103.0		%		80-120	17-FEB-20
WG3276670-13 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-14 LCS								
Total Organic Carbon			104.7		%		80-120	17-FEB-20
WG3276670-13 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
CL-IC-N-CL	Water							
Batch	R4995918							
WG3275091-7 DUP		L2416223-5						
Chloride (Cl)		32.0	32.2		mg/L	0.8	20	12-FEB-20
WG3275091-6 LCS								
Chloride (Cl)			106.5		%		90-110	12-FEB-20
WG3275091-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-FEB-20
WG3275091-8 MS		L2416223-5						
Chloride (Cl)			109.1		%		75-125	12-FEB-20
CO3-CL	Water							
Batch	R4995809							
WG3274952-9 DUP		L2416223-5						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3274952-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	12-FEB-20
EC-L-PCT-CL	Water							
Batch	R4995809							
WG3274952-9 DUP		L2416223-5						
Conductivity (@ 25C)		1140	1130		uS/cm	0.4	10	12-FEB-20
WG3274952-8 LCS								
Conductivity (@ 25C)			96.2		%		90-110	12-FEB-20
WG3274952-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-FEB-20
F-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R4995918							
WG3275091-7	DUP	L2416223-5						
Fluoride (F)		0.092	0.091		mg/L	0.4	20	12-FEB-20
WG3275091-6	LCS							
Fluoride (F)			108.7		%		90-110	12-FEB-20
WG3275091-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	12-FEB-20
WG3275091-8	MS	L2416223-5						
Fluoride (F)			117.8		%		75-125	12-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4996424							
WG3275880-6	LCS							
Mercury (Hg)-Dissolved			107.6		%		80-120	14-FEB-20
WG3275880-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4997585							
WG3276056-2	LCS							
Aluminum (Al)-Dissolved			103.8		%		80-120	18-FEB-20
Antimony (Sb)-Dissolved			99.5		%		80-120	18-FEB-20
Arsenic (As)-Dissolved			100.8		%		80-120	18-FEB-20
Barium (Ba)-Dissolved			106.2		%		80-120	18-FEB-20
Bismuth (Bi)-Dissolved			106.9		%		80-120	18-FEB-20
Boron (B)-Dissolved			101.9		%		80-120	18-FEB-20
Cadmium (Cd)-Dissolved			102.2		%		80-120	18-FEB-20
Calcium (Ca)-Dissolved			107.6		%		80-120	18-FEB-20
Chromium (Cr)-Dissolved			102.5		%		80-120	18-FEB-20
Cobalt (Co)-Dissolved			101.3		%		80-120	18-FEB-20
Copper (Cu)-Dissolved			98.5		%		80-120	18-FEB-20
Iron (Fe)-Dissolved			106.9		%		80-120	18-FEB-20
Lead (Pb)-Dissolved			105.6		%		80-120	18-FEB-20
Lithium (Li)-Dissolved			100.1		%		80-120	18-FEB-20
Magnesium (Mg)-Dissolved			101.2		%		80-120	18-FEB-20
Manganese (Mn)-Dissolved			104.5		%		80-120	18-FEB-20
Molybdenum (Mo)-Dissolved			104.1		%		80-120	18-FEB-20
Nickel (Ni)-Dissolved			99.1		%		80-120	18-FEB-20
Potassium (K)-Dissolved			106.3		%		80-120	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997585							
WG3276056-2	LCS							
Selenium (Se)-Dissolved			103.3		%		80-120	18-FEB-20
Silicon (Si)-Dissolved			107.8		%		60-140	18-FEB-20
Silver (Ag)-Dissolved			99.6		%		80-120	18-FEB-20
Sodium (Na)-Dissolved			107.1		%		80-120	18-FEB-20
Strontium (Sr)-Dissolved			107.0		%		80-120	18-FEB-20
Thallium (Tl)-Dissolved			104.0		%		80-120	18-FEB-20
Tin (Sn)-Dissolved			99.2		%		80-120	18-FEB-20
Titanium (Ti)-Dissolved			99.4		%		80-120	18-FEB-20
Uranium (U)-Dissolved			97.5		%		80-120	18-FEB-20
Vanadium (V)-Dissolved			104.7		%		80-120	18-FEB-20
Zinc (Zn)-Dissolved			106.1		%		80-120	18-FEB-20
WG3276056-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997585							
WG3276056-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4996855							
WG3276119-6	LCS							
Ammonia as N			110.4		%		85-115	14-FEB-20
WG3276119-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4995918							
WG3275091-7	DUP	L2416223-5						
Nitrite (as N)		0.0010	0.0015	J	mg/L	0.0005	0.002	12-FEB-20
WG3275091-6	LCS							
Nitrite (as N)			103.4		%		90-110	12-FEB-20
WG3275091-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-FEB-20
WG3275091-8	MS	L2416223-5						
Nitrite (as N)			109.5		%		75-125	12-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4995918							
WG3275091-7	DUP	L2416223-5						
Nitrate (as N)		2.76	2.78		mg/L	0.4	20	12-FEB-20
WG3275091-6	LCS							
Nitrate (as N)			109.6		%		90-110	12-FEB-20
WG3275091-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-FEB-20
WG3275091-8	MS	L2416223-5						
Nitrate (as N)			N/A	MS-B	%		-	12-FEB-20
OH-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL								
Water								
Batch R4995809								
WG3274952-9	DUP	L2416223-5						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	12-FEB-20
Batch R4995809								
WG3274952-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	12-FEB-20
ORP-CL								
Water								
Batch R4997929								
WG3277355-11	CRM	CL-ORP						
ORP			225		mV		210-230	18-FEB-20
P-T-L-COL-CL								
Water								
Batch R4998319								
WG3277718-10	LCS							
Phosphorus (P)-Total			103.0		%		80-120	19-FEB-20
Batch R4998319								
WG3277718-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-FEB-20
P-TD-L-COL-CL								
Water								
Batch R4998319								
WG3277718-10	LCS							
Phosphorus (P)-Total Dissolved			103.0		%		80-120	19-FEB-20
Batch R4998319								
WG3277718-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-FEB-20
PH-CL								
Water								
Batch R4995809								
WG3274952-9	DUP	L2416223-5						
pH		7.70	7.79	J	pH	0.09	0.2	12-FEB-20
Batch R4995809								
WG3274952-8	LCS							
pH			7.02		pH		6.9-7.1	12-FEB-20
PO4-DO-L-COL-CL								
Water								
Batch R4995826								
WG3274603-10	LCS							
Orthophosphate-Dissolved (as P)			107.7		%		80-120	12-FEB-20
Batch R4995826								
WG3274603-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-FEB-20
SO4-IC-N-CL								
Water								



Quality Control Report

Workorder: L2416223

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R4995918								
WG3275091-7	DUP	L2416223-5						
Sulfate (SO4)		369	370		mg/L	0.2	20	12-FEB-20
WG3275091-6	LCS		108.7		%		90-110	12-FEB-20
Sulfate (SO4)								
WG3275091-5	MB		<0.30		mg/L		0.3	12-FEB-20
Sulfate (SO4)								
WG3275091-8	MS	L2416223-5	N/A	MS-B	%		-	12-FEB-20
Sulfate (SO4)								
SOLIDS-TDS-CL								
Batch R4998354								
WG3276927-15	DUP	L2416223-4						
Total Dissolved Solids		439	472		mg/L	7.3	20	18-FEB-20
WG3276927-8	LCS		101.8		%		85-115	18-FEB-20
Total Dissolved Solids								
WG3276927-7	MB		<10		mg/L		10	18-FEB-20
Total Dissolved Solids								
TKN-L-F-CL								
Batch R4996729								
WG3275909-23	DUP	L2416223-5						
Total Kjeldahl Nitrogen		0.231	0.223		mg/L	3.5	20	14-FEB-20
WG3275909-18	LCS		98.7		%		75-125	14-FEB-20
Total Kjeldahl Nitrogen								
WG3275909-22	LCS		97.2		%		75-125	14-FEB-20
Total Kjeldahl Nitrogen								
WG3275909-17	MB		<0.050		mg/L		0.05	14-FEB-20
Total Kjeldahl Nitrogen								
WG3275909-21	MB		<0.050		mg/L		0.05	14-FEB-20
Total Kjeldahl Nitrogen								
WG3275909-24	MS	L2416223-5	112.7		%		70-130	14-FEB-20
Total Kjeldahl Nitrogen								
TSS-L-CL								
Batch R4998273								
WG3276676-6	LCS		93.8		%		85-115	18-FEB-20
Total Suspended Solids								
WG3276676-5	MB		<1.0		mg/L		1	18-FEB-20
Total Suspended Solids								
TURBIDITY-CL								
Water								



Quality Control Report

Workorder: L2416223

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4996916							
WG3276212-8	LCS							
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-7	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2416223

Report Date: 18-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	11-FEB-20 10:35	18-FEB-20 16:00	0.25	174	hours	EHTR-FM
	2	11-FEB-20 13:20	18-FEB-20 16:00	0.25	171	hours	EHTR-FM
	3	11-FEB-20 13:55	18-FEB-20 16:00	0.25	170	hours	EHTR-FM
	4	11-FEB-20 10:50	18-FEB-20 16:00	0.25	173	hours	EHTR-FM
	5	11-FEB-20 14:50	18-FEB-20 16:00	0.25	169	hours	EHTR-FM
pH							
	1	11-FEB-20 10:35	12-FEB-20 16:00	0.25	30	hours	EHTR-FM
	2	11-FEB-20 13:20	12-FEB-20 16:00	0.25	27	hours	EHTR-FM
	3	11-FEB-20 13:55	12-FEB-20 16:00	0.25	26	hours	EHTR-FM
	4	11-FEB-20 10:50	12-FEB-20 16:00	0.25	29	hours	EHTR-FM
	5	11-FEB-20 14:50	12-FEB-20 16:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416223 were received on 12-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200211Q1GW**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS **ANALYSIS REQUESTED**



L2416223-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECK COAL-ROUTINE-VA (E305.F)	TECK COAL-MET.D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	BPH (C10-C32)	D-Mercury	T-Mercury				
EV_GV3gw_WG_2020_Q1_NP	EV_GV3gw	WG	N	2/11/2020	10:35	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
EV_MW_AQ1_WG_2020_Q1_NP	EV_MW_AQ1	WG	N	2/11/2020	13:20	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
EV_MW_AQ2_WG_2020_Q1_NP	EV_MW_AQ2	WG	N	2/11/2020	13:55	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
EV_MCgwD_WG_2020_Q1_NP	EV_MCgwD	WG	N	2/11/2020	10:50	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
EV_BRgw_WG_2020_Q1_NP	EV_BRgw	WG	N	2/11/2020	14:50	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total							25															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were perserved other than EPH Bottles.	Jason Gravelle	February 11, 2020	OK	2/11/20 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Jason Gravelle/Kim Hackett	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>Jason Gravelle</i>	Date/Time
			February 11, 2020

40c



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-FEB-20
Report Date: 18-DEC-20 14:18 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2416367
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: RG-DW-F_Q1-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:57

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416367-1 WP 11-FEB-20 09:03 RG_DW- F_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.73			
	ORP (mV)	414			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416367-1 WP 11-FEB-20 09:03 RG_DW- F_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			
	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2416367-1 WP 11-FEB-20 09:03 RG_DW- F_WP_Q1- 2020_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2416367-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416367-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416367-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2416367-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416367-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416367-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2416367-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2416367-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2416367-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2416367-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2416367-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2416367-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2416367-1
Matrix Spike	Uranium (U)-Total	MS-B	L2416367-1
Matrix Spike	Ammonia as N	MS-B	L2416367-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

RG-DW-F_Q1-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2416367

Report Date: 18-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995820							
WG3274970-11	LCS							
Acidity (as CaCO3)			101.8		%		85-115	12-FEB-20
WG3274970-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	12-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995809							
WG3274952-11	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	12-FEB-20
WG3274952-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Beryllium (Be)-Dissolved			105.2		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Beryllium (Be)-Total			100.6		%		80-120	16-FEB-20
WG3275869-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-FEB-20
BIC-CL								
	Water							
Batch	R4995809							
WG3274952-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995961							
WG3275137-7	DUP	L2416367-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3275137-6	LCS							
Bromide (Br)			104.1		%		85-115	12-FEB-20
WG3275137-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-FEB-20
WG3275137-8	MS	L2416367-1						
Bromide (Br)			98.9		%		75-125	12-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
C-DIS-ORG-LOW-CL Water									
Batch	R4997320								
WG3276670-14	LCS								
Dissolved Organic Carbon			103.0		%		80-120	17-FEB-20	
WG3276670-13	MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-FEB-20	
C-TOT-ORG-LOW-CL Water									
Batch	R4997320								
WG3276670-14	LCS								
Total Organic Carbon			104.7		%		80-120	17-FEB-20	
WG3276670-13	MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-20	
CL-IC-N-CL Water									
Batch	R4995961								
WG3275137-7	DUP	L2416367-1							
Chloride (Cl)			<0.50		mg/L	RPD-NA	N/A	20	12-FEB-20
WG3275137-6	LCS								
Chloride (Cl)			103.9		%		90-110	12-FEB-20	
WG3275137-5	MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-FEB-20	
WG3275137-8	MS	L2416367-1							
Chloride (Cl)			110.0		%		75-125	12-FEB-20	
CO3-CL Water									
Batch	R4995809								
WG3274952-10	MB								
Carbonate (CO3)			<5.0		mg/L		5	12-FEB-20	
EC-L-PCT-CL Water									
Batch	R4995809								
WG3274952-11	LCS								
Conductivity (@ 25C)			96.9		%		90-110	12-FEB-20	
WG3274952-10	MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-FEB-20	
F-IC-N-CL Water									
Batch	R4995961								
WG3275137-7	DUP	L2416367-1							
Fluoride (F)			<0.020		mg/L	RPD-NA	N/A	20	12-FEB-20
WG3275137-6	LCS								
Fluoride (F)			106.5		%		90-110	12-FEB-20	



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R4995961								
WG3275137-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-FEB-20
WG3275137-8 MS		L2416367-1						
Fluoride (F)			111.0		%		75-125	12-FEB-20
HG-D-CVAA-VA								
Batch R4996424								
WG3275880-6 LCS								
Mercury (Hg)-Dissolved			107.6		%		80-120	14-FEB-20
WG3275880-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-FEB-20
HG-T-CVAA-VA								
Batch R4996424								
WG3275678-2 LCS								
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Batch R4997665								
WG3276015-2 LCS								
Aluminum (Al)-Dissolved			108.2		%		80-120	16-FEB-20
Antimony (Sb)-Dissolved			97.7		%		80-120	16-FEB-20
Arsenic (As)-Dissolved			104.7		%		80-120	16-FEB-20
Barium (Ba)-Dissolved			104.0		%		80-120	16-FEB-20
Bismuth (Bi)-Dissolved			109.6		%		80-120	16-FEB-20
Boron (B)-Dissolved			108.9		%		80-120	16-FEB-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	16-FEB-20
Calcium (Ca)-Dissolved			108.6		%		80-120	16-FEB-20
Chromium (Cr)-Dissolved			109.3		%		80-120	16-FEB-20
Cobalt (Co)-Dissolved			105.7		%		80-120	16-FEB-20
Copper (Cu)-Dissolved			103.4		%		80-120	16-FEB-20
Iron (Fe)-Dissolved			107.7		%		80-120	16-FEB-20
Lead (Pb)-Dissolved			108.3		%		80-120	16-FEB-20
Lithium (Li)-Dissolved			106.1		%		80-120	16-FEB-20
Magnesium (Mg)-Dissolved			108.8		%		80-120	16-FEB-20
Manganese (Mn)-Dissolved			108.5		%		80-120	16-FEB-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Nickel (Ni)-Dissolved			107.7		%		80-120	16-FEB-20
Potassium (K)-Dissolved			103.3		%		80-120	16-FEB-20
Selenium (Se)-Dissolved			102.6		%		80-120	16-FEB-20
Silicon (Si)-Dissolved			106.8		%		60-140	16-FEB-20
Silver (Ag)-Dissolved			101.3		%		80-120	16-FEB-20
Sodium (Na)-Dissolved			106.6		%		80-120	16-FEB-20
Strontium (Sr)-Dissolved			109.5		%		80-120	16-FEB-20
Thallium (Tl)-Dissolved			107.4		%		80-120	16-FEB-20
Tin (Sn)-Dissolved			100.4		%		80-120	16-FEB-20
Titanium (Ti)-Dissolved			97.1		%		80-120	16-FEB-20
Uranium (U)-Dissolved			109.1		%		80-120	16-FEB-20
Vanadium (V)-Dissolved			108.8		%		80-120	16-FEB-20
Zinc (Zn)-Dissolved			105.0		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Aluminum (Al)-Total			102.5		%		80-120	16-FEB-20
Antimony (Sb)-Total			96.9		%		80-120	16-FEB-20
Arsenic (As)-Total			98.5		%		80-120	16-FEB-20
Barium (Ba)-Total			98.6		%		80-120	16-FEB-20
Bismuth (Bi)-Total			95.8		%		80-120	16-FEB-20
Boron (B)-Total			102.3		%		80-120	16-FEB-20
Cadmium (Cd)-Total			102.6		%		80-120	16-FEB-20
Calcium (Ca)-Total			102.2		%		80-120	16-FEB-20
Chromium (Cr)-Total			100.5		%		80-120	16-FEB-20
Cobalt (Co)-Total			99.1		%		80-120	16-FEB-20
Copper (Cu)-Total			100.3		%		80-120	16-FEB-20
Iron (Fe)-Total			102.3		%		80-120	16-FEB-20
Lead (Pb)-Total			99.1		%		80-120	16-FEB-20
Lithium (Li)-Total			97.8		%		80-120	16-FEB-20
Magnesium (Mg)-Total			102.3		%		80-120	16-FEB-20
Manganese (Mn)-Total			100.9		%		80-120	16-FEB-20
Molybdenum (Mo)-Total			101.5		%		80-120	16-FEB-20
Nickel (Ni)-Total			102.5		%		80-120	16-FEB-20
Potassium (K)-Total			103.9		%		80-120	16-FEB-20
Selenium (Se)-Total			100.3		%		80-120	16-FEB-20
Silicon (Si)-Total			102.4		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4997560							
WG3275869-2	LCS							
Silver (Ag)-Total			97.0		%		80-120	16-FEB-20
Sodium (Na)-Total			99.4		%		80-120	16-FEB-20
Strontium (Sr)-Total			101.8		%		80-120	16-FEB-20
Thallium (Tl)-Total			98.1		%		80-120	16-FEB-20
Tin (Sn)-Total			99.6		%		80-120	16-FEB-20
Titanium (Ti)-Total			99.3		%		80-120	16-FEB-20
Uranium (U)-Total			97.6		%		80-120	16-FEB-20
Vanadium (V)-Total			102.5		%		80-120	16-FEB-20
Zinc (Zn)-Total			100.1		%		80-120	16-FEB-20
WG3275869-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-1	MB							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4996855							
WG3276119-6	LCS							
Ammonia as N			110.4		%		85-115	14-FEB-20
WG3276119-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4995961							
WG3275137-7	DUP	L2416367-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3275137-6	LCS							
Nitrite (as N)			103.6		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-FEB-20
WG3275137-8	MS	L2416367-1						
Nitrite (as N)			107.5		%		75-125	12-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4995961							
WG3275137-7	DUP	L2416367-1						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3275137-6	LCS							
Nitrate (as N)			103.5		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-FEB-20
WG3275137-8	MS	L2416367-1						
Nitrate (as N)			110.9		%		75-125	12-FEB-20
OH-CL	Water							



Quality Control Report

Workorder: L2416367

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R4995809							
WG3274952-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	12-FEB-20
ORP-CL	Water							
Batch	R4998402							
WG3277982-1 CRM		CL-ORP						
ORP			221		mV		210-230	19-FEB-20
P-T-L-COL-CL	Water							
Batch	R4998319							
WG3277718-10 LCS								
Phosphorus (P)-Total			103.0		%		80-120	19-FEB-20
WG3277718-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-FEB-20
PH-CL	Water							
Batch	R4995809							
WG3274952-11 LCS								
pH			7.02		pH		6.9-7.1	12-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4996493							
WG3275254-2 LCS								
Orthophosphate-Dissolved (as P)			103.1		%		80-120	13-FEB-20
WG3275254-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995961							
WG3275137-7 DUP		L2416367-1						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	12-FEB-20
WG3275137-6 LCS								
Sulfate (SO4)			103.9		%		90-110	12-FEB-20
WG3275137-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-FEB-20
WG3275137-8 MS		L2416367-1						
Sulfate (SO4)			110.5		%		75-125	12-FEB-20
SOLIDS-TDS-CL	Water							



Quality Control Report

Workorder: L2416367

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Batch	R4998354							
WG3276927-8	LCS							
Total Dissolved Solids			101.8		%		85-115	18-FEB-20
WG3276927-7	MB							
Total Dissolved Solids			<10		mg/L		10	18-FEB-20
TKN-L-F-CL								
Batch	R4996729							
WG3275909-22	LCS							
Total Kjeldahl Nitrogen			97.2		%		75-125	14-FEB-20
WG3275909-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL								
Batch	R4998273							
WG3276676-6	LCS							
Total Suspended Solids			93.8		%		85-115	18-FEB-20
WG3276676-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-FEB-20
TURBIDITY-CL								
Batch	R4996916							
WG3276212-12	DUP	L2416367-1						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	14-FEB-20
WG3276212-11	LCS							
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-10	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Report Date: 18-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-FEB-20 09:03	19-FEB-20 08:00	0.25	191	hours	EHTR-FM
pH	1	11-FEB-20 09:03	12-FEB-20 16:00	0.25	31	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416367 were received on 12-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	RG_DW-F_Q1-2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job#	Regional Effects Program	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Cam Jaeger	Lab Contact	Lyudmyla Shvets	Email 1:	cam.jaeger@teck.com X X X
Email	cam.jaeger@teck.com	Email	lyudmyla.shvets@alsglobal.com	Email 2:	jennifer.dewerk@teck.com X X X
Address	421 Pine Ave	Address	2559 29 st NE	Email 3:	teckcoal@equisonline.com X X X
				Email 4:	
City	Sparwood	Province	BC	City	Calgary
Postal Code	V0B 2G0	Country	Canada	Province	AB
Phone Number	250-425-8449	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	618734

SAMPLE DETAILS								ANALYSIS REQUESTED							Filter
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	Field, Lab, Field & Lab, Ni, None
RG_DW-F_WP_Q1-2020_NP	RG_DW-F	WP	N	Feb 11, 2020	9:03	G	7	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			DK 2/12/20	0900

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Jennifer de Werk</i>	Date/Time	Feb 11, 2020
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

8°C



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-FEB-20
Report Date: 18-DEC-20 14:18 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2416379
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-20_Q1-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:01

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416379-1 WP 11-FEB-20 09:03 RG_DW-02- 20_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	445			
	Hardness (as CaCO3) (mg/L)	249			
	pH (pH)	7.94			
	ORP (mV)	467			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	295	DLHC		
	Turbidity (NTU)	1.22			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	168			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	168			
	Ammonia as N (mg/L)	0.0057			
	Bicarbonate (HCO3) (mg/L)	205			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	2.74			
	Fluoride (F) (mg/L)	0.189			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	100			
	Nitrate (as N) (mg/L)	2.59			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.098	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	70.7			
	Anion Sum (meq/L)	5.10			
	Cation Sum (meq/L)	5.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0828			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416379-1 WP 11-FEB-20 09:03 RG_DW-02- 20_WP_Q1- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0118			
	Calcium (Ca)-Total (mg/L)	64.6			
	Chromium (Cr)-Total (mg/L)	0.00021			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00474			
	Iron (Fe)-Total (mg/L)	0.114			
	Lead (Pb)-Total (mg/L)	0.000320			
	Lithium (Li)-Total (mg/L)	0.0067			
	Magnesium (Mg)-Total (mg/L)	19.5			
	Manganese (Mn)-Total (mg/L)	0.00160			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00113			
	Nickel (Ni)-Total (mg/L)	0.00053			
	Potassium (K)-Total (mg/L)	0.583			
	Selenium (Se)-Total (ug/L)	11.6			
	Silicon (Si)-Total (mg/L)	2.31			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.34			
	Strontium (Sr)-Total (mg/L)	0.236			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00102			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0186			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0877			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0062			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2416379-1 WP 11-FEB-20 09:03 RG_DW-02- 20_WP_Q1- 2020_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	66.0			
	Chromium (Cr)-Dissolved (mg/L)	0.00021			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00263			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000091			
	Lithium (Li)-Dissolved (mg/L)	0.0070			
	Magnesium (Mg)-Dissolved (mg/L)	20.5			
	Manganese (Mn)-Dissolved (mg/L)	0.00091			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00107			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.597			
	Selenium (Se)-Dissolved (ug/L)	12.3			
	Silicon (Si)-Dissolved (mg/L)	2.19			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.44			
	Strontium (Sr)-Dissolved (mg/L)	0.241			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00109			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0108			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2416379-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416379-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416379-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2416379-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416379-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416379-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2416379-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2416379-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2416379-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2416379-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2416379-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2416379-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2416379-1
Matrix Spike	Uranium (U)-Total	MS-B	L2416379-1
Matrix Spike	Ammonia as N	MS-B	L2416379-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a			

Reference Information

halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

Reference Information

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-20_Q1-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995820							
WG3274970-11	LCS							
Acidity (as CaCO3)			101.8		%		85-115	12-FEB-20
WG3274970-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	12-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995809							
WG3274952-11	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	12-FEB-20
WG3274952-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Beryllium (Be)-Dissolved			105.2		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Beryllium (Be)-Total			100.6		%		80-120	16-FEB-20
WG3275869-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-FEB-20
BIC-CL								
	Water							
Batch	R4995809							
WG3274952-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995961							
WG3275137-6	LCS							
Bromide (Br)			104.1		%		85-115	12-FEB-20
WG3275137-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-18 LCS								
Dissolved Organic Carbon			102.7		%		80-120	19-FEB-20
WG3276670-17 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-18 LCS								
Total Organic Carbon			106.9		%		80-120	19-FEB-20
WG3276670-17 MB								
Total Organic Carbon			<0.50		mg/L		0.5	19-FEB-20
CL-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6 LCS								
Chloride (Cl)			103.9		%		90-110	12-FEB-20
WG3275137-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-FEB-20
CO3-CL	Water							
Batch	R4995809							
WG3274952-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	12-FEB-20
EC-L-PCT-CL	Water							
Batch	R4995809							
WG3274952-11 LCS								
Conductivity (@ 25C)			96.9		%		90-110	12-FEB-20
WG3274952-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-FEB-20
F-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6 LCS								
Fluoride (F)			106.5		%		90-110	12-FEB-20
WG3275137-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R4996424							
WG3275880-6	LCS							
Mercury (Hg)-Dissolved			107.6		%		80-120	14-FEB-20
WG3275880-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-FEB-20
HG-T-CVAA-VA								
	Water							
Batch	R4996424							
WG3275678-2	LCS							
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Aluminum (Al)-Dissolved			108.2		%		80-120	16-FEB-20
Antimony (Sb)-Dissolved			97.7		%		80-120	16-FEB-20
Arsenic (As)-Dissolved			104.7		%		80-120	16-FEB-20
Barium (Ba)-Dissolved			104.0		%		80-120	16-FEB-20
Bismuth (Bi)-Dissolved			109.6		%		80-120	16-FEB-20
Boron (B)-Dissolved			108.9		%		80-120	16-FEB-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	16-FEB-20
Calcium (Ca)-Dissolved			108.6		%		80-120	16-FEB-20
Chromium (Cr)-Dissolved			109.3		%		80-120	16-FEB-20
Cobalt (Co)-Dissolved			105.7		%		80-120	16-FEB-20
Copper (Cu)-Dissolved			103.4		%		80-120	16-FEB-20
Iron (Fe)-Dissolved			107.7		%		80-120	16-FEB-20
Lead (Pb)-Dissolved			108.3		%		80-120	16-FEB-20
Lithium (Li)-Dissolved			106.1		%		80-120	16-FEB-20
Magnesium (Mg)-Dissolved			108.8		%		80-120	16-FEB-20
Manganese (Mn)-Dissolved			108.5		%		80-120	16-FEB-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	16-FEB-20
Nickel (Ni)-Dissolved			107.7		%		80-120	16-FEB-20
Potassium (K)-Dissolved			103.3		%		80-120	16-FEB-20
Selenium (Se)-Dissolved			102.6		%		80-120	16-FEB-20
Silicon (Si)-Dissolved			106.8		%		60-140	16-FEB-20
Silver (Ag)-Dissolved			101.3		%		80-120	16-FEB-20
Sodium (Na)-Dissolved			106.6		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Strontium (Sr)-Dissolved			109.5		%		80-120	16-FEB-20
Thallium (Tl)-Dissolved			107.4		%		80-120	16-FEB-20
Tin (Sn)-Dissolved			100.4		%		80-120	16-FEB-20
Titanium (Ti)-Dissolved			97.1		%		80-120	16-FEB-20
Uranium (U)-Dissolved			109.1		%		80-120	16-FEB-20
Vanadium (V)-Dissolved			108.8		%		80-120	16-FEB-20
Zinc (Zn)-Dissolved			105.0		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Aluminum (Al)-Total			102.5		%		80-120	16-FEB-20
Antimony (Sb)-Total			96.9		%		80-120	16-FEB-20
Arsenic (As)-Total			98.5		%		80-120	16-FEB-20
Barium (Ba)-Total			98.6		%		80-120	16-FEB-20
Bismuth (Bi)-Total			95.8		%		80-120	16-FEB-20
Boron (B)-Total			102.3		%		80-120	16-FEB-20
Cadmium (Cd)-Total			102.6		%		80-120	16-FEB-20
Calcium (Ca)-Total			102.2		%		80-120	16-FEB-20
Chromium (Cr)-Total			100.5		%		80-120	16-FEB-20
Cobalt (Co)-Total			99.1		%		80-120	16-FEB-20
Copper (Cu)-Total			100.3		%		80-120	16-FEB-20
Iron (Fe)-Total			102.3		%		80-120	16-FEB-20
Lead (Pb)-Total			99.1		%		80-120	16-FEB-20
Lithium (Li)-Total			97.8		%		80-120	16-FEB-20
Magnesium (Mg)-Total			102.3		%		80-120	16-FEB-20
Manganese (Mn)-Total			100.9		%		80-120	16-FEB-20
Molybdenum (Mo)-Total			101.5		%		80-120	16-FEB-20
Nickel (Ni)-Total			102.5		%		80-120	16-FEB-20
Potassium (K)-Total			103.9		%		80-120	16-FEB-20
Selenium (Se)-Total			100.3		%		80-120	16-FEB-20
Silicon (Si)-Total			102.4		%		80-120	16-FEB-20
Silver (Ag)-Total			97.0		%		80-120	16-FEB-20
Sodium (Na)-Total			99.4		%		80-120	16-FEB-20
Strontium (Sr)-Total			101.8		%		80-120	16-FEB-20
Thallium (Tl)-Total			98.1		%		80-120	16-FEB-20
Tin (Sn)-Total			99.6		%		80-120	16-FEB-20
Titanium (Ti)-Total			99.3		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4997560							
WG3275869-2	LCS							
Uranium (U)-Total			97.6		%		80-120	16-FEB-20
Vanadium (V)-Total			102.5		%		80-120	16-FEB-20
Zinc (Zn)-Total			100.1		%		80-120	16-FEB-20
WG3275869-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R4996855							
WG3276119-6	LCS							
Ammonia as N			110.4		%		85-115	14-FEB-20
WG3276119-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-FEB-20
NO2-L-IC-N-CL								
Water								
Batch	R4995961							
WG3275137-6	LCS							
Nitrite (as N)			103.6		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-FEB-20
NO3-L-IC-N-CL								
Water								
Batch	R4995961							
WG3275137-6	LCS							
Nitrate (as N)			103.5		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-FEB-20
OH-CL								
Water								
Batch	R4995809							
WG3274952-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	12-FEB-20
ORP-CL								
Water								
Batch	R4998402							
WG3277982-1	CRM	CL-ORP						
ORP			221		mV		210-230	19-FEB-20
P-T-L-COL-CL								
Water								
Batch	R4998319							
WG3277718-10	LCS							
Phosphorus (P)-Total			103.0		%		80-120	19-FEB-20
WG3277718-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-FEB-20
PH-CL								
Water								
Batch	R4995809							
WG3274952-11	LCS							
pH			7.02		pH		6.9-7.1	12-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R4996493							
WG3275254-2 LCS								
Orthophosphate-Dissolved (as P)			103.1		%		80-120	13-FEB-20
WG3275254-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6 LCS								
Sulfate (SO4)			103.9		%		90-110	12-FEB-20
WG3275137-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4998354							
WG3276927-8 LCS								
Total Dissolved Solids			101.8		%		85-115	18-FEB-20
WG3276927-7 MB								
Total Dissolved Solids			<10		mg/L		10	18-FEB-20
TKN-L-F-CL	Water							
Batch	R4996729							
WG3275909-22 LCS								
Total Kjeldahl Nitrogen			97.2		%		75-125	14-FEB-20
WG3275909-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL	Water							
Batch	R4998273							
WG3276676-6 LCS								
Total Suspended Solids			93.8		%		85-115	18-FEB-20
WG3276676-5 MB								
Total Suspended Solids			<1.0		mg/L		1	18-FEB-20
TURBIDITY-CL	Water							
Batch	R4996916							
WG3276212-11 LCS								
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-10 MB								
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2416379

Report Date: 18-DEC-20

Page 10 of 10

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-FEB-20 09:03	19-FEB-20 08:00	0.25	191	hours	EHTR-FM
pH	1	11-FEB-20 09:03	12-FEB-20 16:00	0.25	31	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416379 were received on 12-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 02-20_Q1-2020		TURNAROUND TIME:		RUSH:			
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO	
Facility Name / Job#	Regional Effects Program		Lab Name	ALS Calgary		Report Format / Distribution	Excel PDF EDD
Project Manager	Cam Jaeger		Lab Contact	Lyudmyla Shvets		Email 1:	cam.jaeger@teck.com X X X
Email	cam.jaeger@teck.com		Email	lyudmyla.shvets@alsglobal.com		Email 2:	jennifer.dewerk@teck.com X X X
Address	421 Pine Ave		Address	2559 29 st NE		Email 3:	teckcoal@equisonline.com X X X
						Email 4:	X
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8449		Phone Number	403-407-1800		PO number	618734

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N
								H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HC-D-CYAF-VA	HC-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-02-20_WP_Q1-2020_NP	RG_DW-02-20	WP	N	Feb 11, 2020	9:03	G	7	1	1	1	1	1	1	1



L2416379-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:	RELINQUISHED BY/AFFILIATION:	DATE/TIME:	ACCEPTED BY/AFFILIATION:	DATE/TIME:
			<i>DK</i>	<i>2/11/2020</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287	
Sampler's Signature	<i>Jennifer de Werk</i>	Date/Time	Feb 11, 2020	



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-FEB-20
Report Date: 18-DEC-20 14:19 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2416391
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-04_Q1-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:45

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416391-1 WP 11-FEB-20 14:05 RG_DW-03-04_WP_Q1-2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	519			
	Hardness (as CaCO3) (mg/L)	281			
	pH (pH)	7.91			
	ORP (mV)	478			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	338	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	181			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	181			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	221			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	9.54			
	Fluoride (F) (mg/L)	0.156			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.6			
	Nitrate (as N) (mg/L)	1.34			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.327			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0034	RRV		
	Phosphorus (P)-Total (mg/L)	<0.0020	RRV		
	Sulfate (SO4) (mg/L)	97.2			
	Anion Sum (meq/L)	6.02			
	Cation Sum (meq/L)	5.93			
	Cation - Anion Balance (%)	-0.7			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.55			
	Total Organic Carbon (mg/L)	0.63			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	0.00011			
	Arsenic (As)-Total (mg/L)	0.00012			
	Barium (Ba)-Total (mg/L)	0.154			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416391-1 WP 11-FEB-20 14:05 RG_DW-03-04_WP_Q1-2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.011			
	Cadmium (Cd)-Total (ug/L)	0.0197			
	Calcium (Ca)-Total (mg/L)	72.2			
	Chromium (Cr)-Total (mg/L)	0.00015			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0100			
	Magnesium (Mg)-Total (mg/L)	24.6			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00122			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	1.02			
	Selenium (Se)-Total (ug/L)	10.7			
	Silicon (Si)-Total (mg/L)	2.67			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	6.57			
	Strontium (Sr)-Total (mg/L)	0.171			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00104			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.156			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0138			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID			
	L2416391-1 WP 11-FEB-20 14:05 RG_DW-03- 04_WP_Q1- 2020_NP			
Grouping	Analyte			
WATER				
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	71.5		
	Chromium (Cr)-Dissolved (mg/L)	0.00016		
	Cobalt (Co)-Dissolved (ug/L)	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00043		
	Iron (Fe)-Dissolved (mg/L)	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0100		
	Magnesium (Mg)-Dissolved (mg/L)	25.0		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00108		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050		
	Potassium (K)-Dissolved (mg/L)	0.959		
	Selenium (Se)-Dissolved (ug/L)	10.8		
	Silicon (Si)-Dissolved (mg/L)	2.55		
	Silver (Ag)-Dissolved (mg/L)	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	6.57		
	Strontium (Sr)-Dissolved (mg/L)	0.167		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00114		
	Vanadium (V)-Dissolved (mg/L)	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0023		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2416391-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416391-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416391-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2416391-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416391-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416391-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2416391-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2416391-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2416391-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2416391-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2416391-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2416391-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2416391-1
Matrix Spike	Uranium (U)-Total	MS-B	L2416391-1
Matrix Spike	Ammonia as N	MS-B	L2416391-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a			

Reference Information

halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

Reference Information

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-04_Q1-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2416391

Report Date: 18-DEC-20

Page 1 of 10

Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4995820							
WG3274970-11	LCS							
Acidity (as CaCO3)			101.8		%		85-115	12-FEB-20
WG3274970-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	12-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4995809							
WG3274952-11	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	12-FEB-20
WG3274952-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Beryllium (Be)-Dissolved			105.2		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-FEB-20
BE-T-L-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Beryllium (Be)-Total			100.6		%		80-120	16-FEB-20
WG3275869-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-FEB-20
BIC-CL								
	Water							
Batch	R4995809							
WG3274952-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4995961							
WG3275137-6	LCS							
Bromide (Br)			104.1		%		85-115	12-FEB-20
WG3275137-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2416391

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-18 LCS								
Dissolved Organic Carbon			102.7		%		80-120	19-FEB-20
WG3276670-17 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-FEB-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4997320							
WG3276670-18 LCS								
Total Organic Carbon			106.9		%		80-120	19-FEB-20
WG3276670-17 MB								
Total Organic Carbon			<0.50		mg/L		0.5	19-FEB-20
CL-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6 LCS								
Chloride (Cl)			103.9		%		90-110	12-FEB-20
WG3275137-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-FEB-20
CO3-CL	Water							
Batch	R4995809							
WG3274952-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	12-FEB-20
EC-L-PCT-CL	Water							
Batch	R4995809							
WG3274952-11 LCS								
Conductivity (@ 25C)			96.9		%		90-110	12-FEB-20
WG3274952-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-FEB-20
F-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6 LCS								
Fluoride (F)			106.5		%		90-110	12-FEB-20
WG3275137-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-FEB-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4996424							
WG3275880-6	LCS							
Mercury (Hg)-Dissolved			107.6		%		80-120	14-FEB-20
WG3275880-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-FEB-20
HG-T-CVAA-VA								
Water								
Batch	R4996424							
WG3275678-2	LCS							
Mercury (Hg)-Total			108.3		%		80-120	14-FEB-20
WG3275678-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4997665							
WG3276015-2	LCS							
Aluminum (Al)-Dissolved			108.2		%		80-120	16-FEB-20
Antimony (Sb)-Dissolved			97.7		%		80-120	16-FEB-20
Arsenic (As)-Dissolved			104.7		%		80-120	16-FEB-20
Barium (Ba)-Dissolved			104.0		%		80-120	16-FEB-20
Bismuth (Bi)-Dissolved			109.6		%		80-120	16-FEB-20
Boron (B)-Dissolved			108.9		%		80-120	16-FEB-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	16-FEB-20
Calcium (Ca)-Dissolved			108.6		%		80-120	16-FEB-20
Chromium (Cr)-Dissolved			109.3		%		80-120	16-FEB-20
Cobalt (Co)-Dissolved			105.7		%		80-120	16-FEB-20
Copper (Cu)-Dissolved			103.4		%		80-120	16-FEB-20
Iron (Fe)-Dissolved			107.7		%		80-120	16-FEB-20
Lead (Pb)-Dissolved			108.3		%		80-120	16-FEB-20
Lithium (Li)-Dissolved			106.1		%		80-120	16-FEB-20
Magnesium (Mg)-Dissolved			108.8		%		80-120	16-FEB-20
Manganese (Mn)-Dissolved			108.5		%		80-120	16-FEB-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	16-FEB-20
Nickel (Ni)-Dissolved			107.7		%		80-120	16-FEB-20
Potassium (K)-Dissolved			103.3		%		80-120	16-FEB-20
Selenium (Se)-Dissolved			102.6		%		80-120	16-FEB-20
Silicon (Si)-Dissolved			106.8		%		60-140	16-FEB-20
Silver (Ag)-Dissolved			101.3		%		80-120	16-FEB-20
Sodium (Na)-Dissolved			106.6		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-2	LCS							
Strontium (Sr)-Dissolved			109.5		%		80-120	16-FEB-20
Thallium (Tl)-Dissolved			107.4		%		80-120	16-FEB-20
Tin (Sn)-Dissolved			100.4		%		80-120	16-FEB-20
Titanium (Ti)-Dissolved			97.1		%		80-120	16-FEB-20
Uranium (U)-Dissolved			109.1		%		80-120	16-FEB-20
Vanadium (V)-Dissolved			108.8		%		80-120	16-FEB-20
Zinc (Zn)-Dissolved			105.0		%		80-120	16-FEB-20
WG3276015-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997665							
WG3276015-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-FEB-20
MET-T-CCMS-VA								
	Water							
Batch	R4997560							
WG3275869-2	LCS							
Aluminum (Al)-Total			102.5		%		80-120	16-FEB-20
Antimony (Sb)-Total			96.9		%		80-120	16-FEB-20
Arsenic (As)-Total			98.5		%		80-120	16-FEB-20
Barium (Ba)-Total			98.6		%		80-120	16-FEB-20
Bismuth (Bi)-Total			95.8		%		80-120	16-FEB-20
Boron (B)-Total			102.3		%		80-120	16-FEB-20
Cadmium (Cd)-Total			102.6		%		80-120	16-FEB-20
Calcium (Ca)-Total			102.2		%		80-120	16-FEB-20
Chromium (Cr)-Total			100.5		%		80-120	16-FEB-20
Cobalt (Co)-Total			99.1		%		80-120	16-FEB-20
Copper (Cu)-Total			100.3		%		80-120	16-FEB-20
Iron (Fe)-Total			102.3		%		80-120	16-FEB-20
Lead (Pb)-Total			99.1		%		80-120	16-FEB-20
Lithium (Li)-Total			97.8		%		80-120	16-FEB-20
Magnesium (Mg)-Total			102.3		%		80-120	16-FEB-20
Manganese (Mn)-Total			100.9		%		80-120	16-FEB-20
Molybdenum (Mo)-Total			101.5		%		80-120	16-FEB-20
Nickel (Ni)-Total			102.5		%		80-120	16-FEB-20
Potassium (K)-Total			103.9		%		80-120	16-FEB-20
Selenium (Se)-Total			100.3		%		80-120	16-FEB-20
Silicon (Si)-Total			102.4		%		80-120	16-FEB-20
Silver (Ag)-Total			97.0		%		80-120	16-FEB-20
Sodium (Na)-Total			99.4		%		80-120	16-FEB-20
Strontium (Sr)-Total			101.8		%		80-120	16-FEB-20
Thallium (Tl)-Total			98.1		%		80-120	16-FEB-20
Tin (Sn)-Total			99.6		%		80-120	16-FEB-20
Titanium (Ti)-Total			99.3		%		80-120	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4997560							
WG3275869-2	LCS							
Uranium (U)-Total			97.6		%		80-120	16-FEB-20
Vanadium (V)-Total			102.5		%		80-120	16-FEB-20
Zinc (Zn)-Total			100.1		%		80-120	16-FEB-20
WG3275869-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	16-FEB-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R4996855							
WG3276119-6	LCS							
Ammonia as N			110.4		%		85-115	14-FEB-20
WG3276119-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-FEB-20
NO2-L-IC-N-CL								
Water								
Batch	R4995961							
WG3275137-6	LCS							
Nitrite (as N)			103.6		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-FEB-20
NO3-L-IC-N-CL								
Water								
Batch	R4995961							
WG3275137-6	LCS							
Nitrate (as N)			103.5		%		90-110	12-FEB-20
WG3275137-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-FEB-20
OH-CL								
Water								
Batch	R4995809							
WG3274952-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	12-FEB-20
ORP-CL								
Water								
Batch	R4998402							
WG3277982-1	CRM	CL-ORP						
ORP			221		mV		210-230	19-FEB-20
P-T-L-COL-CL								
Water								
Batch	R4998319							
WG3277718-14	LCS							
Phosphorus (P)-Total			105.3		%		80-120	19-FEB-20
WG3277718-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-FEB-20
PH-CL								
Water								
Batch	R4995809							
WG3274952-11	LCS							
pH			7.02		pH		6.9-7.1	12-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R4996493							
WG3275254-6	LCS							
Orthophosphate-Dissolved (as P)			101.7		%		80-120	13-FEB-20
WG3275254-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-FEB-20
SO4-IC-N-CL	Water							
Batch	R4995961							
WG3275137-6	LCS							
Sulfate (SO4)			103.9		%		90-110	12-FEB-20
WG3275137-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4998354							
WG3276927-8	LCS							
Total Dissolved Solids			101.8		%		85-115	18-FEB-20
WG3276927-7	MB							
Total Dissolved Solids			<10		mg/L		10	18-FEB-20
TKN-L-F-CL	Water							
Batch	R4996729							
WG3275909-22	LCS							
Total Kjeldahl Nitrogen			97.2		%		75-125	14-FEB-20
WG3275909-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-FEB-20
TSS-L-CL	Water							
Batch	R4998273							
WG3276676-6	LCS							
Total Suspended Solids			93.8		%		85-115	18-FEB-20
WG3276676-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-FEB-20
TURBIDITY-CL	Water							
Batch	R4996916							
WG3276212-11	LCS							
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-10	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-FEB-20 14:05	19-FEB-20 08:00	0.25	186	hours	EHTR-FM
pH	1	11-FEB-20 14:05	12-FEB-20 16:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416391 were received on 12-FEB-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-04_Q1-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets		Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com		Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE		Email 3:	teckcoal@equisonline.com	X	X	X
							Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-425-8449			Phone Number	403-407-1800		PO number	618734			



L2416391-COFC

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-03-04_WP-Q1-2020_NP	RG_DW-03-04	WP	N	Feb 11, 20	14:05	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			Dk	2/12 0900

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Jennifer deWerk	Mobile #	250-910-7287	
Sampler's Signature	<i>Jennifer deWerk</i>	Date/Time	Feb 11, 2020	

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 13-FEB-20
Report Date: 29-DEC-20 12:12 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-5289

Certificate of Analysis

Lab Work Order #: L2416808
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200212Q1GW
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2416808-1 to -4.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2416808-1 WG 12-FEB-20 14:10 EV_MW_MC1A_W G_2020_Q1_NP	L2416808-2 WG 12-FEB-20 14:05 EV_MW_MC1B_W G_2020_Q1_NP	L2416808-3 WG 12-FEB-20 15:15 EV_MW_MC2A_W G_2020_Q1_NP	L2416808-4 WG 12-FEB-20 15:20 EV_MW_MC2B_W G_2020_Q1_NP
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	865	1280	885	1130
	Hardness (as CaCO3) (mg/L)	400	624	390	634
	pH (pH)	7.85	7.74	7.97	7.85
	ORP (mV)	320	300	348	450
	Total Suspended Solids (mg/L)	1.5	34.2 ^{DLHC}	<1.0	<1.0
	Total Dissolved Solids (mg/L)	500 ^{DLHC}	794 ^{DLHC}	509 ^{DLHC}	865 ^{DLHC}
	Turbidity (NTU)	9.51	1.91	13.4	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	8.6	17.2	6.9	6.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	356	442	412	242
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	356	442	412	242
	Ammonia as N (mg/L)	1.44	0.286	0.824	<0.0050
	Bicarbonate (HCO3) (mg/L)	435	539	502	295
	Bromide (Br) (mg/L)	0.646	0.93 ^{DLHC}	<0.050	0.797
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	85.8	141 ^{DLHC}	72.2	30.7
	Fluoride (F) (mg/L)	0.359	0.21 ^{DLHC}	0.312	0.096
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	94.6	103	94.6	100
	Nitrate (as N) (mg/L)	<0.0050	0.040 ^{DLHC}	<0.0050	6.55
	Nitrite (as N) (mg/L)	<0.0010	0.0050 ^{DLHC}	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.63	0.421	0.964	<0.050 ^{TKNI}
	Total Nitrogen (mg/L)	1.63	0.466	0.964	6.55
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020	<0.0010	0.0020	0.0043 ^{RRV}
	Phosphorus (P)-Total Dissolved (mg/L)	0.0039	0.0151	<0.0020	<0.0020 ^{RRV}
	Phosphorus (P)-Total (mg/L)	0.0050	0.0181	0.0029	<0.0020 ^{RRV}
	Sulfate (SO4) (mg/L)	<0.30	81.1 ^{DLHC}	<0.30	336
	Anion Sum (meq/L)	9.56	14.5	10.3	13.2
Cation Sum (meq/L)	9.05	15.0	9.73	13.2	
Cation - Anion Balance (%)	-2.8	1.5	-2.8	0.2	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.90	3.20	<0.50	<0.50
	Total Organic Carbon (mg/L)	0.77	3.64	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2416808-1 WG 12-FEB-20 14:10 EV_MW_MC1A_W G_2020_Q1_NP	L2416808-2 WG 12-FEB-20 14:05 EV_MW_MC1B_W G_2020_Q1_NP	L2416808-3 WG 12-FEB-20 15:15 EV_MW_MC2A_W G_2020_Q1_NP	L2416808-4 WG 12-FEB-20 15:20 EV_MW_MC2B_W G_2020_Q1_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00107	0.00573	0.00093	0.00011
	Barium (Ba)-Dissolved (mg/L)	11.6	1.04	5.53	0.0549
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.077	0.043	0.065	0.025
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0138	0.0286	0.103
	Calcium (Ca)-Dissolved (mg/L)	105	164	101	151
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00014
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.34	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00024	0.00040	0.00036
	Iron (Fe)-Dissolved (mg/L)	0.757	15.8	1.12	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.152	0.117	0.232	0.0537
	Magnesium (Mg)-Dissolved (mg/L)	33.5	52.3	33.6	62.7
	Manganese (Mn)-Dissolved (mg/L)	0.111	0.939	0.0518	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000257	0.00180	0.000177	0.000595
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00085	<0.00050	0.00062
	Potassium (K)-Dissolved (mg/L)	4.74	3.43	3.89	2.13
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.076	<0.050	46.9
	Silicon (Si)-Dissolved (mg/L)	3.59	6.03	4.15	3.31
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	20.2	34.9	40.8	11.3
	Strontium (Sr)-Dissolved (mg/L)	1.85	0.835	1.53	0.333
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00010	0.00010	0.00017
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000381	0.000579	0.000022	0.00142
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0065	0.0012	0.0036	0.0013

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2416808-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2416808-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2416808-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2416808-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200212Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2416808

Report Date: 29-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4998255							
WG3277815-5	LCS							
Acidity (as CaCO3)			100.1		%		85-115	18-FEB-20
WG3277815-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	18-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4997062							
WG3276417-8	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	13-FEB-20
WG3276417-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4998253							
WG3277182-2	LCS							
Beryllium (Be)-Dissolved			101.3		%		80-120	19-FEB-20
WG3277182-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4996956							
WG3276272-6	LCS							
Bromide (Br)			99.8		%		85-115	13-FEB-20
WG3276272-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4999357							
WG3279232-7	DUP	L2416808-4						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3279232-6	LCS							
Dissolved Organic Carbon			95.7		%		80-120	20-FEB-20
WG3279232-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3279232-8	MS	L2416808-4						
Dissolved Organic Carbon			92.7		%		70-130	20-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4999357							
WG3279232-7	DUP	L2416808-4						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3279232-6	LCS							



Quality Control Report

Workorder: L2416808

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R4999357							
WG3279232-6	LCS							
Total Organic Carbon			95.6		%		80-120	20-FEB-20
WG3279232-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-20
WG3279232-8	MS	L2416808-4						
Total Organic Carbon			93.9		%		70-130	20-FEB-20
CL-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Chloride (Cl)			99.7		%		90-110	13-FEB-20
WG3276272-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-FEB-20
EC-L-PCT-CL								
Water								
Batch	R4997062							
WG3276417-8	LCS							
Conductivity (@ 25C)			101.2		%		90-110	13-FEB-20
WG3276417-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-FEB-20
F-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-6	LCS							
Fluoride (F)			97.2		%		90-110	13-FEB-20
WG3276272-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4997186							
WG3276405-6	LCS							
Mercury (Hg)-Dissolved			96.2		%		80-120	15-FEB-20
WG3276405-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4998253							
WG3277182-2	LCS							
Aluminum (Al)-Dissolved			99.6		%		80-120	19-FEB-20
Antimony (Sb)-Dissolved			98.9		%		80-120	19-FEB-20
Arsenic (As)-Dissolved			98.3		%		80-120	19-FEB-20
Barium (Ba)-Dissolved			100.7		%		80-120	19-FEB-20



Quality Control Report

Workorder: L2416808

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4998253							
WG3277182-2	LCS							
Bismuth (Bi)-Dissolved			93.9		%		80-120	19-FEB-20
Boron (B)-Dissolved			99.7		%		80-120	19-FEB-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	19-FEB-20
Calcium (Ca)-Dissolved			97.2		%		80-120	19-FEB-20
Chromium (Cr)-Dissolved			98.9		%		80-120	19-FEB-20
Cobalt (Co)-Dissolved			94.9		%		80-120	19-FEB-20
Copper (Cu)-Dissolved			95.9		%		80-120	19-FEB-20
Iron (Fe)-Dissolved			100.7		%		80-120	19-FEB-20
Lead (Pb)-Dissolved			95.2		%		80-120	19-FEB-20
Lithium (Li)-Dissolved			98.6		%		80-120	19-FEB-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	19-FEB-20
Manganese (Mn)-Dissolved			98.9		%		80-120	19-FEB-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	19-FEB-20
Nickel (Ni)-Dissolved			96.0		%		80-120	19-FEB-20
Potassium (K)-Dissolved			100.9		%		80-120	19-FEB-20
Selenium (Se)-Dissolved			101.9		%		80-120	19-FEB-20
Silicon (Si)-Dissolved			105.6		%		60-140	19-FEB-20
Silver (Ag)-Dissolved			92.1		%		80-120	19-FEB-20
Sodium (Na)-Dissolved			100.9		%		80-120	19-FEB-20
Strontium (Sr)-Dissolved			95.2		%		80-120	19-FEB-20
Thallium (Tl)-Dissolved			95.6		%		80-120	19-FEB-20
Tin (Sn)-Dissolved			98.0		%		80-120	19-FEB-20
Titanium (Ti)-Dissolved			93.6		%		80-120	19-FEB-20
Uranium (U)-Dissolved			93.3		%		80-120	19-FEB-20
Vanadium (V)-Dissolved			99.7		%		80-120	19-FEB-20
Zinc (Zn)-Dissolved			96.9		%		80-120	19-FEB-20
WG3277182-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-20



Quality Control Report

Workorder: L2416808

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4998253							
WG3277182-1	MB	NP						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4998480							
WG3277399-6	LCS							
Ammonia as N			98.5		%		85-115	19-FEB-20
WG3277399-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4996956							
WG3276272-6	LCS							
Nitrite (as N)			101.6		%		90-110	13-FEB-20
WG3276272-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R4996956							
WG3276272-6	LCS							
Nitrate (as N)			100.9		%		90-110	13-FEB-20
WG3276272-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-FEB-20
ORP-CL	Water							
Batch	R4999104							
WG3278885-7	CRM	CL-ORP						
ORP			221		mV		210-230	20-FEB-20
P-T-L-COL-CL	Water							
Batch	R4999005							
WG3278655-2	LCS							
Phosphorus (P)-Total			107.2		%		80-120	20-FEB-20
WG3278655-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20
P-TD-L-COL-CL	Water							
Batch	R4999005							
WG3278655-2	LCS							
Phosphorus (P)-Total Dissolved			107.2		%		80-120	20-FEB-20
WG3278655-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	20-FEB-20
PH-CL	Water							
Batch	R4997062							
WG3276417-8	LCS							
pH			7.01		pH		6.9-7.1	13-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4996493							
WG3275254-14	LCS							
Orthophosphate-Dissolved (as P)			105.2		%		80-120	13-FEB-20
WG3275254-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-FEB-20
SO4-IC-N-CL	Water							
Batch	R4996956							
WG3276272-6	LCS							
Sulfate (SO4)			101.2		%		90-110	13-FEB-20
WG3276272-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R4996956							
WG3276272-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-FEB-20
SOLIDS-TDS-CL								
Water								
Batch	R4998975							
WG3277691-9	DUP	L2416808-2						
Total Dissolved Solids		794	790		mg/L	0.6	20	19-FEB-20
WG3277691-8	LCS							
Total Dissolved Solids			100.6		%		85-115	19-FEB-20
WG3277691-7	MB							
Total Dissolved Solids			<10		mg/L		10	19-FEB-20
TKN-L-F-CL								
Water								
Batch	R4997145							
WG3276459-6	LCS							
Total Kjeldahl Nitrogen			101.5		%		75-125	15-FEB-20
WG3276459-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-FEB-20
TSS-L-CL								
Water								
Batch	R4998973							
WG3277646-4	LCS							
Total Suspended Solids			86.0		%		85-115	19-FEB-20
WG3277646-3	MB							
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
TURBIDITY-CL								
Water								
Batch	R4996916							
WG3276212-20	LCS							
Turbidity			104.0		%		85-115	14-FEB-20
WG3276212-19	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	12-FEB-20 14:10	20-FEB-20 09:00	0.25	187	hours	EHTR-FM
	2	12-FEB-20 14:05	20-FEB-20 09:00	0.25	187	hours	EHTR-FM
	3	12-FEB-20 15:15	20-FEB-20 09:00	0.25	186	hours	EHTR-FM
	4	12-FEB-20 15:20	20-FEB-20 09:00	0.25	186	hours	EHTR-FM
pH							
	1	12-FEB-20 14:10	13-FEB-20 10:00	0.25	20	hours	EHTR-FM
	2	12-FEB-20 14:05	13-FEB-20 10:00	0.25	20	hours	EHTR-FM
	3	12-FEB-20 15:15	13-FEB-20 10:00	0.25	19	hours	EHTR-FM
	4	12-FEB-20 15:20	13-FEB-20 10:00	0.25	19	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2416808 were received on 13-FEB-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20200212Q1GW** TURNAROUND

L2416808-COFC

RUSH:

PROJECT/CLIENT INFO				OTHER INFO			
Facility Name / Job#	Elkview Operations			Lab Name	ALS		
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets		
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com		
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE		
Address	RR#1 HWY# 3			Distribution	Excel	PDF	EDD
City	Sparwood	Province	BC	Email 1:	kimberley.hackett@teck.com	X	X
Postal Code		Country	Canada	Email 2:	cameron.griffin@teck.com	X	X
Phone Number	1-250-865-5289			Email 3:	kennedy.allan@teck.com	X	X
				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X
				Email 5:	teckcoal@equisonline.com		X
				City	Calgary	Province	AB
				Postal Code	T1Y 7B5	Country	Canada
				Phone Number	403-407-1800		PO number
							VPO00678877

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Dissoved Chromium VI				
EV_MW_MC1A_WG_2020_Q1_NP	EV_MW_MC1A	WG	N	2/12/2020	14:10	G	5	I	I	I	I											
EV_MW_MC1B_WG_2020_Q1_NP	EV_MW_MC1B	WG	N	2/12/2020	14:05	G	5	I	I	I	I											
EV_MW_MC2A_WG_2020_Q1_NP	EV_MW_MC2A	WG	N	2/12/2020	15:15	G	5	I	I	I	I											
EV_MW_MC2B_WG_2020_Q1_NP	EV_MW_MC2B	WG	N	2/12/2020	15:20	G	5	I	I	I	I											
							Total	20														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	February 12, 2020		2/13 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Jason Gravelle	Mobile #	
Regular (default) X	Sampler's Signature		Date/Time	February 12, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

2c



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 14-FEB-20
Report Date: 29-DEC-20 12:14 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2417262
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200213Q1GW
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2417262-1 to -8.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2417262-1 WG 13-FEB-20 15:15 EV_MW_BC1A_W G_2020_Q1_NP	L2417262-2 WG 13-FEB-20 14:55 EV_MW_BC1B_W G_2020_Q1_NP	L2417262-3 WG 13-FEB-20 13:35 EV_MW_GT1B_W G_2020_Q1_NP	L2417262-4 WG 13-FEB-20 13:30 EV_MW_GT1A_W G_2020_Q1_NP	L2417262-5 WG 13-FEB-20 13:35 EV_MW_BC10A_ WG_2020_Q1_FD
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	1810	1890	1860	512	512
	Hardness (as CaCO3) (mg/L)	1160	1230	1220	276	277
	pH (pH)	7.59	7.58	7.86	7.86	7.85
	ORP (mV)	468	442	418	460	466
	Total Suspended Solids (mg/L)	34.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	1660 ^{DLHC}	1710 ^{DLHC}	1690 ^{DLHC}	364 ^{DLHC}	348 ^{DLHC}
	Turbidity (NTU)	33.4	0.15	0.30	1.69	1.74
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	12.0	4.0	1.7	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	252	233	226	184	187
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	252	233	226	184	187
	Ammonia as N (mg/L)	0.0061	<0.0050	<0.0050	0.0713	0.0741
	Bicarbonate (HCO3) (mg/L)	307	285 ^{DLHC}	276 ^{DLHC}	224 ^{DLHC}	228
	Bromide (Br) (mg/L)	1.02	0.57 ^{DLHC}	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0 ^{DLHC}	<5.0
	Chloride (Cl) (mg/L)	30.4 ^{DLHC}	31.0 ^{DLHC}	14.3 ^{DLHC}	2.5 ^{DLHC}	2.35
	Fluoride (F) (mg/L)	0.16 ^{DLHC}	0.20 ^{DLHC}	0.20 ^{DLHC}	<0.10 ^{DLHC}	0.095
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.5	99.1	98.8	92.8	93.9
	Nitrate (as N) (mg/L)	22.7 ^{DLHC}	27.9 ^{DLHC}	27.2 ^{DLHC}	0.114 ^{DLHC}	<0.0050
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	0.096	0.099
	Total Nitrogen (mg/L)	22.7	27.9	27.2	0.210	0.099
	Orthophosphate-Dissolved (as P) (mg/L)	0.0041	0.0249	0.0080	0.0022	0.0020
	Phosphorus (P)-Total Dissolved (mg/L)	0.012 ^{DLM}	0.025 ^{DLM}	0.0086 ^{DLM}	0.012 ^{DLM}	0.010 ^{DLM}
	Phosphorus (P)-Total (mg/L)	0.194 ^{DLHC}	0.027 ^{DLM}	0.0087 ^{DLM}	0.011 ^{DLM}	0.011 ^{DLM}
	Sulfate (SO4) (mg/L)	827 ^{DLHC}	868 ^{DLHC}	889 ^{DLHC}	114 ^{DLHC}	109
	Anion Sum (meq/L)	24.7	25.6	25.4	6.11	6.07
	Cation Sum (meq/L)	23.9	25.4	25.1	5.68	5.70
Cation - Anion Balance (%)	-1.8	-0.5	-0.6	-3.7	-3.1	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.76	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	3.47	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2417262-6 WG 13-FEB-20 13:40 EV_MW_BC10B_ WG_2020_Q1_FB	L2417262-7 WG 13-FEB-20 13:45 EV_MW_BC10C_ WG_2020_Q1_TB	L2417262-8 WG 13-FEB-20 10:50 EV_WF_SW_WG_ 2020_Q1_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0	<2.0	481	
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50	264	
	pH (pH)	5.63	5.41	8.13	
	ORP (mV)	480	482	323	
	Total Suspended Solids (mg/L)	<1.0	<1.0	29.2	
	Total Dissolved Solids (mg/L)	<10	<10	327	DLHC
	Turbidity (NTU)	<0.10	<0.10	20.9	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	1.7	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	<1.0	86.8	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	<1.0	86.8	
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.165	
	Bicarbonate (HCO3) (mg/L)	<5.0	<5.0	106	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	<0.50	<0.50	2.79	
	Fluoride (F) (mg/L)	<0.020	<0.020	0.079	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	0.0	0.0	104	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	0.310	
	Total Nitrogen (mg/L)	<0.050	<0.050	0.315	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	0.0051	DLM
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.047	DLM
	Sulfate (SO4) (mg/L)	<0.30	<0.30	170	
	Anion Sum (meq/L)	<0.10	<0.10	5.36	
	Cation Sum (meq/L)	<0.10	<0.10	5.55	
	Cation - Anion Balance (%)	0.0	0.0	1.8	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.93	
	Total Organic Carbon (mg/L)	<0.50	<0.50	2.00	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2417262-1 WG 13-FEB-20 15:15 EV_MW_BC1A_W G_2020_Q1_NP	L2417262-2 WG 13-FEB-20 14:55 EV_MW_BC1B_W G_2020_Q1_NP	L2417262-3 WG 13-FEB-20 13:35 EV_MW_GT1B_W G_2020_Q1_NP	L2417262-4 WG 13-FEB-20 13:30 EV_MW_GT1A_W G_2020_Q1_NP	L2417262-5 WG 13-FEB-20 13:35 EV_MW_BC10A_ WG_2020_Q1_FD	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00087	0.00137	0.00175	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00026	0.00028	0.00022	0.00052	0.00048
	Barium (Ba)-Dissolved (mg/L)	0.0650	0.0532	0.0617	0.0615	0.0615
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.045	0.043	0.032	0.012	0.012
	Cadmium (Cd)-Dissolved (ug/L)	0.0900	0.227	0.121	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	225	224	234	73.6	73.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	1.83	0.23	0.24	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00031	0.00039	0.00043	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.066	<0.010	<0.010	0.192	0.195
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.166	0.200	0.205	0.0092	0.0090
	Magnesium (Mg)-Dissolved (mg/L)	145	163	154	22.5	22.6
	Manganese (Mn)-Dissolved (mg/L)	0.0498	0.00057	<0.00010	0.0834	0.0842
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00622	0.00993	0.0128	0.00145	0.00143
	Nickel (Ni)-Dissolved (mg/L)	0.00608	0.00265	0.0189	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	5.66	6.34	6.87	0.829	0.829
	Selenium (Se)-Dissolved (ug/L)	166	192	201	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	3.35	2.53	2.18	2.71	2.80
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	12.2	14.6	12.4	2.76	2.74
	Strontium (Sr)-Dissolved (mg/L)	0.912	0.914	1.45	0.122	0.119
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000031	0.000014	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00717	0.00967	0.00949	0.000658	0.000630
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0047	0.0047	0.0042	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2417262-6 WG 13-FEB-20 13:40 EV_MW_BC10B_ WG_2020_Q1_FB	L2417262-7 WG 13-FEB-20 13:45 EV_MW_BC10C_ WG_2020_Q1_TB	L2417262-8 WG 13-FEB-20 10:50 EV_WF_SW_WG_ 2020_Q1_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00015	
	Barium (Ba)-Dissolved (mg/L)	<0.00010	<0.00010	0.00885	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.0056	
	Calcium (Ca)-Dissolved (mg/L)	<0.050	<0.050	25.1	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.32	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00024	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.229	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0127	
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	<0.10	48.8	
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	0.273	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.00166	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00081	
	Potassium (K)-Dissolved (mg/L)	<0.050	<0.050	3.33	
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	0.391	
	Silicon (Si)-Dissolved (mg/L)	<0.050	<0.050	0.262	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	<0.050	<0.050	4.08	
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	<0.00020	0.0237	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00029	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010	0.000281	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Potassium (K)-Dissolved	B	L2417262-6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Nitrate (as N)	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sulfate (SO4)	MS-B	L2417262-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200213Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2417262

Report Date: 29-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4997256							
WG3276596-8	LCS							
Acidity (as CaCO3)			100.1		%		85-115	15-FEB-20
WG3276596-7	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	15-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4997065							
WG3276425-9	DUP	L2417262-7						
Alkalinity, Total (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3276425-11	LCS							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	14-FEB-20
WG3276425-8	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	14-FEB-20
WG3276425-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-FEB-20
WG3276425-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4997886							
WG3277260-2	LCS							
Beryllium (Be)-Dissolved			98.0		%		80-120	18-FEB-20
WG3277260-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-FEB-20
BIC-CL								
	Water							
Batch	R4997065							
WG3276425-9	DUP	L2417262-7						
Bicarbonate (HCO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3276425-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4998549							
WG3278141-2	LCS							
Bromide (Br)			98.5		%		85-115	14-FEB-20
WG3278141-6	LCS							
Bromide (Br)			103.4		%		85-115	14-FEB-20
WG3278141-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-FEB-20
WG3278141-5	MB							



Quality Control Report

Workorder: L2417262

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R4998549							
WG3278141-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-FEB-20
C-DIS-ORG-LOW-CL Water								
Batch	R5001010							
WG3280066-6	LCS							
Dissolved Organic Carbon			94.4		%		80-120	21-FEB-20
WG3280066-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
C-TOT-ORG-LOW-CL Water								
Batch	R5001010							
WG3280066-6	LCS							
Total Organic Carbon			97.8		%		80-120	21-FEB-20
WG3280066-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-20
CL-IC-N-CL Water								
Batch	R4998549							
WG3278141-2	LCS							
Chloride (Cl)			101.9		%		90-110	14-FEB-20
WG3278141-6	LCS							
Chloride (Cl)			101.5		%		90-110	14-FEB-20
WG3278141-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-FEB-20
WG3278141-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-FEB-20
CO3-CL Water								
Batch	R4997065							
WG3276425-9	DUP	L2417262-7						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	14-FEB-20
WG3276425-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-FEB-20
EC-L-PCT-CL Water								
Batch	R4997065							
WG3276425-9	DUP	L2417262-7						
Conductivity (@ 25C)		<2.0	<2.0	RPD-NA	uS/cm	N/A	10	14-FEB-20
WG3276425-11	LCS							
Conductivity (@ 25C)			100.1		%		90-110	14-FEB-20



Quality Control Report

Workorder: L2417262

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL		Water						
Batch	R4997065							
WG3276425-8	LCS							
Conductivity (@ 25C)			100.7		%		90-110	14-FEB-20
WG3276425-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-FEB-20
WG3276425-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-FEB-20
F-IC-N-CL		Water						
Batch	R4998549							
WG3278141-2	LCS							
Fluoride (F)			108.9		%		90-110	14-FEB-20
WG3278141-6	LCS							
Fluoride (F)			109.2		%		90-110	14-FEB-20
WG3278141-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-FEB-20
WG3278141-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-FEB-20
HG-D-CVAA-VA		Water						
Batch	R4998481							
WG3277375-6	LCS							
Mercury (Hg)-Dissolved			102.7		%		80-120	19-FEB-20
WG3277375-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-FEB-20
MET-D-CCMS-VA		Water						
Batch	R4997886							
WG3277260-2	LCS							
Aluminum (Al)-Dissolved			99.2		%		80-120	18-FEB-20
Antimony (Sb)-Dissolved			99.8		%		80-120	18-FEB-20
Arsenic (As)-Dissolved			101.3		%		80-120	18-FEB-20
Barium (Ba)-Dissolved			103.6		%		80-120	18-FEB-20
Bismuth (Bi)-Dissolved			96.4		%		80-120	18-FEB-20
Boron (B)-Dissolved			99.0		%		80-120	18-FEB-20
Cadmium (Cd)-Dissolved			96.5		%		80-120	18-FEB-20
Calcium (Ca)-Dissolved			100.2		%		80-120	18-FEB-20
Chromium (Cr)-Dissolved			99.6		%		80-120	18-FEB-20
Cobalt (Co)-Dissolved			98.5		%		80-120	18-FEB-20
Copper (Cu)-Dissolved			98.4		%		80-120	18-FEB-20
Iron (Fe)-Dissolved			102.2		%		80-120	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997886							
WG3277260-2	LCS							
Lead (Pb)-Dissolved			99.9		%		80-120	18-FEB-20
Lithium (Li)-Dissolved			96.1		%		80-120	18-FEB-20
Magnesium (Mg)-Dissolved			105.1		%		80-120	18-FEB-20
Manganese (Mn)-Dissolved			100.5		%		80-120	18-FEB-20
Molybdenum (Mo)-Dissolved			97.8		%		80-120	18-FEB-20
Nickel (Ni)-Dissolved			99.6		%		80-120	18-FEB-20
Potassium (K)-Dissolved			99.0		%		80-120	18-FEB-20
Selenium (Se)-Dissolved			102.8		%		80-120	18-FEB-20
Silicon (Si)-Dissolved			102.6		%		60-140	18-FEB-20
Silver (Ag)-Dissolved			97.3		%		80-120	18-FEB-20
Sodium (Na)-Dissolved			98.7		%		80-120	18-FEB-20
Strontium (Sr)-Dissolved			100.2		%		80-120	18-FEB-20
Thallium (Tl)-Dissolved			96.0		%		80-120	18-FEB-20
Tin (Sn)-Dissolved			98.7		%		80-120	18-FEB-20
Titanium (Ti)-Dissolved			98.2		%		80-120	18-FEB-20
Uranium (U)-Dissolved			97.1		%		80-120	18-FEB-20
Vanadium (V)-Dissolved			101.5		%		80-120	18-FEB-20
Zinc (Zn)-Dissolved			99.1		%		80-120	18-FEB-20
WG3277260-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4997886							
WG3277260-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-FEB-20
Batch	R4998514							
WG3277967-2	LCS							
Aluminum (Al)-Dissolved			92.5		%		80-120	19-FEB-20
Antimony (Sb)-Dissolved			99.7		%		80-120	19-FEB-20
Arsenic (As)-Dissolved			88.8		%		80-120	19-FEB-20
Barium (Ba)-Dissolved			93.3		%		80-120	19-FEB-20
Bismuth (Bi)-Dissolved			95.1		%		80-120	19-FEB-20
Boron (B)-Dissolved			91.0		%		80-120	19-FEB-20
Cadmium (Cd)-Dissolved			90.3		%		80-120	19-FEB-20
Calcium (Ca)-Dissolved			91.6		%		80-120	19-FEB-20
Chromium (Cr)-Dissolved			91.6		%		80-120	19-FEB-20
Cobalt (Co)-Dissolved			91.4		%		80-120	19-FEB-20
Copper (Cu)-Dissolved			89.8		%		80-120	19-FEB-20
Iron (Fe)-Dissolved			90.8		%		80-120	19-FEB-20
Lead (Pb)-Dissolved			98.2		%		80-120	19-FEB-20
Lithium (Li)-Dissolved			99.4		%		80-120	19-FEB-20
Magnesium (Mg)-Dissolved			84.7		%		80-120	19-FEB-20
Manganese (Mn)-Dissolved			94.8		%		80-120	19-FEB-20
Molybdenum (Mo)-Dissolved			99.1		%		80-120	19-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4998514							
WG3277967-2	LCS							
Nickel (Ni)-Dissolved			89.0		%		80-120	19-FEB-20
Potassium (K)-Dissolved			91.5		%		80-120	19-FEB-20
Selenium (Se)-Dissolved			90.4		%		80-120	19-FEB-20
Silicon (Si)-Dissolved			92.3		%		60-140	19-FEB-20
Silver (Ag)-Dissolved			97.8		%		80-120	19-FEB-20
Sodium (Na)-Dissolved			90.7		%		80-120	19-FEB-20
Strontium (Sr)-Dissolved			102.7		%		80-120	19-FEB-20
Thallium (Tl)-Dissolved			93.1		%		80-120	19-FEB-20
Tin (Sn)-Dissolved			94.6		%		80-120	19-FEB-20
Titanium (Ti)-Dissolved			88.0		%		80-120	19-FEB-20
Uranium (U)-Dissolved			99.4		%		80-120	19-FEB-20
Vanadium (V)-Dissolved			89.1		%		80-120	19-FEB-20
Zinc (Zn)-Dissolved			92.0		%		80-120	19-FEB-20
WG3277967-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Potassium (K)-Dissolved			0.055	B	mg/L		0.05	19-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4998514							
WG3277967-1	MB	NP						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4999736							
WG3279649-10	LCS							
Ammonia as N			93.7		%		85-115	21-FEB-20
WG3279649-14	LCS							
Ammonia as N			86.0		%		85-115	21-FEB-20
WG3279649-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-20
WG3279649-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4998549							
WG3278141-2	LCS							
Nitrite (as N)			102.7		%		90-110	14-FEB-20
WG3278141-6	LCS							
Nitrite (as N)			102.3		%		90-110	14-FEB-20
WG3278141-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-FEB-20
WG3278141-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4998549							
WG3278141-2	LCS							
Nitrate (as N)			102.6		%		90-110	14-FEB-20
WG3278141-6	LCS							
Nitrate (as N)			102.0		%		90-110	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL		Water						
Batch	R4998549							
WG3278141-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-FEB-20
WG3278141-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-FEB-20
OH-CL		Water						
Batch	R4997065							
WG3276425-9	DUP	L2417262-7						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	14-FEB-20
WG3276425-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-FEB-20
ORP-CL		Water						
Batch	R4999104							
WG3278885-11	CRM	CL-ORP						
ORP			229		mV		210-230	20-FEB-20
WG3278885-9	CRM	CL-ORP						
ORP			229		mV		210-230	20-FEB-20
WG3278885-12	DUP	L2417262-8						
ORP		323	312	J	mV	10.8	15	20-FEB-20
P-T-L-COL-CL		Water						
Batch	R4999005							
WG3278655-10	LCS							
Phosphorus (P)-Total			110.7		%		80-120	20-FEB-20
WG3278655-14	LCS							
Phosphorus (P)-Total			112.7		%		80-120	20-FEB-20
WG3278655-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20
WG3278655-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-FEB-20
P-TD-L-COL-CL		Water						
Batch	R4999005							
WG3278655-10	LCS							
Phosphorus (P)-Total Dissolved			110.7		%		80-120	20-FEB-20
WG3278655-14	LCS							
Phosphorus (P)-Total Dissolved			112.7		%		80-120	20-FEB-20
WG3278655-13	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	20-FEB-20
WG3278655-9	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R4999686							
WG3278357-8	LCS							
Total Dissolved Solids			101.2		%		85-115	20-FEB-20
WG3278357-7	MB							
Total Dissolved Solids			<10		mg/L		10	20-FEB-20
TKN-L-F-CL		Water						
Batch	R4997661							
WG3276904-6	LCS							
Total Kjeldahl Nitrogen			92.5		%		75-125	18-FEB-20
WG3276904-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-FEB-20
TSS-L-CL		Water						
Batch	R4998973							
WG3277646-10	LCS							
Total Suspended Solids			86.0		%		85-115	19-FEB-20
WG3277646-8	LCS							
Total Suspended Solids			91.8		%		85-115	19-FEB-20
WG3277646-7	MB							
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
WG3277646-9	MB							
Total Suspended Solids			<1.0		mg/L		1	19-FEB-20
TURBIDITY-CL		Water						
Batch	R4996916							
WG3276212-32	LCS							
Turbidity			104.5		%		85-115	14-FEB-20
WG3276212-35	LCS							
Turbidity			104.0		%		85-115	14-FEB-20
WG3276212-31	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20
WG3276212-34	MB							
Turbidity			<0.10		NTU		0.1	14-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	13-FEB-20 15:15	20-FEB-20 10:00	0.25	163	hours	EHTR-FM
	2	13-FEB-20 14:55	20-FEB-20 11:00	0.25	164	hours	EHTR-FM
	3	13-FEB-20 13:35	20-FEB-20 11:00	0.25	165	hours	EHTR-FM
	4	13-FEB-20 13:30	20-FEB-20 11:00	0.25	166	hours	EHTR-FM
	5	13-FEB-20 13:35	20-FEB-20 11:00	0.25	165	hours	EHTR-FM
	6	13-FEB-20 13:40	20-FEB-20 11:00	0.25	165	hours	EHTR-FM
	7	13-FEB-20 13:45	20-FEB-20 11:00	0.25	165	hours	EHTR-FM
	8	13-FEB-20 10:50	20-FEB-20 11:00	0.25	168	hours	EHTR-FM
pH							
	1	13-FEB-20 15:15	14-FEB-20 15:00	0.25	24	hours	EHTR-FM
	2	13-FEB-20 14:55	14-FEB-20 15:00	0.25	24	hours	EHTR-FM
	3	13-FEB-20 13:35	14-FEB-20 15:00	0.25	25	hours	EHTR-FM
	4	13-FEB-20 13:30	14-FEB-20 15:00	0.25	25	hours	EHTR-FM
	5	13-FEB-20 13:35	14-FEB-20 15:00	0.25	25	hours	EHTR-FM
	6	13-FEB-20 13:40	14-FEB-20 15:00	0.25	25	hours	EHTR-FM
	7	13-FEB-20 13:45	14-FEB-20 15:00	0.25	25	hours	EHTR-FM
	8	13-FEB-20 10:50	14-FEB-20 15:00	0.25	28	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2417262 were received on 14-FEB-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2417262-COFC

COC ID: 20200213Q1GW		TURNAROUND		RUSH:			
PROJECT/CLIENT INFO				OTHER INFO			
Facility Name / Job# Elkview Operations				Lab Name ALS			
Job Description Q1 Ground Water Sampling				Lab Contact Lyudmyla Shvets		Distribution	
Project Manager Cameron Griffin				Email lyudmyla.shvets@alsglobal.com		Excel X	
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Country Canada				Country Canada		Email 4 Teck Lab Results@sharepoint.teck.com	
Postal Code				Postal Code T1Y 7B5		Email 5 teckcoal@equisonline.com	
Phone Number 1-250-865-5289				Phone Number 403-407-1800		PO number VPO00678877	

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Dissolved Chromium VI	
1 EV_MW_BC1A_WG_2020_Q1_NP	EV_MW_BC1A	WG	N	2/13/2020	15:15	G	5	1	1	1		1					1		
2 EV_MW_BC1B_WG_2020_Q1_NP	EV_MW_BC1B	WG	N	2/13/2020	14:55	G	5	1	1	1		1					1		
3 EV_MW_GT1B_WG_2020_Q1_NP	EV_MW_GT1B	WG	N	2/13/2020	13:35	G	5	1	1	1		1					1		
4 EV_MW_GT1A_WG_2020_Q1_NP	EV_MW_GT1A	WG	N	2/13/2020	13:30	G	5	1	1	1		1					1		
5 EV_MW_BC10A_WG_2020_Q1_FD	EV_MW_BC10A	WG	N	2/13/2020	13:35	G	5	1	1	1		1					1		
6 EV_MW_BC10B_WG_2020_Q1_FB	EV_MW_BC10B	WG	N	2/13/2020	13:40	G	5	1	1	1		1					1		
7 EV_MW_BC10C_WG_2020_Q1_FB	EV_MW_BC10C	WG	N	2/13/2020	13:45	G	5	1	1	1		1					1		
8 EV_WF_SW_WG_2020_Q1_NP	EV_WF_SW	WG	N	2/13/2020	10:50	G	5	1	1	1		1					1		
Total							40												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		Jason Gravelle		February 13, 2020				2/14/20 890	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #		Sampler's Signature		Date/Time	
Regular (default) X		Jason Gravelle						February 13, 2020	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 20-FEB-20
Report Date: 21-DEC-20 16:24 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2419035
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200219Q1GW
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2419035-1 to -3.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2419035-1 WG 19-FEB-20 13:25 EV_MW_SPR1A_ WG_2020_Q1_NP	L2419035-2 WG 19-FEB-20 15:05 EV_MW_SPR1B_ WG_2020_Q1_NP	L2419035-3 WG 19-FEB-20 13:15 EV_MW_SPR1C_ WG_2020_Q1_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	600	439	723	
	Hardness (as CaCO3) (mg/L)	335	150	408	
	pH (pH)	7.89	8.06	7.86	
	ORP (mV)	376	397	453	
	Total Suspended Solids (mg/L)	16.2	858	<1.0	
	Total Dissolved Solids (mg/L)	349 ^{DLHC}	274 ^{DLHC}	440 ^{DLHC}	
	Turbidity (NTU)	2.99	135	<0.10	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	16.4	3.7	14.2	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	303	216	237	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	303	216	237	
	Ammonia as N (mg/L)	0.0654	0.215	<0.0050	
	Bicarbonate (HCO3) (mg/L)	369	263	289	
	Bromide (Br) (mg/L)	<0.050	<0.050	0.260	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	13.2	0.97	29.2	
	Fluoride (F) (mg/L)	0.307	1.27	0.154	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	99.1	92.9	103	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	1.33	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.081	0.433	0.465	
	Total Nitrogen (mg/L)	0.081	0.433	1.79	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0021	0.0036 ^{RRV}	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020 ^{RRV}	
	Phosphorus (P)-Total (mg/L)	<0.0020	0.915 ^{DLHC}	<0.0020 ^{RRV}	
	Sulfate (SO4) (mg/L)	29.0	58.4	127	
	Anion Sum (meq/L)	7.04	5.62	8.30	
	Cation Sum (meq/L)	6.98	5.22	8.55	
	Cation - Anion Balance (%)	-0.5	-3.7	1.5	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.87	1.64	0.93	
	Total Organic Carbon (mg/L)	0.72	1.94	0.82	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2419035-1 WG 19-FEB-20 13:25 EV_MW_SPR1A_ WG_2020_Q1_NP	L2419035-2 WG 19-FEB-20 15:05 EV_MW_SPR1B_ WG_2020_Q1_NP	L2419035-3 WG 19-FEB-20 13:15 EV_MW_SPR1C_ WG_2020_Q1_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00098	0.00067	0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.395	0.0427	0.180	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.022	0.143	0.015	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.025 ^{DLM}	0.0601	
	Calcium (Ca)-Dissolved (mg/L)	84.9	34.8	107	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.58	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	0.00022	0.00059	0.00037	
	Iron (Fe)-Dissolved (mg/L)	0.314	0.103	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0139	0.0100	0.0149	
	Magnesium (Mg)-Dissolved (mg/L)	30.0	15.4	34.4	
	Manganese (Mn)-Dissolved (mg/L)	0.307	0.103	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00130	0.0254	0.000636	
	Nickel (Ni)-Dissolved (mg/L)	0.00171	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	1.79	1.25	1.28	
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	14.2	
	Silicon (Si)-Dissolved (mg/L)	4.02	4.09	2.77	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	4.63	50.1	8.39	
	Strontium (Sr)-Dissolved (mg/L)	0.304	0.532	0.232	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00126	0.00151	0.00113	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Sodium (Na)-Dissolved	MES	L2419035-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2419035-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2419035-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2419035-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2419035-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2419035-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200219Q1GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2419035

Report Date: 21-DEC-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4999495							
WG3279418-5	LCS							
Acidity (as CaCO3)			104.1		%		85-115	20-FEB-20
WG3279418-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	20-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
Alkalinity, Total (as CaCO3)		237	244		mg/L	2.8	20	20-FEB-20
WG3279358-8	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	20-FEB-20
WG3279358-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5002146							
WG3280215-2	LCS							
Beryllium (Be)-Dissolved			100.7		%		80-120	24-FEB-20
WG3280215-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-FEB-20
BIC-CL								
	Water							
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
Bicarbonate (HCO3)		289	297		mg/L	2.8	20	20-FEB-20
WG3279358-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	20-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Bromide (Br)			97.0		%		85-115	20-FEB-20
WG3279481-6	LCS							
Bromide (Br)			99.5		%		85-115	20-FEB-20
WG3279481-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-FEB-20
WG3279481-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-FEB-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2419035

Report Date: 21-DEC-20

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5008186							
WG3282021-10	LCS							
Dissolved Organic Carbon			103.0		%		80-120	24-FEB-20
WG3282021-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-FEB-20
C-TOT-ORG-LOW-CL Water								
Batch	R5008186							
WG3282021-10	LCS							
Total Organic Carbon			106.6		%		80-120	24-FEB-20
WG3282021-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-FEB-20
CL-IC-N-CL Water								
Batch	R4999564							
WG3279481-10	LCS							
Chloride (Cl)			101.4		%		90-110	20-FEB-20
WG3279481-6	LCS							
Chloride (Cl)			102.1		%		90-110	20-FEB-20
WG3279481-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	20-FEB-20
WG3279481-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	20-FEB-20
CO3-CL Water								
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	20-FEB-20
WG3279358-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	20-FEB-20
EC-L-PCT-CL Water								
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
Conductivity (@ 25C)		723	720		uS/cm	0.4	10	20-FEB-20
WG3279358-8	LCS							
Conductivity (@ 25C)			96.6		%		90-110	20-FEB-20
WG3279358-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-FEB-20
F-IC-N-CL Water								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Fluoride (F)			100.7		%		90-110	20-FEB-20
WG3279481-6	LCS							
Fluoride (F)			96.8		%		90-110	20-FEB-20
WG3279481-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-FEB-20
WG3279481-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-FEB-20
HG-D-CVAA-VA								
	Water							
Batch	R5000986							
WG3279945-6	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	22-FEB-20
WG3279945-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-FEB-20
MET-D-CCMS-VA								
	Water							
Batch	R5002146							
WG3280215-2	LCS							
Aluminum (Al)-Dissolved			112.2		%		80-120	24-FEB-20
Antimony (Sb)-Dissolved			100.8		%		80-120	24-FEB-20
Arsenic (As)-Dissolved			113.5		%		80-120	24-FEB-20
Barium (Ba)-Dissolved			113.6		%		80-120	24-FEB-20
Bismuth (Bi)-Dissolved			109.6		%		80-120	24-FEB-20
Boron (B)-Dissolved			104.8		%		80-120	24-FEB-20
Cadmium (Cd)-Dissolved			100.4		%		80-120	24-FEB-20
Calcium (Ca)-Dissolved			107.3		%		80-120	24-FEB-20
Chromium (Cr)-Dissolved			110.5		%		80-120	24-FEB-20
Cobalt (Co)-Dissolved			112.9		%		80-120	24-FEB-20
Copper (Cu)-Dissolved			111.2		%		80-120	24-FEB-20
Iron (Fe)-Dissolved			106.9		%		80-120	24-FEB-20
Lead (Pb)-Dissolved			106.2		%		80-120	24-FEB-20
Lithium (Li)-Dissolved			96.4		%		80-120	24-FEB-20
Magnesium (Mg)-Dissolved			111.3		%		80-120	24-FEB-20
Manganese (Mn)-Dissolved			112.5		%		80-120	24-FEB-20
Molybdenum (Mo)-Dissolved			104.3		%		80-120	24-FEB-20
Nickel (Ni)-Dissolved			111.9		%		80-120	24-FEB-20
Potassium (K)-Dissolved			110.3		%		80-120	24-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5002146							
WG3280215-2	LCS							
Selenium (Se)-Dissolved			108.8		%		80-120	24-FEB-20
Silicon (Si)-Dissolved			107.6		%		60-140	24-FEB-20
Silver (Ag)-Dissolved			103.8		%		80-120	24-FEB-20
Sodium (Na)-Dissolved			120.8	MES	%		80-120	24-FEB-20
Strontium (Sr)-Dissolved			106.1		%		80-120	24-FEB-20
Thallium (Tl)-Dissolved			111.3		%		80-120	24-FEB-20
Tin (Sn)-Dissolved			102.7		%		80-120	24-FEB-20
Titanium (Ti)-Dissolved			109.0		%		80-120	24-FEB-20
Uranium (U)-Dissolved			108.2		%		80-120	24-FEB-20
Vanadium (V)-Dissolved			113.0		%		80-120	24-FEB-20
Zinc (Zn)-Dissolved			116.9		%		80-120	24-FEB-20
WG3280215-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5002146							
WG3280215-1	MB	NP						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-FEB-20
NH3-L-F-CL								
	Water							
Batch	R5008232							
WG3281666-6	LCS							
Ammonia as N			95.7		%		85-115	25-FEB-20
WG3281666-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Nitrite (as N)			99.3		%		90-110	20-FEB-20
WG3279481-6	LCS							
Nitrite (as N)			102.8		%		90-110	20-FEB-20
WG3279481-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-FEB-20
WG3279481-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-FEB-20
NO3-L-IC-N-CL								
	Water							
Batch	R4999564							
WG3279481-10	LCS							
Nitrate (as N)			103.9		%		90-110	20-FEB-20
WG3279481-6	LCS							
Nitrate (as N)			104.1		%		90-110	20-FEB-20
WG3279481-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-FEB-20
WG3279481-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-FEB-20
OH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL Water								
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	20-FEB-20
WG3279358-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	20-FEB-20
ORP-CL Water								
Batch	R5005687							
WG3281603-1	CRM	CL-ORP						
ORP			226		mV		210-230	25-FEB-20
P-T-L-COL-CL Water								
Batch	R4999832							
WG3279654-22	LCS							
Phosphorus (P)-Total			112.3		%		80-120	21-FEB-20
WG3279654-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-FEB-20
P-TD-L-COL-CL Water								
Batch	R4999832							
WG3279654-22	LCS							
Phosphorus (P)-Total Dissolved			112.3		%		80-120	21-FEB-20
WG3279654-21	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	21-FEB-20
PH-CL Water								
Batch	R4999442							
WG3279358-9	DUP	L2419035-3						
pH		7.86	7.76	J	pH	0.10	0.2	20-FEB-20
WG3279358-8	LCS							
pH			7.02		pH		6.9-7.1	20-FEB-20
PO4-DO-L-COL-CL Water								
Batch	R4999174							
WG3278904-6	LCS							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	20-FEB-20
WG3278904-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-FEB-20
SO4-IC-N-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R4999564							
WG3279481-10	LCS							
Sulfate (SO4)			97.8		%		90-110	20-FEB-20
WG3279481-6	LCS							
Sulfate (SO4)			99.0		%		90-110	20-FEB-20
WG3279481-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-FEB-20
WG3279481-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-FEB-20
SOLIDS-TDS-CL								
Water								
Batch	R5005172							
WG3280588-5	LCS							
Total Dissolved Solids			100.3		%		85-115	24-FEB-20
WG3280588-4	MB							
Total Dissolved Solids			<10		mg/L		10	24-FEB-20
TKN-L-F-CL								
Water								
Batch	R4999687							
WG3279374-19	DUP	L2419035-3						
Total Kjeldahl Nitrogen		0.465	0.389		mg/L	18	20	22-FEB-20
WG3279374-18	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	21-FEB-20
WG3279374-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-FEB-20
WG3279374-20	MS	L2419035-3						
Total Kjeldahl Nitrogen			112.0		%		70-130	22-FEB-20
TSS-L-CL								
Water								
Batch	R5007766							
WG3280950-5	LCS							
Total Suspended Solids			98.9		%		85-115	25-FEB-20
WG3280950-4	MB							
Total Suspended Solids			<1.0		mg/L		1	25-FEB-20
TURBIDITY-CL								
Water								
Batch	R4999738							
WG3279625-14	LCS							
Turbidity			99.0		%		85-115	21-FEB-20
WG3279625-13	MB							
Turbidity			<0.10		NTU		0.1	21-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	19-FEB-20 13:25	25-FEB-20 14:00	0.25	144	hours	EHTR-FM
	2	19-FEB-20 15:05	25-FEB-20 14:00	0.25	143	hours	EHTR-FM
	3	19-FEB-20 13:15	25-FEB-20 14:00	0.25	145	hours	EHTR-FM
pH	1	19-FEB-20 13:25	20-FEB-20 15:00	0.25	26	hours	EHTR-FM
	2	19-FEB-20 15:05	20-FEB-20 15:00	0.25	24	hours	EHTR-FM
	3	19-FEB-20 13:15	20-FEB-20 15:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2419035 were received on 20-FEB-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200219Q1GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	NO	Yes	Yes	No	No	No	No	Yes	Yes			
								PREPARED	Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH				
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Dissolved Chromium VI
EV_MW_SPRIA_WG_2020_Q1_NP	EV_MW_SPRIA	WG	N	2/19/2020	13:25	G	5	1	1	1	1				1				
EV_MW_SPRIB_WG_2020_Q1_NP	EV_MW_SPRIB	WG	N	2/19/2020	15:05	G	5	1	1	1	1				1				
EV_MW_SPRIC_WG_2020_Q1_NP	EV_MW_SPRIC	WG	N	2/19/2020	13:15	G	5	1	1	1	1				1				
							Total										15		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	February 19, 2020	<i>DK</i>	2/20 0830

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jason Gravelle		February 19, 2020
	<i>Jason Gravelle</i>		

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 12-MAR-20
Report Date: 18-DEC-20 14:24 (MT)
Version: FINAL REV. 2

Client Phone: 250-865-5289

Certificate of Analysis

Lab Work Order #: L2427284
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200311Q1GW
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:30

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2427284-1 WG 11-MAR-20 11:15 EV_ER1GWS_WG_2020_Q1_NP	L2427284-2 WG 11-MAR-20 11:20 EV_EC5GW_WG_2020_Q1_NP	L2427284-3 WG 11-MAR-20 11:25 EV_EC6GW_WG_2020_Q1_NP	L2427284-4 WG 11-MAR-20 11:30 EV_EC7GW_WG_2020_Q1_NP	L2427284-5 WG 11-MAR-20 13:45 EV_ER1GWD_WG_2020_Q1_NP
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	549	541	<2.0	<2.0	388
	Hardness (as CaCO3) (mg/L)	273	224	<0.50	<0.50	197
	pH (pH)	7.99	8.04	5.34	5.32	7.98
	ORP (mV)	469	491	436	439	461
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	32.9
	Total Dissolved Solids (mg/L)	366	380	<10 ^{HTD}	<10 ^{HTD}	285
	Turbidity (NTU)	<0.10	0.17	<0.10	<0.10	26.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	7.3	6.7	1.7	1.4	6.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	201	200	<1.0	<1.0	177
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	201	200	<1.0	<1.0	177
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0094 ^{RRV}	<0.0050	0.0702
	Bicarbonate (HCO3) (mg/L)	245	244	<5.0	<5.0	216
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.836
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	16.8	16.1	<0.50	<0.50	4.16
	Fluoride (F) (mg/L)	0.188	0.112	<0.020	<0.020	0.281
	Hydroxide (OH) (mg/L)	<5.0	<5.0 ^{RRV}	<5.0	<5.0	<5.0
	Ion Balance (%)	93.2	74.8 ^{RRV}	0.0	0.0	93.7
	Nitrate (as N) (mg/L)	1.99	2.00	<0.0050	<0.0050	0.494
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0117
	Total Kjeldahl Nitrogen (mg/L)	0.235	0.258	<0.050	<0.050	0.248
	Total Nitrogen (mg/L)	2.22	2.25	<0.050	<0.050	0.754
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037	0.0032	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0036	0.0049	<0.0020	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0035	0.0053 ^{DLM}	<0.0020	<0.0020	0.031 ^{DLM}
	Sulfate (SO4) (mg/L)	78.7	78.9 ^{RRV}	<0.30	<0.30	33.8
	Anion Sum (meq/L)	6.28	6.24 ^{RRV}	<0.10	<0.10	4.41
	Cation Sum (meq/L)	5.85	4.67	<0.10	<0.10	4.13
Cation - Anion Balance (%)	-3.5	-14.4	0.0	0.0	-3.3	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.63
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.69
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	LAB	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	LAB	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0039	<0.0030	<0.0030	<0.0030	0.0048

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2427284-1 WG 11-MAR-20 11:15 EV_ER1GWS_WG_2020_Q1_NP	L2427284-2 WG 11-MAR-20 11:20 EV_EC5GW_WG_2020_Q1_NP	L2427284-3 WG 11-MAR-20 11:25 EV_EC6GW_WG_2020_Q1_NP	L2427284-4 WG 11-MAR-20 11:30 EV_EC7GW_WG_2020_Q1_NP	L2427284-5 WG 11-MAR-20 13:45 EV_ER1GWD_WG_2020_Q1_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00055
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00013	<0.00010	<0.00010	0.00038
	Barium (Ba)-Dissolved (mg/L)	0.112	0.0929	0.00049 ^{RRV}	<0.00010	0.0719
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.012
	Cadmium (Cd)-Dissolved (ug/L)	0.0079	0.0160	0.0235 ^{RRV}	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	70.6	58.3	<0.050	<0.050	49.8
	Chromium (Cr)-Dissolved (mg/L)	0.00027	0.00020	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	0.11
	Copper (Cu)-Dissolved (mg/L)	0.00025	0.00124	<0.00020	<0.00020	0.00027
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0082	0.0070	<0.0010	<0.0010	0.0072
	Magnesium (Mg)-Dissolved (mg/L)	23.4	18.9	<0.10	<0.10	17.7
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.0266
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000823	0.00115	<0.000050	<0.000050	0.00346
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00134
	Potassium (K)-Dissolved (mg/L)	0.733	0.770	<0.050	<0.050	1.60
	Selenium (Se)-Dissolved (ug/L)	9.74	8.01	<0.050	<0.050	2.25
	Silicon (Si)-Dissolved (mg/L)	2.41	2.27	<0.050	<0.050	4.35
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.79	4.12	<0.050	<0.050	3.22
	Strontium (Sr)-Dissolved (mg/L)	0.211	0.167	<0.00020	<0.00020	0.174
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00016	0.00024 ^{RRV}	<0.00010	0.00015
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00114	0.000974	<0.000010	<0.000010	0.000909
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0033	<0.0010	<0.0010	0.0071

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - -4 DOC/P-TD/D-METAL/D-HG FILTERED AND PRESERVED AT THE LAB

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2427284-4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2427284-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2427284-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2427284-3
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2427284-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2427284-3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2427284-3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2427284-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2427284-3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2427284-1, -2, -3, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2427284-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2427284-3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum

Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200311Q1GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2427284

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5027862							
WG3293276-2	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	16-MAR-20
WG3293062-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-MAR-20
WG3293276-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-MAR-20
WG3293062-4	MS	L2427284-4						
Mercury (Hg)-Dissolved			94.3		%		70-130	16-MAR-20
MET-D-CCMS-VA								
Water								
Batch	R5026434							
WG3292737-2	LCS							
Aluminum (Al)-Dissolved			100.3		%		80-120	15-MAR-20
Antimony (Sb)-Dissolved			96.9		%		80-120	15-MAR-20
Arsenic (As)-Dissolved			98.5		%		80-120	15-MAR-20
Barium (Ba)-Dissolved			98.3		%		80-120	15-MAR-20
Bismuth (Bi)-Dissolved			102.5		%		80-120	15-MAR-20
Boron (B)-Dissolved			92.3		%		80-120	15-MAR-20
Cadmium (Cd)-Dissolved			94.8		%		80-120	15-MAR-20
Calcium (Ca)-Dissolved			96.9		%		80-120	15-MAR-20
Chromium (Cr)-Dissolved			98.6		%		80-120	15-MAR-20
Cobalt (Co)-Dissolved			99.0		%		80-120	15-MAR-20
Copper (Cu)-Dissolved			97.6		%		80-120	15-MAR-20
Iron (Fe)-Dissolved			101.2		%		80-120	15-MAR-20
Lead (Pb)-Dissolved			102.6		%		80-120	15-MAR-20
Lithium (Li)-Dissolved			97.3		%		80-120	15-MAR-20
Magnesium (Mg)-Dissolved			101.4		%		80-120	15-MAR-20
Manganese (Mn)-Dissolved			99.7		%		80-120	15-MAR-20
Molybdenum (Mo)-Dissolved			95.3		%		80-120	15-MAR-20
Nickel (Ni)-Dissolved			97.9		%		80-120	15-MAR-20
Potassium (K)-Dissolved			100.9		%		80-120	15-MAR-20
Selenium (Se)-Dissolved			96.0		%		80-120	15-MAR-20
Silicon (Si)-Dissolved			100.9		%		60-140	15-MAR-20
Silver (Ag)-Dissolved			99.3		%		80-120	15-MAR-20
Sodium (Na)-Dissolved			106.0		%		80-120	15-MAR-20
Strontium (Sr)-Dissolved			98.7		%		80-120	15-MAR-20
Thallium (Tl)-Dissolved			100.7		%		80-120	15-MAR-20



Quality Control Report

Workorder: L2427284

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5026434							
WG3292737-2	LCS							
Tin (Sn)-Dissolved			97.7		%		80-120	15-MAR-20
Titanium (Ti)-Dissolved			96.5		%		80-120	15-MAR-20
Uranium (U)-Dissolved			107.0		%		80-120	15-MAR-20
Vanadium (V)-Dissolved			101.5		%		80-120	15-MAR-20
Zinc (Zn)-Dissolved			97.2		%		80-120	15-MAR-20
WG3292737-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5026434							
WG3292737-1	MB	NP						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-20
Batch	R5028388							
WG3293224-2	LCS							
Aluminum (Al)-Dissolved			99.9		%		80-120	17-MAR-20
Antimony (Sb)-Dissolved			108.1		%		80-120	17-MAR-20
Arsenic (As)-Dissolved			99.2		%		80-120	17-MAR-20
Barium (Ba)-Dissolved			100.4		%		80-120	17-MAR-20
Bismuth (Bi)-Dissolved			100.4		%		80-120	17-MAR-20
Boron (B)-Dissolved			98.9		%		80-120	17-MAR-20
Cadmium (Cd)-Dissolved			98.6		%		80-120	17-MAR-20
Calcium (Ca)-Dissolved			98.6		%		80-120	17-MAR-20
Chromium (Cr)-Dissolved			97.0		%		80-120	17-MAR-20
Cobalt (Co)-Dissolved			96.4		%		80-120	17-MAR-20
Copper (Cu)-Dissolved			97.0		%		80-120	17-MAR-20
Iron (Fe)-Dissolved			95.3		%		80-120	17-MAR-20
Lead (Pb)-Dissolved			96.0		%		80-120	17-MAR-20
Lithium (Li)-Dissolved			90.0		%		80-120	17-MAR-20
Magnesium (Mg)-Dissolved			95.2		%		80-120	17-MAR-20
Manganese (Mn)-Dissolved			96.2		%		80-120	17-MAR-20
Molybdenum (Mo)-Dissolved			104.1		%		80-120	17-MAR-20
Nickel (Ni)-Dissolved			96.6		%		80-120	17-MAR-20
Potassium (K)-Dissolved			100.6		%		80-120	17-MAR-20
Selenium (Se)-Dissolved			106.9		%		80-120	17-MAR-20
Silicon (Si)-Dissolved			98.9		%		60-140	17-MAR-20
Silver (Ag)-Dissolved			101.0		%		80-120	17-MAR-20
Sodium (Na)-Dissolved			100.6		%		80-120	17-MAR-20
Strontium (Sr)-Dissolved			100.2		%		80-120	17-MAR-20
Thallium (Tl)-Dissolved			95.3		%		80-120	17-MAR-20
Tin (Sn)-Dissolved			101.1		%		80-120	17-MAR-20
Titanium (Ti)-Dissolved			98.2		%		80-120	17-MAR-20
Uranium (U)-Dissolved			95.4		%		80-120	17-MAR-20
Vanadium (V)-Dissolved			98.9		%		80-120	17-MAR-20
Zinc (Zn)-Dissolved			98.7		%		80-120	17-MAR-20
WG3293224-1		NP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5028388							
WG3293224-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAR-20
Batch	R5028414							
WG3293459-2	LCS							
Aluminum (Al)-Dissolved			100.5		%		80-120	16-MAR-20
Antimony (Sb)-Dissolved			103.2		%		80-120	16-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5028414							
WG3293459-2	LCS							
Arsenic (As)-Dissolved			94.0		%		80-120	16-MAR-20
Barium (Ba)-Dissolved			95.9		%		80-120	16-MAR-20
Bismuth (Bi)-Dissolved			97.8		%		80-120	16-MAR-20
Boron (B)-Dissolved			90.3		%		80-120	16-MAR-20
Cadmium (Cd)-Dissolved			95.9		%		80-120	16-MAR-20
Calcium (Ca)-Dissolved			95.0		%		80-120	16-MAR-20
Chromium (Cr)-Dissolved			98.5		%		80-120	16-MAR-20
Cobalt (Co)-Dissolved			96.4		%		80-120	16-MAR-20
Copper (Cu)-Dissolved			94.0		%		80-120	16-MAR-20
Iron (Fe)-Dissolved			99.9		%		80-120	16-MAR-20
Lead (Pb)-Dissolved			97.1		%		80-120	16-MAR-20
Lithium (Li)-Dissolved			95.3		%		80-120	16-MAR-20
Magnesium (Mg)-Dissolved			97.1		%		80-120	16-MAR-20
Manganese (Mn)-Dissolved			97.0		%		80-120	16-MAR-20
Molybdenum (Mo)-Dissolved			92.7		%		80-120	16-MAR-20
Nickel (Ni)-Dissolved			94.9		%		80-120	16-MAR-20
Potassium (K)-Dissolved			98.9		%		80-120	16-MAR-20
Selenium (Se)-Dissolved			96.7		%		80-120	16-MAR-20
Silicon (Si)-Dissolved			102.5		%		60-140	16-MAR-20
Silver (Ag)-Dissolved			99.2		%		80-120	16-MAR-20
Sodium (Na)-Dissolved			100.0		%		80-120	16-MAR-20
Strontium (Sr)-Dissolved			92.7		%		80-120	16-MAR-20
Thallium (Tl)-Dissolved			97.4		%		80-120	16-MAR-20
Tin (Sn)-Dissolved			99.3		%		80-120	16-MAR-20
Titanium (Ti)-Dissolved			92.7		%		80-120	16-MAR-20
Uranium (U)-Dissolved			99.2		%		80-120	16-MAR-20
Vanadium (V)-Dissolved			96.4		%		80-120	16-MAR-20
Zinc (Zn)-Dissolved			96.0		%		80-120	16-MAR-20
WG3293459-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5028414							
WG3293459-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-MAR-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-MAR-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-MAR-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-MAR-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-MAR-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-MAR-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-MAR-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-MAR-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-MAR-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-MAR-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-MAR-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-MAR-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-MAR-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-MAR-20
NH3-L-F-CL								
	Water							
Batch	R5026970							
WG3292237-2	LCS							
Ammonia as N			99.1		%		85-115	13-MAR-20
WG3292237-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	13-MAR-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Nitrite (as N)			100.9		%		90-110	12-MAR-20
WG3292055-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-20
NO3-L-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Nitrate (as N)			107.4		%		90-110	12-MAR-20
WG3292055-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-20
ORP-CL	Water							
Batch	R5026330							
WG3292649-7	CRM	CL-ORP						
ORP			219		mV		210-230	14-MAR-20
P-T-L-COL-CL	Water							
Batch	R5024729							
WG3292086-7	DUP	L2427284-4						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	13-MAR-20
WG3292086-6	LCS							
Phosphorus (P)-Total			104.3		%		80-120	13-MAR-20
WG3292086-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAR-20
WG3292086-8	MS	L2427284-4						
Phosphorus (P)-Total			103.4		%		70-130	13-MAR-20
P-TD-L-COL-CL	Water							
Batch	R5024729							
WG3292086-7	DUP	L2427284-4						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	13-MAR-20
WG3292086-6	LCS							
Phosphorus (P)-Total Dissolved			104.3		%		80-120	13-MAR-20
WG3292086-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	13-MAR-20
WG3292086-8	MS	L2427284-4						
Phosphorus (P)-Total Dissolved			102.7		%		70-130	13-MAR-20
PH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5024095							
WG3291867-5	LCS							
pH			6.99		pH		6.9-7.1	12-MAR-20
PO4-DO-L-COL-CL	Water							
Batch	R5024127							
WG3291338-6	LCS							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	12-MAR-20
WG3291338-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAR-20
WG3291338-8	MS	L2427284-4						
Orthophosphate-Dissolved (as P)			103.7		%		70-130	12-MAR-20
SO4-IC-N-CL	Water							
Batch	R5024548							
WG3292055-6	LCS							
Sulfate (SO4)			104.4		%		90-110	12-MAR-20
WG3292055-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-20
SOLIDS-TDS-CL	Water							
Batch	R5028349							
WG3292932-8	LCS							
Total Dissolved Solids			101.4		%		85-115	16-MAR-20
WG3292932-7	MB							
Total Dissolved Solids			<10		mg/L		10	16-MAR-20
TKN-L-F-CL	Water							
Batch	R5028186							
WG3293631-3	DUP	L2427284-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-MAR-20
WG3293631-2	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	17-MAR-20
WG3293631-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-MAR-20
WG3293631-4	MS	L2427284-3						
Total Kjeldahl Nitrogen			102.2		%		70-130	17-MAR-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5028317							
WG3292931-6	LCS							
Total Suspended Solids			95.3		%		85-115	16-MAR-20
WG3292931-5	MB							
Total Suspended Solids			<1.0		mg/L		1	16-MAR-20
TURBIDITY-CL	Water							
Batch	R5024092							
WG3291568-6	DUP	L2427284-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	12-MAR-20
WG3291568-2	LCS							
Turbidity			104.5		%		85-115	12-MAR-20
WG3291568-5	LCS							
Turbidity			105.0		%		85-115	12-MAR-20
WG3291568-1	MB							
Turbidity			<0.10		NTU		0.1	12-MAR-20
WG3291568-4	MB							
Turbidity			<0.10		NTU		0.1	12-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-MAR-20 11:15	14-MAR-20 16:00	0.25	77	hours	EHTR-FM
	2	11-MAR-20 11:20	14-MAR-20 16:00	0.25	77	hours	EHTR-FM
	3	11-MAR-20 11:25	14-MAR-20 16:00	0.25	77	hours	EHTR-FM
	4	11-MAR-20 11:30	14-MAR-20 16:00	0.25	77	hours	EHTR-FM
	5	11-MAR-20 13:45	14-MAR-20 16:00	0.25	74	hours	EHTR-FM
Total Dissolved Solids	3	11-MAR-20 11:25	19-MAR-20 14:00	7	8	days	EHT
	4	11-MAR-20 11:30	19-MAR-20 14:00	7	8	days	EHT
pH	1	11-MAR-20 11:15	12-MAR-20 14:00	0.25	27	hours	EHTR-FM
	2	11-MAR-20 11:20	12-MAR-20 14:00	0.25	27	hours	EHTR-FM
	3	11-MAR-20 11:25	12-MAR-20 14:00	0.25	27	hours	EHTR-FM
	4	11-MAR-20 11:30	12-MAR-20 14:00	0.25	26	hours	EHTR-FM
	5	11-MAR-20 13:45	12-MAR-20 14:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2427284 were received on 12-MAR-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200311Q1GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number			VPO00678877		

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filter	PRESERVE	ANALYSIS	No	Yes	Yes	No	No	No	No	Yes	
											TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APIA 3310)	Dissolved Phosphorus	TKN/TOC (APIA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)
EV_ER1gwS_WG_2020_Q1_NP	EV_ER1gwS	WG	N	3/11/2020	11:15	G	5				I	I	I	I				I	
EV_EC5GW_WG_2020_Q1_NP	EV_EC5GW	WG	N	3/11/2020	11:20	G	5				I	I	I	I				I	
EV_EC6GW_WG_2020_Q1_NP	EV_EC6GW	WG	N	3/11/2020	11:25	G	5				I	I	I	I				I	
EV_EC7gw_WG_2020_Q1_NP	EV_EC7gw	WG	N	3/11/2020	11:30	G	5				I	I	I	I				I	
EV_ER1gwD_WG_2020_Q1_NP	EV_ER1gwD	WG	N	3/11/2020	13:45	G	5				I	I	I	I				I	
							Total	25											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were preserved other than EPH Bottles.	Jason Gravelle	March 11, 2020	<i>[Signature]</i>	3/11/2020

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Jason Gravelle/Chris Emslie	Mobile #		
Sampler's Signature	<i>[Signature]</i>	Date/Time	March 11, 2020	



L2427284-COFC



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 06-MAY-20
Report Date: 14-MAY-20 11:39 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2444591
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200505Q2GW
Legal Site Desc:

Comments:

14-MAY-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2444591-1 WG 05-MAY-20 11:15 EV_GV3GW_WG_ 2020_Q2_NP	L2444591-2 WG 05-MAY-20 11:20 EV_EC5GW_WG_ 2020_Q2_NP	L2444591-3 WG 05-MAY-20 11:25 EV_EC6GW_WG_ 2020_Q2_NP	L2444591-4 WG 05-MAY-20 11:30 EV_EC7GW_WG_ 2020_Q2_NP	L2444591-5 WG 05-MAY-20 13:20 EV_LSGW_WG_20 20_Q2_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	560	558	<2.0	<2.0	840
	Hardness (as CaCO3) (mg/L)	362	364	<0.50	<0.50	596
	pH (pH)	8.22	8.23	5.48	5.34	8.16
	ORP (mV)	346	321	461	420	315
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	409 ^{DLHC}	481 ^{DLHC}	<10	<10	571 ^{DLHC}
	Turbidity (NTU)	0.22	0.21	<0.10	0.10	27.1
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.8	1.9	1.1	1.3	8.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	209	207	<1.0	<1.0	520
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	209	207	<1.0	<1.0	520
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	0.0086 ^{RRV}	0.109
	Bicarbonate (HCO3) (mg/L)	254	252	<5.0	<5.0	634
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.058
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.19	1.65	<0.50	<0.50	7.83
	Fluoride (F) (mg/L)	0.652	0.520	<0.020	<0.020	0.288
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	104	105	0.0	0.0	107
	Nitrate (as N) (mg/L)	0.141	0.128	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	0.104
	Total Nitrogen (mg/L)	0.141	0.128	<0.050	<0.050	0.104
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	0.0018	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0126
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0115
	Sulfate (SO4) (mg/L)	137	137	<0.30	<0.30	55.0
	Anion Sum (meq/L)	7.14	7.07	<0.10	<0.10	11.8
	Cation Sum (meq/L)	7.42	7.45	<0.10	<0.10	12.6
	Cation - Anion Balance (%)	1.9	2.6	0.0	0.0	3.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.62
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.38
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2444591-6 WG 05-MAY-20 14:15 EV_RCSGW_WG_ 2020_Q2_NP	L2444591-7 WG 05-MAY-20 14:35 EV_HW1_WG_202 0_Q2_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2060	1010		
	Hardness (as CaCO3) (mg/L)	1770	683		
	pH (pH)	8.02	8.26		
	ORP (mV)	385	426		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	2150 ^{DLHC}	853 ^{DLHC}		
	Turbidity (NTU)	0.35	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.4	3.8		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	263	242		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	263	242		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	321 ^{DLHC}	295		
	Bromide (Br) (mg/L)	<0.25	0.644		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	20.7 ^{DLHC}	33.2		
	Fluoride (F) (mg/L)	0.18 ^{DLHC}	0.141		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	109	109		
	Nitrate (as N) (mg/L)	33.3 ^{DLHC}	6.37		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0012 ^{TKNI}		
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}		
	Total Nitrogen (mg/L)	33.3 ^{RRV}	6.38 ^{RRV}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037 ^{RRV}	0.0039 ^{RRV}		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	<0.0020 ^{RRV}		
	Phosphorus (P)-Total (mg/L)	0.0033 ^{DLHC}	<0.0020 ^{RRV}		
	Sulfate (SO4) (mg/L)	1190	330		
	Anion Sum (meq/L)	32.9	13.1		
	Cation Sum (meq/L)	35.8	14.3		
Cation - Anion Balance (%)	4.3	4.4			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.16	<0.50		
	Total Organic Carbon (mg/L)	1.02	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2444591-1	L2444591-2	L2444591-3	L2444591-4	L2444591-5
					WG	WG	WG	WG	WG
		05-MAY-20	11:15		05-MAY-20	05-MAY-20	05-MAY-20	05-MAY-20	05-MAY-20
					11:15	11:20	11:25	11:30	13:20
					EV_GV3GW_WG_2020_Q2_NP	EV_EC5GW_WG_2020_Q2_NP	EV_EC6GW_WG_2020_Q2_NP	EV_EC7GW_WG_2020_Q2_NP	EV_LSGW_WG_2020_Q2_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00139
	Barium (Ba)-Dissolved (mg/L)	0.0177	0.0173	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.230
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	0.038
	Cadmium (Cd)-Dissolved (ug/L)	0.0077	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	86.9	87.5	<0.050	<0.050	<0.050	<0.050	<0.050	112
	Chromium (Cr)-Dissolved (mg/L)	0.00023	0.00021	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.10
	Copper (Cu)-Dissolved (mg/L)	0.00035	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	2.04
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0156	0.0155	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0666
	Magnesium (Mg)-Dissolved (mg/L)	35.2	35.3	<0.10	<0.10	<0.10	<0.10	<0.10	76.7
	Manganese (Mn)-Dissolved (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.941
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000938	0.000924	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00193
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00368
	Potassium (K)-Dissolved (mg/L)	0.983	0.971	<0.050	<0.050	<0.050	<0.050	<0.050	3.59
	Selenium (Se)-Dissolved (ug/L)	4.65	4.54	<0.050	<0.050	<0.050	<0.050	<0.050	0.083
	Silicon (Si)-Dissolved (mg/L)	3.24	3.28	<0.050	<0.050	<0.050	<0.050	<0.050	4.17
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.69	3.61	<0.050	<0.050	<0.050	<0.050	<0.050	10.1
	Strontium (Sr)-Dissolved (mg/L)	0.608	0.598	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.464
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000036
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00179	0.00181	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00209
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0024	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2444591-6	L2444591-7		
	Description	WG	WG		
	Sampled Date	05-MAY-20	05-MAY-20		
	Sampled Time	14:15	14:35		
	Client ID	EV_RCSGW_WG_2020_Q2_NP	EV_HW1_WG_2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00021	0.00012		
	Arsenic (As)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00011		
	Barium (Ba)-Dissolved (mg/L)	0.0423	0.0483		
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.020 ^{DLA}	0.022		
	Cadmium (Cd)-Dissolved (ug/L)	0.283	0.0859		
	Calcium (Ca)-Dissolved (mg/L)	371	160		
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00011		
	Cobalt (Co)-Dissolved (ug/L)	<0.20 ^{DLA}	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.108	0.0306		
	Iron (Fe)-Dissolved (mg/L)	<0.020 ^{DLA}	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.00077	0.000229		
	Lithium (Li)-Dissolved (mg/L)	0.0694	0.0600		
	Magnesium (Mg)-Dissolved (mg/L)	204	69.1		
	Manganese (Mn)-Dissolved (mg/L)	0.00156	0.00015		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00139	0.000615		
	Nickel (Ni)-Dissolved (mg/L)	0.0027	0.00077		
	Potassium (K)-Dissolved (mg/L)	3.54	2.16		
	Selenium (Se)-Dissolved (ug/L)	242	47.7		
	Silicon (Si)-Dissolved (mg/L)	4.19	3.37		
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	10.3	13.8		
	Strontium (Sr)-Dissolved (mg/L)	0.461	0.347		
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 ^{DLA}	0.000018		
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00789	0.00164		
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.479	0.0392		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200505Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5080586							
WG3320490-2	LCS							
Acidity (as CaCO3)			104.2		%		85-115	08-MAY-20
WG3320490-1	MB							
Acidity (as CaCO3)			1.2		mg/L		2	08-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5080598							
WG3320496-5	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	08-MAY-20
WG3320496-8	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	08-MAY-20
WG3320496-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAY-20
WG3320496-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-2	LCS							
Beryllium (Be)-Dissolved			96.9		%		80-120	12-MAY-20
WG3321624-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-MAY-20
BIC-CL								
	Water							
Batch	R5080598							
WG3320496-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAY-20
WG3320496-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5081652							
WG3321711-2	LCS							
Bromide (Br)			99.2		%		85-115	08-MAY-20
WG3321711-6	LCS							
Bromide (Br)			100.6		%		85-115	08-MAY-20
WG3321711-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-MAY-20
WG3321711-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-MAY-20
CL-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL		Water						
Batch	R5081652							
WG3321711-2	LCS							
Chloride (Cl)			103.1		%		90-110	08-MAY-20
WG3321711-6	LCS							
Chloride (Cl)			101.8		%		90-110	08-MAY-20
WG3321711-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-20
WG3321711-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-20
CO3-CL		Water						
Batch	R5080598							
WG3320496-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	08-MAY-20
WG3320496-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	08-MAY-20
EC-L-PCT-CL		Water						
Batch	R5080598							
WG3320496-5	LCS							
Conductivity (@ 25C)			100.2		%		90-110	08-MAY-20
WG3320496-8	LCS							
Conductivity (@ 25C)			98.2		%		90-110	08-MAY-20
WG3320496-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAY-20
WG3320496-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAY-20
F-IC-N-CL		Water						
Batch	R5081652							
WG3321711-2	LCS							
Fluoride (F)			94.9		%		90-110	08-MAY-20
WG3321711-6	LCS							
Fluoride (F)			104.3		%		90-110	08-MAY-20
WG3321711-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-MAY-20
WG3321711-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-MAY-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5082193							
WG3322325-11	DUP	L2444591-5						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-MAY-20
WG3322325-10	LCS							
Mercury (Hg)-Dissolved			102.3		%		80-120	13-MAY-20
WG3322325-6	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	13-MAY-20
WG3322325-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
WG3322325-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
WG3322325-12	MS	L2444591-6						
Mercury (Hg)-Dissolved			102.3		%		70-130	13-MAY-20
MET-D-CCMS-VA								
Water								
Batch	R5081919							
WG3321624-2	LCS							
Aluminum (Al)-Dissolved			102.5		%		80-120	12-MAY-20
Antimony (Sb)-Dissolved			95.9		%		80-120	12-MAY-20
Arsenic (As)-Dissolved			99.6		%		80-120	12-MAY-20
Barium (Ba)-Dissolved			101.3		%		80-120	12-MAY-20
Bismuth (Bi)-Dissolved			116.5		%		80-120	12-MAY-20
Boron (B)-Dissolved			88.4		%		80-120	12-MAY-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	12-MAY-20
Calcium (Ca)-Dissolved			94.1		%		80-120	12-MAY-20
Chromium (Cr)-Dissolved			100.2		%		80-120	12-MAY-20
Cobalt (Co)-Dissolved			101.8		%		80-120	12-MAY-20
Copper (Cu)-Dissolved			100.4		%		80-120	12-MAY-20
Iron (Fe)-Dissolved			85.0		%		80-120	12-MAY-20
Lead (Pb)-Dissolved			99.6		%		80-120	12-MAY-20
Lithium (Li)-Dissolved			99.2		%		80-120	12-MAY-20
Magnesium (Mg)-Dissolved			99.6		%		80-120	12-MAY-20
Manganese (Mn)-Dissolved			105.9		%		80-120	12-MAY-20
Molybdenum (Mo)-Dissolved			97.2		%		80-120	12-MAY-20
Nickel (Ni)-Dissolved			99.7		%		80-120	12-MAY-20
Potassium (K)-Dissolved			101.5		%		80-120	12-MAY-20
Selenium (Se)-Dissolved			99.99		%		80-120	12-MAY-20
Silicon (Si)-Dissolved			100.8		%		60-140	12-MAY-20



Quality Control Report

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Report Date: 14-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-2	LCS							
Silver (Ag)-Dissolved			97.3		%		80-120	12-MAY-20
Sodium (Na)-Dissolved			109.9		%		80-120	12-MAY-20
Strontium (Sr)-Dissolved			97.6		%		80-120	12-MAY-20
Thallium (Tl)-Dissolved			117.3		%		80-120	12-MAY-20
Tin (Sn)-Dissolved			97.4		%		80-120	12-MAY-20
Titanium (Ti)-Dissolved			91.9		%		80-120	12-MAY-20
Uranium (U)-Dissolved			107.9		%		80-120	12-MAY-20
Vanadium (V)-Dissolved			102.2		%		80-120	12-MAY-20
Zinc (Zn)-Dissolved			95.0		%		80-120	12-MAY-20
WG3321624-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20



Quality Control Report

Workorder: L2444591

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Batch	R5082419							
WG3322558-2	LCS							
Aluminum (Al)-Dissolved			89.9		%		80-120	13-MAY-20
Antimony (Sb)-Dissolved			105.3		%		80-120	13-MAY-20
Arsenic (As)-Dissolved			98.8		%		80-120	13-MAY-20
Barium (Ba)-Dissolved			103.9		%		80-120	13-MAY-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	13-MAY-20
Boron (B)-Dissolved			93.3		%		80-120	13-MAY-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	13-MAY-20
Calcium (Ca)-Dissolved			104.0		%		80-120	13-MAY-20
Chromium (Cr)-Dissolved			96.7		%		80-120	13-MAY-20
Cobalt (Co)-Dissolved			99.0		%		80-120	13-MAY-20
Copper (Cu)-Dissolved			99.2		%		80-120	13-MAY-20
Iron (Fe)-Dissolved			101.7		%		80-120	13-MAY-20
Lead (Pb)-Dissolved			104.0		%		80-120	13-MAY-20
Lithium (Li)-Dissolved			99.0		%		80-120	13-MAY-20
Magnesium (Mg)-Dissolved			97.9		%		80-120	13-MAY-20
Manganese (Mn)-Dissolved			100.0		%		80-120	13-MAY-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	13-MAY-20
Nickel (Ni)-Dissolved			98.2		%		80-120	13-MAY-20
Potassium (K)-Dissolved			104.4		%		80-120	13-MAY-20
Selenium (Se)-Dissolved			102.8		%		80-120	13-MAY-20
Silicon (Si)-Dissolved			102.1		%		60-140	13-MAY-20
Silver (Ag)-Dissolved			103.5		%		80-120	13-MAY-20
Sodium (Na)-Dissolved			99.4		%		80-120	13-MAY-20
Strontium (Sr)-Dissolved			108.3		%		80-120	13-MAY-20
Thallium (Tl)-Dissolved			106.6		%		80-120	13-MAY-20
Tin (Sn)-Dissolved			98.3		%		80-120	13-MAY-20



Quality Control Report

Workorder: L2444591

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5082419							
WG3322558-2	LCS							
Titanium (Ti)-Dissolved			88.3		%		80-120	13-MAY-20
Uranium (U)-Dissolved			104.4		%		80-120	13-MAY-20
Vanadium (V)-Dissolved			99.9		%		80-120	13-MAY-20
Zinc (Zn)-Dissolved			102.8		%		80-120	13-MAY-20
WG3322558-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch R5082419								
WG3322558-1	MB	NP	<0.0010		mg/L		0.001	13-MAY-20
Zinc (Zn)-Dissolved								
NH3-L-F-CL								
Water								
Batch R5081870								
WG3321989-31	DUP	L2444591-7	<0.0050	RPD-NA	mg/L	N/A	20	12-MAY-20
Ammonia as N								
WG3321989-30	LCS		102.4		%		85-115	12-MAY-20
Ammonia as N								
WG3321989-34	LCS		101.9		%		85-115	12-MAY-20
Ammonia as N								
WG3321989-29	MB		<0.0050		mg/L		0.005	12-MAY-20
Ammonia as N								
WG3321989-33	MB		<0.0050		mg/L		0.005	12-MAY-20
Ammonia as N								
WG3321989-32	MS	L2444591-7	94.2		%		75-125	12-MAY-20
Ammonia as N								
NO2-L-IC-N-CL								
Water								
Batch R5081652								
WG3321711-2	LCS		97.8		%		90-110	08-MAY-20
Nitrite (as N)								
WG3321711-6	LCS		99.4		%		90-110	08-MAY-20
Nitrite (as N)								
WG3321711-1	MB		<0.0010		mg/L		0.001	08-MAY-20
Nitrite (as N)								
WG3321711-5	MB		<0.0010		mg/L		0.001	08-MAY-20
Nitrite (as N)								
NO3-L-IC-N-CL								
Water								
Batch R5081652								
WG3321711-2	LCS		104.4		%		90-110	08-MAY-20
Nitrate (as N)								
WG3321711-6	LCS		103.1		%		90-110	08-MAY-20
Nitrate (as N)								
WG3321711-1	MB		<0.0050		mg/L		0.005	08-MAY-20
Nitrate (as N)								
WG3321711-5	MB		<0.0050		mg/L		0.005	08-MAY-20
Nitrate (as N)								
OH-CL								
Water								



Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5080598							
WG3320496-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	08-MAY-20
WG3320496-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	08-MAY-20
ORP-CL	Water							
Batch	R5082421							
WG3322688-1 CRM		CL-ORP						
ORP			225		mV		210-230	13-MAY-20
P-T-L-COL-CL	Water							
Batch	R5081272							
WG3321157-34 LCS								
Phosphorus (P)-Total			106.6		%		80-120	11-MAY-20
WG3321157-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-MAY-20
P-TD-L-COL-CL	Water							
Batch	R5081272							
WG3321157-34 LCS								
Phosphorus (P)-Total Dissolved			106.6		%		80-120	11-MAY-20
WG3321157-33 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	11-MAY-20
PH-CL	Water							
Batch	R5080598							
WG3320496-5 LCS								
pH			6.99		pH		6.9-7.1	08-MAY-20
WG3320496-8 LCS								
pH			6.97		pH		6.9-7.1	08-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5080230							
WG3319597-12 LCS								
Orthophosphate-Dissolved (as P)			102.5		%		80-120	07-MAY-20
WG3319597-15 LCS								
Orthophosphate-Dissolved (as P)			102.7		%		80-120	07-MAY-20
WG3319597-2 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAY-20
WG3319597-3 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R5081652								
WG3321711-2	LCS							
Sulfate (SO4)			102.5		%		90-110	08-MAY-20
WG3321711-6	LCS							
Sulfate (SO4)			95.5		%		90-110	08-MAY-20
WG3321711-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-MAY-20
WG3321711-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-MAY-20
SOLIDS-TDS-CL								
Batch R5082692								
WG3321444-2	LCS							
Total Dissolved Solids			99.4		%		85-115	12-MAY-20
WG3321444-5	LCS							
Total Dissolved Solids			101.1		%		85-115	12-MAY-20
WG3321444-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-MAY-20
WG3321444-4	MB							
Total Dissolved Solids			<10		mg/L		10	12-MAY-20
TKN-L-F-CL								
Batch R5082618								
WG3322870-11	DUP	L2444591-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-MAY-20
WG3322870-10	LCS							
Total Kjeldahl Nitrogen			107.0		%		75-125	13-MAY-20
WG3322870-2	LCS							
Total Kjeldahl Nitrogen			96.5		%		75-125	13-MAY-20
WG3322870-6	LCS							
Total Kjeldahl Nitrogen			117.0		%		75-125	13-MAY-20
WG3322870-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-12	MS	L2444591-4						
Total Kjeldahl Nitrogen			92.3		%		70-130	13-MAY-20
TSS-L-CL								
Water								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5082018							
WG3321381-6	LCS							
Total Suspended Solids			98.0		%		85-115	11-MAY-20
WG3321381-5	MB							
Total Suspended Solids			<1.0		mg/L		1	11-MAY-20
TURBIDITY-CL	Water							
Batch	R5080000							
WG3319762-23	LCS							
Turbidity			105.0		%		85-115	07-MAY-20
WG3319762-22	MB							
Turbidity			<0.10		NTU		0.1	07-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2444591

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	05-MAY-20 11:15	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	2	05-MAY-20 11:20	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	3	05-MAY-20 11:25	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	4	05-MAY-20 11:30	13-MAY-20 08:00	0.25	188	hours	EHTR-FM
	5	05-MAY-20 13:20	13-MAY-20 08:00	0.25	187	hours	EHTR-FM
	6	05-MAY-20 14:15	13-MAY-20 08:00	0.25	186	hours	EHTR-FM
	7	05-MAY-20 14:35	13-MAY-20 08:00	0.25	186	hours	EHTR-FM
pH							
	1	05-MAY-20 11:15	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	2	05-MAY-20 11:20	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	3	05-MAY-20 11:25	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	4	05-MAY-20 11:30	08-MAY-20 13:00	0.25	73	hours	EHTR-FM
	5	05-MAY-20 13:20	08-MAY-20 13:00	0.25	72	hours	EHTR-FM
	6	05-MAY-20 14:15	08-MAY-20 13:00	0.25	71	hours	EHTR-FM
	7	05-MAY-20 14:35	08-MAY-20 13:00	0.25	70	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2444591 were received on 06-MAY-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200505Q2GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcool@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678&77			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2444591-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERVE	ANALYSIS REQUESTED															
									TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury					
EV_GV3GW_WG_2020_Q2_NP	EV_GW3GW	WG	N	5/5/2020	11:15	G	5																	
EV_EC5GW_WG_2020_Q2_NP	EV_EC5GW	WG	N	5/5/2020	11:20	G	5																	
EV_EC6GW_WG_2020_Q2_NP	EV_EC6GW	WG	N	5/5/2020	11:25	G	5																	
EV_EC7GW_WG_2020_Q2_NP	EV_EC7GW	WG	N	5/5/2020	11:30	G	5																	
EV_LSGW_WG_2020_Q2_NP	EV_LSGW	WG	N	5/5/2020	13:20	G	5																	
EV_RCSGW_WG_2020_Q2_NP	EV_RCSGW	WG	N	5/5/2020	14:15	G	5																	
EV_HW1_WG_2020_Q2_NP	EV_HW1	WG	N	5/5/2020	14:35	G	5																	
							Total	30																

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	Kennedy Allen	May 5, 2020		
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SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Kennedy Allen	Mobile #	
				Sampler's Signature		Date/Time	May 5, 2020



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 07-MAY-20
Report Date: 16-MAY-20 15:50 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2444944
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200506Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2444944-1	L2444944-2		
		Description	WG	WG		
		Sampled Date	06-MAY-20	06-MAY-20		
		Sampled Time	14:35	15:26		
		Client ID	EV_BCGW_WG_2 020_Q2_NP	EV_BRGW_WG_2 020_Q2_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	608	983			
	Hardness (as CaCO3) (mg/L)	378	668			
	pH (pH)	8.31	8.19			
	ORP (mV)	396	390			
	Total Suspended Solids (mg/L)	2.3	1.7			
	Total Dissolved Solids (mg/L)	503 ^{DLHC}	880 ^{DLHC}			
	Turbidity (NTU)	0.72	0.74			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	1.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	175	272			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.4	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	178	272			
	Ammonia as N (mg/L)	<0.0050	<0.0050			
	Bicarbonate (HCO3) (mg/L)	214	332			
	Bromide (Br) (mg/L)	0.131	0.381			
	Carbonate (CO3) (mg/L)	<5.0	<5.0			
	Chloride (Cl) (mg/L)	4.90	21.8			
	Fluoride (F) (mg/L)	0.148	0.134			
	Hydroxide (OH) (mg/L)	<5.0	<5.0			
	Ion Balance (%)	104	105			
	Nitrate (as N) (mg/L)	2.36	2.03			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.453	0.339			
	Total Nitrogen (mg/L)	2.82	2.37			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0038	0.0019 ^{RRV}			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	<0.0020 ^{RRV}			
	Phosphorus (P)-Total (mg/L)	0.0038 ^{RRV}	0.0032 ^{RRV}			
	Sulfate (SO4) (mg/L)	173	334			
	Anion Sum (meq/L)	7.49	13.2			
	Cation Sum (meq/L)	7.76	13.8			
Cation - Anion Balance (%)	1.7	2.3 ^{RRV}				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.30	2.70 ^{RRV}			
	Total Organic Carbon (mg/L)	0.80 ^{RRV}	<0.50 ^{RRV}			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2444944-1	L2444944-2		
		Description	WG	WG		
		Sampled Date	06-MAY-20	06-MAY-20		
		Sampled Time	14:35	15:26		
		Client ID	EV_BCGW_WG_2 020_Q2_NP	EV_BRGW_WG_2 020_Q2_NP		
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00011	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0366	0.0602			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013	0.036			
	Cadmium (Cd)-Dissolved (ug/L)	0.0334	0.0441			
	Calcium (Ca)-Dissolved (mg/L)	93.5	177			
	Chromium (Cr)-Dissolved (mg/L)	0.00013	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00144	0.00025			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0217	0.0484			
	Magnesium (Mg)-Dissolved (mg/L)	35.2	54.7			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00170			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00106	0.000594			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00209			
	Potassium (K)-Dissolved (mg/L)	1.05	2.05			
	Selenium (Se)-Dissolved (ug/L)	20.2	13.6			
	Silicon (Si)-Dissolved (mg/L)	2.54	3.12			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.94	8.77			
	Strontium (Sr)-Dissolved (mg/L)	0.187	0.333			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00125	0.00146			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0018	0.0024			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2444944-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2444944-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2444944-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2444944-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2444944-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200506Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2444944

Report Date: 16-MAY-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5080586							
WG3320490-8	LCS							
Acidity (as CaCO3)			97.8		%		85-115	08-MAY-20
WG3320490-7	MB							
Acidity (as CaCO3)			1.6		mg/L		2	08-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5080598							
WG3320496-17	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	08-MAY-20
WG3320496-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5082757							
WG3322817-2	LCS							
Beryllium (Be)-Dissolved			102.7		%		80-120	13-MAY-20
WG3322817-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-MAY-20
WG3322817-4	MS	L2444944-1						
Beryllium (Be)-Dissolved			101.9		%		70-130	13-MAY-20
BIC-CL								
	Water							
Batch	R5080598							
WG3320496-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5081652							
WG3321711-10	LCS							
Bromide (Br)			105.8		%		85-115	08-MAY-20
WG3321711-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5084056							
WG3323190-10	LCS							
Dissolved Organic Carbon			90.1		%		80-120	13-MAY-20
WG3323190-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5084056							
WG3323190-10 LCS								
Total Organic Carbon			92.1		%		80-120	13-MAY-20
WG3323190-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	13-MAY-20
CL-IC-N-CL	Water							
Batch	R5081652							
WG3321711-10 LCS								
Chloride (Cl)			101.2		%		90-110	08-MAY-20
WG3321711-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-20
CO3-CL	Water							
Batch	R5080598							
WG3320496-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	08-MAY-20
EC-L-PCT-CL	Water							
Batch	R5080598							
WG3320496-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAY-20
F-IC-N-CL	Water							
Batch	R5081652							
WG3321711-10 LCS								
Fluoride (F)			107.6		%		90-110	08-MAY-20
WG3321711-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	08-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5083225							
WG3323082-6 LCS								
Mercury (Hg)-Dissolved			98.8		%		80-120	14-MAY-20
WG3323082-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-MAY-20
MET-D-CCMS-VA	Water							
Batch	R5082757							
WG3322817-2 LCS								
Aluminum (Al)-Dissolved			108.3		%		80-120	13-MAY-20
Antimony (Sb)-Dissolved			103.3		%		80-120	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5082757							
WG3322817-2	LCS							
Arsenic (As)-Dissolved			103.8		%		80-120	13-MAY-20
Barium (Ba)-Dissolved			111.1		%		80-120	13-MAY-20
Bismuth (Bi)-Dissolved			97.4		%		80-120	13-MAY-20
Boron (B)-Dissolved			99.8		%		80-120	13-MAY-20
Cadmium (Cd)-Dissolved			105.4		%		80-120	13-MAY-20
Calcium (Ca)-Dissolved			107.6		%		80-120	13-MAY-20
Chromium (Cr)-Dissolved			105.3		%		80-120	13-MAY-20
Cobalt (Co)-Dissolved			100.8		%		80-120	13-MAY-20
Copper (Cu)-Dissolved			101.3		%		80-120	13-MAY-20
Iron (Fe)-Dissolved			96.7		%		80-120	13-MAY-20
Lead (Pb)-Dissolved			96.1		%		80-120	13-MAY-20
Lithium (Li)-Dissolved			102.5		%		80-120	13-MAY-20
Magnesium (Mg)-Dissolved			101.4		%		80-120	13-MAY-20
Manganese (Mn)-Dissolved			100.5		%		80-120	13-MAY-20
Molybdenum (Mo)-Dissolved			104.8		%		80-120	13-MAY-20
Nickel (Ni)-Dissolved			104.4		%		80-120	13-MAY-20
Potassium (K)-Dissolved			103.0		%		80-120	13-MAY-20
Selenium (Se)-Dissolved			103.7		%		80-120	13-MAY-20
Silicon (Si)-Dissolved			101.0		%		60-140	13-MAY-20
Silver (Ag)-Dissolved			100.6		%		80-120	13-MAY-20
Sodium (Na)-Dissolved			107.6		%		80-120	13-MAY-20
Strontium (Sr)-Dissolved			104.4		%		80-120	13-MAY-20
Thallium (Tl)-Dissolved			98.9		%		80-120	13-MAY-20
Tin (Sn)-Dissolved			103.2		%		80-120	13-MAY-20
Titanium (Ti)-Dissolved			97.4		%		80-120	13-MAY-20
Uranium (U)-Dissolved			94.6		%		80-120	13-MAY-20
Vanadium (V)-Dissolved			106.5		%		80-120	13-MAY-20
Zinc (Zn)-Dissolved			100.6		%		80-120	13-MAY-20
WG3322817-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20



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Workorder: L2444944

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5082757							
WG3322817-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
WG3322817-4	MS	L2444944-1						
Aluminum (Al)-Dissolved			105.5		%		70-130	13-MAY-20
Antimony (Sb)-Dissolved			104.9		%		70-130	13-MAY-20
Arsenic (As)-Dissolved			109.8		%		70-130	13-MAY-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	13-MAY-20
Bismuth (Bi)-Dissolved			87.4		%		70-130	13-MAY-20
Boron (B)-Dissolved			101.4		%		70-130	13-MAY-20
Cadmium (Cd)-Dissolved			107.1		%		70-130	13-MAY-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5082757							
WG3322817-4 MS		L2444944-1						
Chromium (Cr)-Dissolved			104.1		%		70-130	13-MAY-20
Cobalt (Co)-Dissolved			100.5		%		70-130	13-MAY-20
Copper (Cu)-Dissolved			99.3		%		70-130	13-MAY-20
Iron (Fe)-Dissolved			101.4		%		70-130	13-MAY-20
Lead (Pb)-Dissolved			93.6		%		70-130	13-MAY-20
Lithium (Li)-Dissolved			100.4		%		70-130	13-MAY-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	13-MAY-20
Molybdenum (Mo)-Dissolved			105.0		%		70-130	13-MAY-20
Nickel (Ni)-Dissolved			100.7		%		70-130	13-MAY-20
Potassium (K)-Dissolved			104.2		%		70-130	13-MAY-20
Selenium (Se)-Dissolved			110.9		%		70-130	13-MAY-20
Silicon (Si)-Dissolved			94.8		%		70-130	13-MAY-20
Silver (Ag)-Dissolved			103.1		%		70-130	13-MAY-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	13-MAY-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	13-MAY-20
Thallium (Tl)-Dissolved			93.0		%		70-130	13-MAY-20
Tin (Sn)-Dissolved			104.1		%		70-130	13-MAY-20
Titanium (Ti)-Dissolved			99.96		%		70-130	13-MAY-20
Uranium (U)-Dissolved			94.7		%		70-130	13-MAY-20
Vanadium (V)-Dissolved			108.7		%		70-130	13-MAY-20
Zinc (Zn)-Dissolved			97.6		%		70-130	13-MAY-20
Batch	R5087656							
WG3322817-4 MS		L2444944-1						
Manganese (Mn)-Dissolved			96.2		%		70-130	15-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5084161							
WG3322957-26 LCS								
Ammonia as N			96.9		%		85-115	13-MAY-20
WG3322957-25 MB								
Ammonia as N			<0.0050		mg/L		0.005	13-MAY-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5081652							
WG3321711-10	LCS							
Nitrite (as N)			97.8		%		90-110	08-MAY-20
WG3321711-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5081652							
WG3321711-10	LCS							
Nitrate (as N)			102.6		%		90-110	08-MAY-20
WG3321711-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-MAY-20
OH-CL	Water							
Batch	R5080598							
WG3320496-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	08-MAY-20
ORP-CL	Water							
Batch	R5083691							
WG3323363-3	CRM	CL-ORP						
ORP			220		mV		210-230	14-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082257							
WG3321996-22	LCS							
Phosphorus (P)-Total			96.1		%		80-120	12-MAY-20
WG3321996-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAY-20
P-TD-L-COL-CL	Water							
Batch	R5082257							
WG3321996-22	LCS							
Phosphorus (P)-Total Dissolved			96.1		%		80-120	12-MAY-20
WG3321996-21	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	12-MAY-20
PH-CL	Water							
Batch	R5080598							
WG3320496-17	LCS							
pH			6.97		pH		6.9-7.1	08-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL		Water						
Batch	R5080230							
WG3319597-24	LCS							
Orthophosphate-Dissolved (as P)			98.4		%		80-120	07-MAY-20
WG3319597-6	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAY-20
SO4-IC-N-CL		Water						
Batch	R5081652							
WG3321711-10	LCS							
Sulfate (SO4)			104.9		%		90-110	08-MAY-20
WG3321711-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-MAY-20
SOLIDS-TDS-CL		Water						
Batch	R5082692							
WG3321444-17	LCS							
Total Dissolved Solids			101.1		%		85-115	12-MAY-20
WG3321444-16	MB							
Total Dissolved Solids			<10		mg/L		10	12-MAY-20
TKN-L-F-CL		Water						
Batch	R5087496							
WG3324249-10	LCS							
Total Kjeldahl Nitrogen			88.5		%		75-125	14-MAY-20
WG3324249-2	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	14-MAY-20
WG3324249-6	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	14-MAY-20
WG3324249-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-MAY-20
WG3324249-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-MAY-20
WG3324249-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-MAY-20
TSS-L-CL		Water						
Batch	R5082635							
WG3321881-10	LCS							
Total Suspended Solids			95.8		%		85-115	12-MAY-20
WG3321881-12	LCS							
Total Suspended Solids			99.6		%		85-115	12-MAY-20
WG3321881-11	MB							



Quality Control Report

Workorder: L2444944

Report Date: 16-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5082635							
WG3321881-11 MB								
Total Suspended Solids			<1.0		mg/L		1	12-MAY-20
WG3321881-9 MB								
Total Suspended Solids			<1.0		mg/L		1	12-MAY-20
TURBIDITY-CL	Water							
Batch	R5080558							
WG3320026-5 LCS								
Turbidity			104.5		%		85-115	08-MAY-20
WG3320026-4 MB								
Turbidity			<0.10		NTU		0.1	08-MAY-20

Quality Control Report

Workorder: L2444944

Report Date: 16-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Quality Control Report

Workorder: L2444944

Report Date: 16-MAY-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	06-MAY-20 14:35	14-MAY-20 08:30	0.25	186	hours	EHTR-FM
	2	06-MAY-20 15:26	14-MAY-20 08:30	0.25	185	hours	EHTR-FM
pH	1	06-MAY-20 14:35	08-MAY-20 13:00	0.25	46	hours	EHTR-FM
	2	06-MAY-20 15:26	08-MAY-20 13:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2444944 were received on 07-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200506Q2GW		TURNAROUND TIME:			RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Elkview Operations				Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Job Description Q2 Ground Water Sampling				Lab Contact Lyudmyla Shvets		Email 1:	kimberley.heckett@teck.com	X	X	X	
Project Manager Cameron Griffin				Email lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com	X	X	X	
Email Cameron.Griffin@Teck.com				Address 255929 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X	
Address RR#1 HWY# 3						Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X	
						Email 5:	teckcoal@equisonline.com			X	
City Sparwood		Province BC		City Calgary		Province AB					
Postal Code		Country Canada		Postal Code T1Y 7B5		Country Canada					
Phone Number 1-250-865-5289				Phone Number 403-407-1800		PO number		VPO00678877			

SAMPLE DETAILS						ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_BCGW_WG_2020_Q2_NP	EV_BCGW	WG	N	5/6/2020	14:35	G	5	1	1	1		1					1		
EV_BRGW_WG_2020_Q2_NP	EV_BRGW	WG	N	5/6/2020	15:26	G	5	1	1	1		1					1		
Total																		10	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	May 6, 2020	<i>[Signature]</i>	5/7 895

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X			
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
Sampler's Name	Kennedy Allen	Mobile #	
Sampler's Signature	<i>[Signature]</i>	Date/Time	May 6, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 08-MAY-20
Report Date: 16-MAY-20 15:58 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2445423
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200507Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2445423-1 WG 07-MAY-20 14:23 EV_GCGW_WG_2 020_Q2_NP	L2445423-2 WG 07-MAY-20 10:15 EV_WH50_WG_20 20_Q2_NP	L2445423-3 WG 07-MAY-20 12:42 EV_BALGW_WG_ 2020_Q2_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	393	395	621		
	Hardness (as CaCO3) (mg/L)	222	210	355		
	pH (pH)	8.19	8.43	7.99		
	ORP (mV)	276	385	347		
	Total Suspended Solids (mg/L)	7.4	10.0	139		
	Total Dissolved Solids (mg/L)	277 ^{DLHC}	266 ^{DLHC}	483 ^{DLHC}		
	Turbidity (NTU)	7.59	3.53	93.2		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.2	<1.0	9.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	161	146	280		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	7.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	161	153	280		
	Ammonia as N (mg/L)	0.0299	0.0062	<0.0050		
	Bicarbonate (HCO3) (mg/L)	196	178	341		
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	4.12	2.62	1.96		
	Fluoride (F) (mg/L)	0.625	0.151	0.249		
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	102	93.1	114		
	Nitrate (as N) (mg/L)	0.0056	0.963	0.0275		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0026		
	Total Kjeldahl Nitrogen (mg/L)	0.058	0.361	0.274		
	Total Nitrogen (mg/L)	0.064	1.32	0.304		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0037 ^{RRV}	0.0020		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020 ^{RRV}	0.0057		
	Phosphorus (P)-Total (mg/L)	0.0052	0.0035	0.133 ^{DLHC}		
	Sulfate (SO4) (mg/L)	55.1	69.7	90.6		
	Anion Sum (meq/L)	4.51	4.66	7.55		
	Cation Sum (meq/L)	4.62	4.34	8.61		
	Cation - Anion Balance (%)	1.2	-3.6	6.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.71	1.31	1.73		
	Total Organic Carbon (mg/L)	0.60	2.04	2.96		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0043	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2445423-1	L2445423-2	L2445423-3		
Description	WG	WG	WG		
Sampled Date	07-MAY-20	07-MAY-20	07-MAY-20		
Sampled Time	14:23	10:15	12:42		
Client ID	EV_GCGW_WG_2 020_Q2_NP	EV_WH50_WG_20 20_Q2_NP	EV_BALGW_WG_ 2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00015	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00260	<0.00010	0.00031	
	Barium (Ba)-Dissolved (mg/L)	0.0697	0.0735	0.0338	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.012	<0.010	0.158	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0167	0.0075	
	Calcium (Ca)-Dissolved (mg/L)	61.8	52.2	93.1	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.20	<0.10	0.17	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00047	0.00026	
	Iron (Fe)-Dissolved (mg/L)	0.345	0.035	0.103	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0076	0.0075	0.117	
	Magnesium (Mg)-Dissolved (mg/L)	16.3	19.3	29.7	
	Manganese (Mn)-Dissolved (mg/L)	0.0888	0.00426	0.0325	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00252	0.000912	0.000393	
	Nickel (Ni)-Dissolved (mg/L)	0.00061	<0.00050	0.00094	
	Potassium (K)-Dissolved (mg/L)	0.733	0.681	2.76	
	Selenium (Se)-Dissolved (ug/L)	<0.050	8.59	0.150	
	Silicon (Si)-Dissolved (mg/L)	4.10	2.06	4.44	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.58	3.08	33.2	
	Strontium (Sr)-Dissolved (mg/L)	0.252	0.124	2.23	
	Thallium (Tl)-Dissolved (mg/L)	0.000022	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00114	0.000959	0.000141	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0026	0.0015	0.0069	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2445423-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2445423-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200507Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5080766							
WG3320680-5	LCS							
Acidity (as CaCO3)			103.1		%		85-115	09-MAY-20
WG3320680-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	09-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5080775							
WG3320683-17	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	09-MAY-20
WG3320683-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5083338							
WG3323584-2	LCS							
Beryllium (Be)-Dissolved			100.1		%		80-120	14-MAY-20
WG3323584-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-MAY-20
BIC-CL								
	Water							
Batch	R5080775							
WG3320683-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5080854							
WG3320752-6	LCS							
Bromide (Br)			95.6		%		85-115	09-MAY-20
WG3320752-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5088825							
WG3324615-2	LCS							
Dissolved Organic Carbon			90.1		%		80-120	15-MAY-20
WG3324615-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5088825							
WG3324615-2 LCS								
Total Organic Carbon			92.1		%		80-120	15-MAY-20
WG3324615-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-MAY-20
CL-IC-N-CL	Water							
Batch	R5080854							
WG3320752-6 LCS								
Chloride (Cl)			102.7		%		90-110	09-MAY-20
WG3320752-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	09-MAY-20
CO3-CL	Water							
Batch	R5080775							
WG3320683-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	09-MAY-20
EC-L-PCT-CL	Water							
Batch	R5080775							
WG3320683-17 LCS								
Conductivity (@ 25C)			100.3		%		90-110	09-MAY-20
WG3320683-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	09-MAY-20
F-IC-N-CL	Water							
Batch	R5080854							
WG3320752-6 LCS								
Fluoride (F)			108.5		%		90-110	09-MAY-20
WG3320752-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	09-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5085901							
WG3323804-10 LCS								
Mercury (Hg)-Dissolved			105.3		%		80-120	15-MAY-20
WG3323804-6 LCS								
Mercury (Hg)-Dissolved			103.5		%		80-120	15-MAY-20
WG3323804-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
WG3323804-9 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5083338							
WG3323584-2	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	14-MAY-20
Antimony (Sb)-Dissolved			101.7		%		80-120	14-MAY-20
Arsenic (As)-Dissolved			100.2		%		80-120	14-MAY-20
Barium (Ba)-Dissolved			98.1		%		80-120	14-MAY-20
Bismuth (Bi)-Dissolved			92.7		%		80-120	14-MAY-20
Boron (B)-Dissolved			93.9		%		80-120	14-MAY-20
Cadmium (Cd)-Dissolved			103.0		%		80-120	14-MAY-20
Calcium (Ca)-Dissolved			104.1		%		80-120	14-MAY-20
Chromium (Cr)-Dissolved			101.4		%		80-120	14-MAY-20
Cobalt (Co)-Dissolved			100.4		%		80-120	14-MAY-20
Copper (Cu)-Dissolved			101.4		%		80-120	14-MAY-20
Iron (Fe)-Dissolved			105.4		%		80-120	14-MAY-20
Lead (Pb)-Dissolved			102.1		%		80-120	14-MAY-20
Lithium (Li)-Dissolved			104.5		%		80-120	14-MAY-20
Magnesium (Mg)-Dissolved			102.8		%		80-120	14-MAY-20
Manganese (Mn)-Dissolved			104.6		%		80-120	14-MAY-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	14-MAY-20
Nickel (Ni)-Dissolved			101.0		%		80-120	14-MAY-20
Potassium (K)-Dissolved			103.6		%		80-120	14-MAY-20
Selenium (Se)-Dissolved			105.3		%		80-120	14-MAY-20
Silicon (Si)-Dissolved			103.4		%		60-140	14-MAY-20
Silver (Ag)-Dissolved			102.6		%		80-120	14-MAY-20
Sodium (Na)-Dissolved			100.5		%		80-120	14-MAY-20
Strontium (Sr)-Dissolved			102.5		%		80-120	14-MAY-20
Thallium (Tl)-Dissolved			98.4		%		80-120	14-MAY-20
Tin (Sn)-Dissolved			104.0		%		80-120	14-MAY-20
Titanium (Ti)-Dissolved			103.5		%		80-120	14-MAY-20
Uranium (U)-Dissolved			106.7		%		80-120	14-MAY-20
Vanadium (V)-Dissolved			100.1		%		80-120	14-MAY-20
Zinc (Zn)-Dissolved			105.7		%		80-120	14-MAY-20
WG3323584-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5083338							
WG3323584-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5084856							
WG3323703-26	LCS							
Ammonia as N			96.5		%		85-115	14-MAY-20
WG3323703-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-MAY-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5080854							
WG3320752-6	LCS							
Nitrite (as N)			100.1		%		90-110	09-MAY-20
WG3320752-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5080854							
WG3320752-6	LCS							
Nitrate (as N)			104.4		%		90-110	09-MAY-20
WG3320752-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-MAY-20
OH-CL	Water							
Batch	R5080775							
WG3320683-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	09-MAY-20
ORP-CL	Water							
Batch	R5085738							
WG3323834-3	CRM	CL-ORP						
ORP			217		mV		210-230	14-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-10	LCS							
Phosphorus (P)-Total			107.0		%		80-120	13-MAY-20
WG3322703-14	LCS							
Phosphorus (P)-Total			108.6		%		80-120	13-MAY-20
WG3322703-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
WG3322703-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
P-TD-L-COL-CL	Water							
Batch	R5082438							
WG3322703-10	LCS							
Phosphorus (P)-Total Dissolved			107.0		%		80-120	13-MAY-20
WG3322703-14	LCS							
Phosphorus (P)-Total Dissolved			108.2		%		80-120	13-MAY-20
WG3322703-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5084916							
WG3322385-6	LCS							
Total Suspended Solids			97.4		%		85-115	13-MAY-20
WG3322385-5	MB							
Total Suspended Solids			<1.0		mg/L		1	13-MAY-20
TURBIDITY-CL	Water							
Batch	R5080617							
WG3320528-2	LCS							
Turbidity			104.5		%		85-115	09-MAY-20
WG3320528-1	MB							
Turbidity			<0.10		NTU		0.1	09-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	07-MAY-20 14:23	14-MAY-20 18:00	0.25	172	hours	EHTR-FM
	2	07-MAY-20 10:15	14-MAY-20 18:00	0.25	176	hours	EHTR-FM
	3	07-MAY-20 12:42	14-MAY-20 18:00	0.25	173	hours	EHTR-FM
pH	1	07-MAY-20 14:23	09-MAY-20 13:00	0.25	47	hours	EHTR-FM
	2	07-MAY-20 10:15	09-MAY-20 13:00	0.25	51	hours	EHTR-FM
	3	07-MAY-20 12:42	09-MAY-20 13:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2445423 were received on 08-MAY-20 08:45.


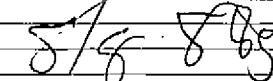
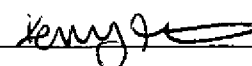
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200507Q2GW		TURNAROUND TIME:		RUSH:							
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO					
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com	X	X	X	
Project Manager	Cameron Griffin		Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com	X	X	X	
Email	Cameron.Griffin@Teck.com		Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X	
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@aharopoint.teck.com	X	X	X	
						Email 5:	teckcoal@equisonline.com			X	
City	Sparwood	Province	BC	City	Calgary	Province	AB				
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-250-865-5289		Phone Number	403-407-1800		PO number	VPU00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	No	Yes	Yes	No	No	No	No	Yes			
									Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl			
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury
EV_GCGW_WG_2020_Q2_NP	EV_GCGW	WG	N	5/7/2020	14:23	G	5	1	1	1	1	1	1				1	
EV_WH50_WG_2020_Q2_NP	EV_WH50	WG	N	5/7/2020	10:15	G	5	1	1	1	1	1	1				1	
EV_BALGW_WG_2020_Q2_NP	EV_BALGW	WG	N	5/7/2020	12:42	G	5	1	1	1	1	1	1				1	
							Total										15	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		Kennedy Allen		May 7, 2020					
SERVICE REQUEST (rush - subject to availability)									
Regular (default) X		Sampler's Name		Kennedy Allen		Mobile #			
Priority (2-3 business days) - 50% surcharge		Sampler's Signature				Date/Time		May 7, 2020	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 20-MAY-20 14:31 (MT)
Version: FINAL

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2446411
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-10_Q2-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446411-1 WP 11-MAY-20 13:45 RG_DW-03- 10_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	454			
	Hardness (as CaCO3) (mg/L)	273			
	pH (pH)	7.92			
	ORP (mV)	410			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	253	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	234			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	234			
	Ammonia as N (mg/L)	0.0083			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	11.2			
	Fluoride (F) (mg/L)	0.184			
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	0.486			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.136			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	23.3			
	Anion Sum (meq/L)	5.52			
	Cation Sum (meq/L)	5.71			
	Cation - Anion Balance (%)	1.7			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.140			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2446411-1 WP 11-MAY-20 13:45 RG_DW-03- 10_WP_Q2- 2020_NP				
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	71.1			
	Chromium (Cr)-Total (mg/L)	0.00063			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00296			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0075			
	Magnesium (Mg)-Total (mg/L)	19.0			
	Manganese (Mn)-Total (mg/L)	0.00024			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00149			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.797			
	Selenium (Se)-Total (ug/L)	1.08			
	Silicon (Si)-Total (mg/L)	3.92			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	5.42			
	Strontium (Sr)-Total (mg/L)	0.226			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00153			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.135			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	73.1			
	Chromium (Cr)-Dissolved (mg/L)	0.00060			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446411-1 WP 11-MAY-20 13:45 RG_DW-03- 10_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00270			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0075			
	Magnesium (Mg)-Dissolved (mg/L)	22.0			
	Manganese (Mn)-Dissolved (mg/L)	0.00020			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00145			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.805			
	Selenium (Se)-Dissolved (ug/L)	1.11			
	Silicon (Si)-Dissolved (mg/L)	3.58			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.32			
	Strontium (Sr)-Dissolved (mg/L)	0.230			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00144			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0023			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-10_Q2-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2446411

Report Date: 20-MAY-20

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5083036							
WG3323148-8	LCS							
Acidity (as CaCO3)			93.2		%		85-115	13-MAY-20
WG3323148-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	13-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5083297							
WG3323209-14	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	13-MAY-20
WG3323209-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Beryllium (Be)-Dissolved			96.4		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323262-2	LCS							
Beryllium (Be)-Total			97.5		%		80-120	15-MAY-20
WG3323262-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5092650							
WG3325886-2	LCS							
Bromide (Br)			104.7		%		85-115	14-MAY-20
WG3325886-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5092369							
WG3325047-10	LCS							
Dissolved Organic Carbon			93.3		%		80-120	19-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2446411

Report Date: 20-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10	LCS							
Total Organic Carbon			94.2		%		80-120	19-MAY-20
CL-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2	LCS							
Chloride (Cl)			106.5		%		90-110	14-MAY-20
WG3325886-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
Conductivity (@ 25C)			101.7		%		90-110	13-MAY-20
WG3323209-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAY-20
F-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2	LCS							
Fluoride (F)			101.1		%		90-110	14-MAY-20
WG3325886-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5085901							
WG3323804-6	LCS							
Mercury (Hg)-Dissolved			103.5		%		80-120	15-MAY-20
WG3323804-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA	Water							
Batch	R5085901							
WG3323960-2	LCS							
Mercury (Hg)-Total			103.5		%		80-120	15-MAY-20
WG3323960-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-MAY-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2446411

Report Date: 20-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Aluminum (Al)-Dissolved			98.7		%		80-120	15-MAY-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			97.9		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			94.9		%		80-120	15-MAY-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	15-MAY-20
Boron (B)-Dissolved			89.5		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			97.7		%		80-120	15-MAY-20
Calcium (Ca)-Dissolved			101.1		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			98.4		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			97.1		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			95.8		%		80-120	15-MAY-20
Iron (Fe)-Dissolved			94.2		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			94.0		%		80-120	15-MAY-20
Lithium (Li)-Dissolved			96.4		%		80-120	15-MAY-20
Magnesium (Mg)-Dissolved			94.4		%		80-120	15-MAY-20
Manganese (Mn)-Dissolved			97.6		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			98.5		%		80-120	15-MAY-20
Potassium (K)-Dissolved			98.1		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			103.7		%		80-120	15-MAY-20
Silicon (Si)-Dissolved			101.9		%		60-140	15-MAY-20
Silver (Ag)-Dissolved			98.7		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			102.9		%		80-120	15-MAY-20
Strontium (Sr)-Dissolved			110.8		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			101.4		%		80-120	15-MAY-20
Tin (Sn)-Dissolved			98.7		%		80-120	15-MAY-20
Titanium (Ti)-Dissolved			96.3		%		80-120	15-MAY-20
Uranium (U)-Dissolved			93.3		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			97.4		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			97.1		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20



Quality Control Report

Workorder: L2446411

Report Date: 20-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5084472							
WG3323262-2	LCS							
Aluminum (Al)-Total			98.0		%		80-120	15-MAY-20
Antimony (Sb)-Total			109.5		%		80-120	15-MAY-20
Arsenic (As)-Total			95.2		%		80-120	15-MAY-20
Barium (Ba)-Total			96.0		%		80-120	15-MAY-20



Quality Control Report

Workorder: L2446411

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5084472							
WG3323262-2	LCS							
Bismuth (Bi)-Total			104.0		%		80-120	15-MAY-20
Boron (B)-Total			91.5		%		80-120	15-MAY-20
Cadmium (Cd)-Total			96.4		%		80-120	15-MAY-20
Calcium (Ca)-Total			101.9		%		80-120	15-MAY-20
Chromium (Cr)-Total			97.3		%		80-120	15-MAY-20
Cobalt (Co)-Total			95.3		%		80-120	15-MAY-20
Copper (Cu)-Total			94.0		%		80-120	15-MAY-20
Iron (Fe)-Total			92.0		%		80-120	15-MAY-20
Lead (Pb)-Total			98.5		%		80-120	15-MAY-20
Lithium (Li)-Total			97.9		%		80-120	15-MAY-20
Magnesium (Mg)-Total			85.4		%		80-120	15-MAY-20
Manganese (Mn)-Total			97.4		%		80-120	15-MAY-20
Molybdenum (Mo)-Total			102.8		%		80-120	15-MAY-20
Nickel (Ni)-Total			97.5		%		80-120	15-MAY-20
Potassium (K)-Total			97.3		%		80-120	15-MAY-20
Selenium (Se)-Total			99.1		%		80-120	15-MAY-20
Silicon (Si)-Total			104.3		%		80-120	15-MAY-20
Silver (Ag)-Total			100.6		%		80-120	15-MAY-20
Sodium (Na)-Total			103.8		%		80-120	15-MAY-20
Strontium (Sr)-Total			110.5		%		80-120	15-MAY-20
Thallium (Tl)-Total			102.9		%		80-120	15-MAY-20
Tin (Sn)-Total			100.7		%		80-120	15-MAY-20
Titanium (Ti)-Total			93.2		%		80-120	15-MAY-20
Uranium (U)-Total			97.8		%		80-120	15-MAY-20
Vanadium (V)-Total			95.9		%		80-120	15-MAY-20
Zinc (Zn)-Total			94.9		%		80-120	15-MAY-20
WG3323262-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	15-MAY-20



Quality Control Report

Workorder: L2446411

Report Date: 20-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5084472							
WG3323262-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	15-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-MAY-20
NH3-L-F-CL		Water						
Batch	R5091837							
WG3325366-6	LCS							
Ammonia as N			101.3		%		85-115	19-MAY-20
WG3325366-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL		Water						
Batch	R5092650							
WG3325886-2	LCS							
Nitrite (as N)			108.0		%		90-110	14-MAY-20
WG3325886-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2	LCS							
Nitrate (as N)			105.2		%		90-110	14-MAY-20
WG3325886-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-MAY-20
ORP-CL	Water							
Batch	R5092422							
WG3325615-5	CRM	CL-ORP						
ORP			224		mV		210-230	19-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-30	LCS							
Phosphorus (P)-Total			109.7		%		80-120	13-MAY-20
WG3322703-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
pH			6.99		pH		6.9-7.1	13-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5082066							
WG3322055-10	LCS							
Orthophosphate-Dissolved (as P)			108.7		%		80-120	12-MAY-20
WG3322055-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAY-20
SO4-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2	LCS							
Sulfate (SO4)			107.3		%		90-110	14-MAY-20
WG3325886-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5087837							
WG3323488-14	LCS							
Total Dissolved Solids			100.1		%		85-115	14-MAY-20
WG3323488-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5087837							
WG3323488-13 MB								
Total Dissolved Solids			<10		mg/L		10	14-MAY-20
TKN-L-F-CL		Water						
Batch	R5087923							
WG3324412-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22 LCS								
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL		Water						
Batch	R5088638							
WG3323949-29 LCS								
Total Suspended Solids			107.4		%		85-115	15-MAY-20
WG3323949-28 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5085357							
WG3323554-8	LCS							
Turbidity			105.0		%		85-115	14-MAY-20
WG3323554-7	MB							
Turbidity			<0.10		NTU		0.1	14-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2446411

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-MAY-20 13:45	19-MAY-20 19:00	0.25	197	hours	EHTR-FM
pH	1	11-MAY-20 13:45	13-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:


Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2446411 were received on 12-MAY-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

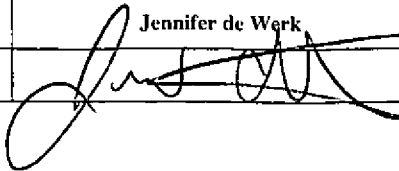
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	03-10_Q2-2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Regional Effects Program	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Cam Jaeger	Lab Contact	Lyudmyla Shvets	Email 1:	cam.jaeger@teck.com X X X
Email	cam.jaeger@teck.com	Email	lyudmyla.shvets@alsglobal.com	Email 2:	jennifer.dewerk@teck.com X X X
Address	421 Pine Ave	Address	2559 29 st NE	Email 3:	teckcoal@equisonline.com X X X
City	Sparwood	City	Calgary	Email 4:	X
Province	BC	Province	AB	Email 5:	
Postal Code	V0B 2G0	Postal Code	T1Y 7B5		
Country	Canada	Country	Canada		
Phone Number	250-425-8449	Phone Number	403-407-1800	PO number	690772

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N
 L2446411-COFC														
RG_DW-03-10_WP_Q2-2020_NP	RG_DW-03-10	WP	N	11-May-20	13:45	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TKNTOC	HC-D-CVAF-VA	HC-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
								1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			PK	5/12 0920

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
Regular (default)	X	Sampler's Signature		Date/Time	May 11, 2020
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					





Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 21-DEC-20 17:55 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2446419
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: RG_DW-T_Q2-2020
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2446419-1.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446419-1 WP 11-MAY-20 12:00 RG_DW- T_WP_Q2- 2020_NP-05-13			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.54			
	ORP (mV)	504			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	0.0185 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050 ^{HTD}			
	Nitrite (as N) (mg/L)	<0.0010 ^{HTD}			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446419-1 WP 11-MAY-20 12:00 RG_DW- T_WP_Q2- 2020_NP-05-13			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			
	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2446419-1 WP 11-MAY-20 12:00 RG_DW- T_WP_Q2- 2020_NP-05-13				
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	<0.050				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010				
	Cobalt (Co)-Dissolved (ug/L)	<0.10				
	Copper (Cu)-Dissolved (mg/L)	<0.00020				
	Iron (Fe)-Dissolved (mg/L)	<0.010				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.0010				
	Magnesium (Mg)-Dissolved (mg/L)	<0.10				
	Manganese (Mn)-Dissolved (mg/L)	<0.00010				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050				
	Potassium (K)-Dissolved (mg/L)	<0.050				
	Selenium (Se)-Dissolved (ug/L)	<0.050				
	Silicon (Si)-Dissolved (mg/L)	<0.050				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	<0.050				
	Strontium (Sr)-Dissolved (mg/L)	<0.00020				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010				
	Uranium (U)-Dissolved (mg/L)	<0.000010				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
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Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

RG_DW-T_Q2-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2446419

Report Date: 21-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5083036							
WG3323148-8	LCS							
Acidity (as CaCO3)			93.2		%		85-115	13-MAY-20
WG3323148-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	13-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5083297							
WG3323209-14	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	13-MAY-20
WG3323209-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Beryllium (Be)-Dissolved			96.4		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323262-2	LCS							
Beryllium (Be)-Total			97.5		%		80-120	15-MAY-20
WG3323262-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-MAY-20
BIC-CL								
	Water							
Batch	R5083297							
WG3323209-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5092650							
WG3325886-2	LCS							
Bromide (Br)			104.7		%		85-115	14-MAY-20
WG3325886-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Dissolved Organic Carbon			93.3		%		80-120	19-MAY-20
WG3325047-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Total Organic Carbon			94.2		%		80-120	19-MAY-20
WG3325047-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
CL-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2 LCS								
Chloride (Cl)			106.5		%		90-110	14-MAY-20
WG3325886-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	14-MAY-20
CO3-CL	Water							
Batch	R5083297							
WG3323209-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5083297							
WG3323209-14 LCS								
Conductivity (@ 25C)			101.7		%		90-110	13-MAY-20
WG3323209-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAY-20
F-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2 LCS								
Fluoride (F)			101.1		%		90-110	14-MAY-20
WG3325886-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	14-MAY-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5085901							
WG3323804-6	LCS							
Mercury (Hg)-Dissolved			103.5		%		80-120	15-MAY-20
WG3323804-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA								
	Water							
Batch	R5085901							
WG3323960-2	LCS							
Mercury (Hg)-Total			103.5		%		80-120	15-MAY-20
WG3323960-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-MAY-20
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Aluminum (Al)-Dissolved			98.7		%		80-120	15-MAY-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			97.9		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			94.9		%		80-120	15-MAY-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	15-MAY-20
Boron (B)-Dissolved			89.5		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			97.7		%		80-120	15-MAY-20
Calcium (Ca)-Dissolved			101.1		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			98.4		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			97.1		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			95.8		%		80-120	15-MAY-20
Iron (Fe)-Dissolved			94.2		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			94.0		%		80-120	15-MAY-20
Lithium (Li)-Dissolved			96.4		%		80-120	15-MAY-20
Magnesium (Mg)-Dissolved			94.4		%		80-120	15-MAY-20
Manganese (Mn)-Dissolved			97.6		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			98.5		%		80-120	15-MAY-20
Potassium (K)-Dissolved			98.1		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			103.7		%		80-120	15-MAY-20
Silicon (Si)-Dissolved			101.9		%		60-140	15-MAY-20
Silver (Ag)-Dissolved			98.7		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			102.9		%		80-120	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Strontium (Sr)-Dissolved			110.8		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			101.4		%		80-120	15-MAY-20
Tin (Sn)-Dissolved			98.7		%		80-120	15-MAY-20
Titanium (Ti)-Dissolved			96.3		%		80-120	15-MAY-20
Uranium (U)-Dissolved			93.3		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			97.4		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			97.1		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5084472							
WG3323262-2	LCS							
Aluminum (Al)-Total			98.0		%		80-120	15-MAY-20
Antimony (Sb)-Total			109.5		%		80-120	15-MAY-20
Arsenic (As)-Total			95.2		%		80-120	15-MAY-20
Barium (Ba)-Total			96.0		%		80-120	15-MAY-20
Bismuth (Bi)-Total			104.0		%		80-120	15-MAY-20
Boron (B)-Total			91.5		%		80-120	15-MAY-20
Cadmium (Cd)-Total			96.4		%		80-120	15-MAY-20
Calcium (Ca)-Total			101.9		%		80-120	15-MAY-20
Chromium (Cr)-Total			97.3		%		80-120	15-MAY-20
Cobalt (Co)-Total			95.3		%		80-120	15-MAY-20
Copper (Cu)-Total			94.0		%		80-120	15-MAY-20
Iron (Fe)-Total			92.0		%		80-120	15-MAY-20
Lead (Pb)-Total			98.5		%		80-120	15-MAY-20
Lithium (Li)-Total			97.9		%		80-120	15-MAY-20
Magnesium (Mg)-Total			85.4		%		80-120	15-MAY-20
Manganese (Mn)-Total			97.4		%		80-120	15-MAY-20
Molybdenum (Mo)-Total			102.8		%		80-120	15-MAY-20
Nickel (Ni)-Total			97.5		%		80-120	15-MAY-20
Potassium (K)-Total			97.3		%		80-120	15-MAY-20
Selenium (Se)-Total			99.1		%		80-120	15-MAY-20
Silicon (Si)-Total			104.3		%		80-120	15-MAY-20
Silver (Ag)-Total			100.6		%		80-120	15-MAY-20
Sodium (Na)-Total			103.8		%		80-120	15-MAY-20
Strontium (Sr)-Total			110.5		%		80-120	15-MAY-20
Thallium (Tl)-Total			102.9		%		80-120	15-MAY-20
Tin (Sn)-Total			100.7		%		80-120	15-MAY-20
Titanium (Ti)-Total			93.2		%		80-120	15-MAY-20



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Workorder: L2446419

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5084472							
WG3323262-2 LCS								
Uranium (U)-Total			97.8		%		80-120	15-MAY-20
Vanadium (V)-Total			95.9		%		80-120	15-MAY-20
Zinc (Zn)-Total			94.9		%		80-120	15-MAY-20
WG3323262-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	15-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Batch R5091837								
WG3325366-10 LCS								
Ammonia as N			99.3		%		85-115	19-MAY-20
WG3325366-9 MB								
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL								
Batch R5092650								
WG3325886-2 LCS								
Nitrite (as N)			108.0		%		90-110	14-MAY-20
WG3325886-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	14-MAY-20
NO3-L-IC-N-CL								
Batch R5092650								
WG3325886-2 LCS								
Nitrate (as N)			105.2		%		90-110	14-MAY-20
WG3325886-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	14-MAY-20
OH-CL								
Batch R5083297								
WG3323209-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	13-MAY-20
ORP-CL								
Batch R5092422								
WG3325615-5 CRM								
ORP		CL-ORP	224		mV		210-230	19-MAY-20
P-T-L-COL-CL								
Batch R5082438								
WG3322703-30 LCS								
Phosphorus (P)-Total			109.7		%		80-120	13-MAY-20
WG3322703-29 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL								
Batch R5083297								
WG3323209-14 LCS								
pH			6.99		pH		6.9-7.1	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5082066							
WG3322055-10 LCS								
Orthophosphate-Dissolved (as P)			108.7		%		80-120	12-MAY-20
WG3322055-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAY-20
SO4-IC-N-CL	Water							
Batch	R5092650							
WG3325886-2 LCS								
Sulfate (SO4)			107.3		%		90-110	14-MAY-20
WG3325886-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	14-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5087837							
WG3323488-14 LCS								
Total Dissolved Solids			100.1		%		85-115	14-MAY-20
WG3323488-13 MB								
Total Dissolved Solids			<10		mg/L		10	14-MAY-20
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22 LCS								
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL	Water							
Batch	R5088638							
WG3323949-29 LCS								
Total Suspended Solids			107.4		%		85-115	15-MAY-20
WG3323949-28 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL	Water							
Batch	R5085357							
WG3323554-8 LCS								
Turbidity			105.0		%		85-115	14-MAY-20
WG3323554-7 MB								
Turbidity			<0.10		NTU		0.1	14-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-MAY-20 12:00	19-MAY-20 19:00	0.25	199	hours	EHTR-FM
pH	1	11-MAY-20 12:00	14-MAY-20 10:30	0.25	71	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	11-MAY-20 12:00	15-MAY-20 09:29	3	4	days	EHT
Nitrite in Water by IC (Low Level)	1	11-MAY-20 12:00	15-MAY-20 09:29	3	4	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2446419 were received on 12-MAY-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	RG_DW-T_Q2-2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Regional Effects Program	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Cam Jaeger	Lab Contact	Lyudmyla Shvets	Email 1:	cam.jaeger@teck.com X X X
Email	cam.jaeger@teck.com	Email	lyudmyla.shvets@alsglobal.com	Email 2:	jennifer.dewerk@teck.com X X X
Address	421 Pine Ave	Address	2559 29 st NE	Email 3:	teckcoal@equisonline.com X X X
				Email 4:	
City	Sparwood	Province	BC	City	Calgary
Postal Code	VOB 2G0	Country	Canada	Province	AB
Phone Number	250-425-8449	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	

SAMPLE DETAILS



L2446419-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
RG_DW-T_WP_Q2-2020_NP-05-B	RG_DW-T	WP	N	Aug 11, 2020		G	7

ANALYSIS REQUESTED

ANALYSIS	F	N	F	N	F	N	N				
H2SO4											
H2SO4											
HCL											
HCL											
HNO3											
HNO3											
ALS_Package-DOC											
ALS_Package-TKN/TOC											
HG-D-CVAF-VA											
HG-T-CVAF-VA											
TECKCOAL-MET-D-VA											
TECKCOAL-MET-T-VA											
TECKCOAL-ROUTINE-VA											
	1	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	REINQUISHED BY/VERIFICATION	DATE/TIME	ACCEPTED BY/VERIFICATION	DATE/TIME
			PK	5/12 0920
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time	
Regular (default) X	Jennifer de Werk	250-910-7287	May 11, 2020	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature			
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Handwritten signatures and dates:
 Jennifer de Werk
 May 11, 2020



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 18-DEC-20 14:27 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2446436
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-04_Q2-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:48

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446436-1 WP 11-MAY-20 13:12 RG_DW-03-04_WP_Q2-2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	566			
	Hardness (as CaCO3) (mg/L)	311			
	pH (pH)	8.13			
	ORP (mV)	307			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	331 ^{DLHC}			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	180			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	180			
	Ammonia as N (mg/L)	0.0320			
	Bicarbonate (HCO3) (mg/L)	219			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	16.8			
	Fluoride (F) (mg/L)	0.162			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	100			
	Nitrate (as N) (mg/L)	1.75			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.264			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0025 ^{RRV}			
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{RRV}			
	Sulfate (SO4) (mg/L)	114			
	Anion Sum (meq/L)	6.56			
	Cation Sum (meq/L)	6.59			
	Cation - Anion Balance (%)	0.2			
	Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50		
Total Organic Carbon (mg/L)		<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.171			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2446436-1 WP 11-MAY-20 13:12 RG_DW-03-04_WP_Q2-2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0122			
	Calcium (Ca)-Total (mg/L)	76.7			
	Chromium (Cr)-Total (mg/L)	0.00014			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0100			
	Magnesium (Mg)-Total (mg/L)	27.1			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00104			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.941			
	Selenium (Se)-Total (ug/L)	12.6			
	Silicon (Si)-Total (mg/L)	2.54			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	7.70			
	Strontium (Sr)-Total (mg/L)	0.186			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00112			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.158			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0117			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2446436-1			
		Description	WP			
		Sampled Date	11-MAY-20			
		Sampled Time	13:12			
		Client ID	RG_DW-03-04_WP_Q2-2020_NP			
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		82.6			
	Chromium (Cr)-Dissolved (mg/L)		0.00016			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00066			
	Iron (Fe)-Dissolved (mg/L)		<0.010			
	Lead (Pb)-Dissolved (mg/L)		<0.000050			
	Lithium (Li)-Dissolved (mg/L)		0.0093			
	Magnesium (Mg)-Dissolved (mg/L)		25.5			
	Manganese (Mn)-Dissolved (mg/L)		<0.00010			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00112			
	Nickel (Ni)-Dissolved (mg/L)		<0.00050			
	Potassium (K)-Dissolved (mg/L)		0.914			
	Selenium (Se)-Dissolved (ug/L)		13.5			
	Silicon (Si)-Dissolved (mg/L)		2.39			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		7.96			
	Strontium (Sr)-Dissolved (mg/L)		0.198			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00111			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0027			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L2446436-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2446436-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2446436-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2446436-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2446436-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-04_Q2-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2446436

Report Date: 18-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5083036							
WG3323148-8	LCS							
Acidity (as CaCO3)			93.2		%		85-115	13-MAY-20
WG3323148-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	13-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5083297							
WG3323209-14	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	13-MAY-20
WG3323209-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Beryllium (Be)-Dissolved			96.4		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5086478							
WG3323266-2	LCS							
Beryllium (Be)-Total			95.3		%		80-120	14-MAY-20
WG3323266-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	14-MAY-20
BIC-CL								
	Water							
Batch	R5083297							
WG3323209-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5083997							
WG3323374-6	LCS							
Bromide (Br)			100.7		%		85-115	13-MAY-20
WG3323374-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Dissolved Organic Carbon			93.3		%		80-120	19-MAY-20
WG3325047-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5092369							
WG3325047-10 LCS								
Total Organic Carbon			94.2		%		80-120	19-MAY-20
WG3325047-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
CL-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Chloride (Cl)			102.7		%		90-110	13-MAY-20
WG3323374-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	13-MAY-20
CO3-CL	Water							
Batch	R5083297							
WG3323209-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5083297							
WG3323209-14 LCS								
Conductivity (@ 25C)			101.7		%		90-110	13-MAY-20
WG3323209-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAY-20
F-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Fluoride (F)			105.5		%		90-110	13-MAY-20
WG3323374-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-MAY-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5085901							
WG3323804-6	LCS							
Mercury (Hg)-Dissolved			103.5		%		80-120	15-MAY-20
WG3323804-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA								
	Water							
Batch	R5085901							
WG3323960-2	LCS							
Mercury (Hg)-Total			103.5		%		80-120	15-MAY-20
WG3323960-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-MAY-20
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Aluminum (Al)-Dissolved			98.7		%		80-120	15-MAY-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			97.9		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			94.9		%		80-120	15-MAY-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	15-MAY-20
Boron (B)-Dissolved			89.5		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			97.7		%		80-120	15-MAY-20
Calcium (Ca)-Dissolved			101.1		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			98.4		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			97.1		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			95.8		%		80-120	15-MAY-20
Iron (Fe)-Dissolved			94.2		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			94.0		%		80-120	15-MAY-20
Lithium (Li)-Dissolved			96.4		%		80-120	15-MAY-20
Magnesium (Mg)-Dissolved			94.4		%		80-120	15-MAY-20
Manganese (Mn)-Dissolved			97.6		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			101.0		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			98.5		%		80-120	15-MAY-20
Potassium (K)-Dissolved			98.1		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			103.7		%		80-120	15-MAY-20
Silicon (Si)-Dissolved			101.9		%		60-140	15-MAY-20
Silver (Ag)-Dissolved			98.7		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			102.9		%		80-120	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-2	LCS							
Strontium (Sr)-Dissolved			110.8		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			101.4		%		80-120	15-MAY-20
Tin (Sn)-Dissolved			98.7		%		80-120	15-MAY-20
Titanium (Ti)-Dissolved			96.3		%		80-120	15-MAY-20
Uranium (U)-Dissolved			93.3		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			97.4		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			97.1		%		80-120	15-MAY-20
WG3323479-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084472							
WG3323479-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5086478							
WG3323266-2	LCS							
Aluminum (Al)-Total			98.5		%		80-120	14-MAY-20
Antimony (Sb)-Total			98.4		%		80-120	14-MAY-20
Arsenic (As)-Total			95.4		%		80-120	14-MAY-20
Barium (Ba)-Total			101.6		%		80-120	14-MAY-20
Bismuth (Bi)-Total			104.4		%		80-120	14-MAY-20
Boron (B)-Total			90.4		%		80-120	14-MAY-20
Cadmium (Cd)-Total			95.5		%		80-120	14-MAY-20
Calcium (Ca)-Total			102.0		%		80-120	14-MAY-20
Chromium (Cr)-Total			97.2		%		80-120	14-MAY-20
Cobalt (Co)-Total			96.8		%		80-120	14-MAY-20
Copper (Cu)-Total			96.0		%		80-120	14-MAY-20
Iron (Fe)-Total			96.6		%		80-120	14-MAY-20
Lead (Pb)-Total			103.3		%		80-120	14-MAY-20
Lithium (Li)-Total			105.4		%		80-120	14-MAY-20
Magnesium (Mg)-Total			96.8		%		80-120	14-MAY-20
Manganese (Mn)-Total			97.4		%		80-120	14-MAY-20
Molybdenum (Mo)-Total			95.0		%		80-120	14-MAY-20
Nickel (Ni)-Total			97.4		%		80-120	14-MAY-20
Potassium (K)-Total			98.9		%		80-120	14-MAY-20
Selenium (Se)-Total			96.4		%		80-120	14-MAY-20
Silicon (Si)-Total			98.5		%		80-120	14-MAY-20
Silver (Ag)-Total			96.6		%		80-120	14-MAY-20
Sodium (Na)-Total			100.2		%		80-120	14-MAY-20
Strontium (Sr)-Total			101.5		%		80-120	14-MAY-20
Thallium (Tl)-Total			98.5		%		80-120	14-MAY-20
Tin (Sn)-Total			97.7		%		80-120	14-MAY-20
Titanium (Ti)-Total			93.8		%		80-120	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5086478							
WG3323266-2	LCS							
Uranium (U)-Total			103.6		%		80-120	14-MAY-20
Vanadium (V)-Total			96.7		%		80-120	14-MAY-20
Zinc (Zn)-Total			95.7		%		80-120	14-MAY-20
WG3323266-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	14-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	14-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5091837							
WG3325366-6	LCS							
Ammonia as N			101.3		%		85-115	19-MAY-20
WG3325366-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6	LCS							
Nitrite (as N)			104.9		%		90-110	13-MAY-20
WG3323374-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6	LCS							
Nitrate (as N)			103.5		%		90-110	13-MAY-20
WG3323374-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAY-20
OH-CL	Water							
Batch	R5083297							
WG3323209-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-MAY-20
ORP-CL	Water							
Batch	R5092422							
WG3325615-5	CRM	CL-ORP						
ORP			224		mV		210-230	19-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-30	LCS							
Phosphorus (P)-Total			109.7		%		80-120	13-MAY-20
WG3322703-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
pH			6.99		pH		6.9-7.1	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5082066							
WG3322055-10 LCS								
Orthophosphate-Dissolved (as P)			108.7		%		80-120	12-MAY-20
WG3322055-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAY-20
SO4-IC-N-CL	Water							
Batch	R5083997							
WG3323374-6 LCS								
Sulfate (SO4)			104.9		%		90-110	13-MAY-20
WG3323374-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5087837							
WG3323488-14 LCS								
Total Dissolved Solids			100.1		%		85-115	14-MAY-20
WG3323488-13 MB								
Total Dissolved Solids			<10		mg/L		10	14-MAY-20
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22 LCS								
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL	Water							
Batch	R5088638							
WG3323949-29 LCS								
Total Suspended Solids			107.4		%		85-115	15-MAY-20
WG3323949-28 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL	Water							
Batch	R5085357							
WG3323554-8 LCS								
Turbidity			105.0		%		85-115	14-MAY-20
WG3323554-7 MB								
Turbidity			<0.10		NTU		0.1	14-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-MAY-20 13:12	19-MAY-20 19:00	0.25	198	hours	EHTR-FM
pH	1	11-MAY-20 13:12	13-MAY-20 13:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2446436 were received on 12-MAY-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	03-04_Q2-2020	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT/NO		LABORATORY		OTHER INFO	
Facility Name / Job#	Regional Effects Program	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Cam Jaeger	Lab Contact	Lyudmyla Shvets	Email 1:	cam.jaeger@teck.com X X X
Email	cam.jaeger@teck.com	Email	lyudmyla.shvets@alsglobal.com	Email 2:	jennifer.dewerk@teck.com X X X
Address	421 Pine Ave	Address	2559 29 st NE	Email 3:	teckcoal@equisonline.com X X X
				Email 4:	
City	Sparwood	Province	BC	City	Calgary
Postal Code	VOB 2G0	Country	Canada	Province	AB
Phone Number	250-425-8449	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	690772

SAMPLE DETAILS							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
RG_DW-03-04_WP_Q2-2020_NP	RG_DW-03-04	WP	N	11-May-20	13:12	G	7

ANALYSIS REQUESTED							Filtered Field, Lab, Field & Cat. of Sample													
F	N	F	N	F	N	N														
H2SO4	H2SO4	HCL	HCL	HNO3	HNO3															
ALS_Package-DOC	ALS_Package-TRN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA														
1	1	1	1	1	1	1														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>JDK</i>	<i>5/12 0920</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jennifer deWerk	Mobile #	250-910-7287	
Sampler's Signature	<i>Jennifer deWerk</i>	Date/Time	<i>May 11, 2020</i>	



L2446436-COFC

Handwritten notes and signatures:
JDK
5/12 0920
May 11, 2020
Jc



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 13-MAY-20
Report Date: 18-DEC-20 14:28 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2447099
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-40_Q2-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:06

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447099-1 WP 12-MAY-20 14:04 RG_DW-02- 40_WP_Q2- 2020_NP-05-13			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	462			
	Hardness (as CaCO3) (mg/L)	246			
	pH (pH)	8.31			
	ORP (mV)	326			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	315			
	Turbidity (NTU)	0.53			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	154			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	2.8			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	157			
	Ammonia as N (mg/L)	0.0556			
	Bicarbonate (HCO3) (mg/L)	188			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	3.81			
	Fluoride (F) (mg/L)	0.184			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	96.9			
	Nitrate (as N) (mg/L)	3.05			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.133 ^{TKNI}			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	83.8			
	Anion Sum (meq/L)	5.21			
	Cation Sum (meq/L)	5.05			
	Cation - Anion Balance (%)	-1.6			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0879			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447099-1 WP 12-MAY-20 14:04 RG_DW-02- 40_WP_Q2- 2020_NP-05-13			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0062			
	Calcium (Ca)-Total (mg/L)	69.7			
	Chromium (Cr)-Total (mg/L)	0.00023			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00386			
	Iron (Fe)-Total (mg/L)	0.058			
	Lead (Pb)-Total (mg/L)	0.000328			
	Lithium (Li)-Total (mg/L)	0.0072			
	Magnesium (Mg)-Total (mg/L)	21.6			
	Manganese (Mn)-Total (mg/L)	0.00139			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00107			
	Nickel (Ni)-Total (mg/L)	0.00095			
	Potassium (K)-Total (mg/L)	0.616			
	Selenium (Se)-Total (ug/L)	12.8			
	Silicon (Si)-Total (mg/L)	2.36			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.70			
	Strontium (Sr)-Total (mg/L)	0.256			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00108			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0217			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0843			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0057			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2447099-1			
		Description	WP			
		Sampled Date	12-MAY-20			
		Sampled Time	14:04			
		Client ID	RG_DW-02-40_WP_Q2-2020_NP-05-13			
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		65.7			
	Chromium (Cr)-Dissolved (mg/L)		0.00019			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00233			
	Iron (Fe)-Dissolved (mg/L)		<0.010			
	Lead (Pb)-Dissolved (mg/L)		0.000066			
	Lithium (Li)-Dissolved (mg/L)		0.0070			
	Magnesium (Mg)-Dissolved (mg/L)		20.0			
	Manganese (Mn)-Dissolved (mg/L)		0.00060			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00105			
	Nickel (Ni)-Dissolved (mg/L)		0.00060			
	Potassium (K)-Dissolved (mg/L)		0.602			
	Selenium (Se)-Dissolved (ug/L)		14.1			
	Silicon (Si)-Dissolved (mg/L)		2.26			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		2.59			
	Strontium (Sr)-Dissolved (mg/L)		0.233			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00105			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0173			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447099-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2447099-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2447099-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447099-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2447099-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2447099-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2447099-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2447099-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447099-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2447099-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2447099-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2447099-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2447099-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2447099-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2447099-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon			

Reference Information

and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

Reference Information

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-40_Q2-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447099

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5089516							
WG3324822-11	LCS							
Acidity (as CaCO3)			98.8		%		85-115	16-MAY-20
WG3324822-10	MB							
Acidity (as CaCO3)			1.5		mg/L		2	16-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5086005							
WG3323947-10	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	14-MAY-20
WG3323947-9	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-2	LCS							
Beryllium (Be)-Dissolved			91.1		%		80-120	16-MAY-20
WG3324569-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-3	DUP	L2447099-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3324558-2	LCS							
Beryllium (Be)-Total			101.9		%		80-120	16-MAY-20
WG3324558-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-2	LCS							
Bromide (Br)			103.6		%		85-115	15-MAY-20
WG3324630-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5092934							
WG3326204-6	LCS							
Dissolved Organic Carbon			85.2		%		80-120	19-MAY-20
WG3326204-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5092934							
WG3326204-6	LCS							
Total Organic Carbon			85.7		%		80-120	19-MAY-20
WG3326204-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-MAY-20
CL-IC-N-CL	Water							
Batch	R5088828							
WG3324630-2	LCS							
Chloride (Cl)			103.3		%		90-110	15-MAY-20
WG3324630-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAY-20
EC-L-PCT-CL	Water							
Batch	R5086005							
WG3323947-10	LCS							
Conductivity (@ 25C)			103.9		%		90-110	14-MAY-20
WG3323947-9	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-20
F-IC-N-CL	Water							
Batch	R5088828							
WG3324630-2	LCS							
Fluoride (F)			100.3		%		90-110	15-MAY-20
WG3324630-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	15-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5085901							
WG3324254-2	LCS							
Mercury (Hg)-Dissolved			104.7		%		80-120	15-MAY-20
WG3324254-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA	Water							
Batch	R5092316							
WG3325496-2	LCS							
Mercury (Hg)-Total			91.1		%		80-120	19-MAY-20
WG3325496-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-MAY-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-2	LCS							
Aluminum (Al)-Dissolved			100.6		%		80-120	16-MAY-20
Antimony (Sb)-Dissolved			99.4		%		80-120	16-MAY-20
Arsenic (As)-Dissolved			98.5		%		80-120	16-MAY-20
Barium (Ba)-Dissolved			101.4		%		80-120	16-MAY-20
Bismuth (Bi)-Dissolved			103.1		%		80-120	16-MAY-20
Boron (B)-Dissolved			88.4		%		80-120	16-MAY-20
Cadmium (Cd)-Dissolved			101.1		%		80-120	16-MAY-20
Calcium (Ca)-Dissolved			97.5		%		80-120	16-MAY-20
Chromium (Cr)-Dissolved			101.3		%		80-120	16-MAY-20
Cobalt (Co)-Dissolved			99.9		%		80-120	16-MAY-20
Copper (Cu)-Dissolved			98.4		%		80-120	16-MAY-20
Iron (Fe)-Dissolved			97.7		%		80-120	16-MAY-20
Lead (Pb)-Dissolved			105.9		%		80-120	16-MAY-20
Lithium (Li)-Dissolved			97.4		%		80-120	16-MAY-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	16-MAY-20
Manganese (Mn)-Dissolved			105.8		%		80-120	16-MAY-20
Molybdenum (Mo)-Dissolved			101.4		%		80-120	16-MAY-20
Nickel (Ni)-Dissolved			99.4		%		80-120	16-MAY-20
Potassium (K)-Dissolved			106.3		%		80-120	16-MAY-20
Selenium (Se)-Dissolved			100.7		%		80-120	16-MAY-20
Silicon (Si)-Dissolved			98.0		%		60-140	16-MAY-20
Silver (Ag)-Dissolved			99.0		%		80-120	16-MAY-20
Sodium (Na)-Dissolved			105.2		%		80-120	16-MAY-20
Strontium (Sr)-Dissolved			98.9		%		80-120	16-MAY-20
Thallium (Tl)-Dissolved			106.3		%		80-120	16-MAY-20
Tin (Sn)-Dissolved			98.9		%		80-120	16-MAY-20
Titanium (Ti)-Dissolved			101.0		%		80-120	16-MAY-20
Uranium (U)-Dissolved			106.6		%		80-120	16-MAY-20
Vanadium (V)-Dissolved			101.5		%		80-120	16-MAY-20
Zinc (Zn)-Dissolved			103.4		%		80-120	16-MAY-20
WG3324569-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-3	DUP	L2447099-1						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	16-MAY-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAY-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAY-20
Barium (Ba)-Total		0.0879	0.0870		mg/L	1.0	20	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-3	DUP	L2447099-1						
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-MAY-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-MAY-20
Cadmium (Cd)-Total		0.0000062	0.0000069		mg/L	10	20	16-MAY-20
Calcium (Ca)-Total		69.7	71.1		mg/L	1.9	20	16-MAY-20
Chromium (Cr)-Total		0.00023	0.00023		mg/L	0.5	20	16-MAY-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAY-20
Copper (Cu)-Total		0.00386	0.00393		mg/L	1.9	20	16-MAY-20
Iron (Fe)-Total		0.058	0.068		mg/L	16	20	16-MAY-20
Lead (Pb)-Total		0.000328	0.000341		mg/L	4.1	20	16-MAY-20
Lithium (Li)-Total		0.0072	0.0072		mg/L	0.2	20	16-MAY-20
Magnesium (Mg)-Total		21.6	22.2		mg/L	3.1	20	16-MAY-20
Manganese (Mn)-Total		0.00139	0.00152		mg/L	8.6	20	16-MAY-20
Molybdenum (Mo)-Total		0.00107	0.00110		mg/L	2.3	20	16-MAY-20
Nickel (Ni)-Total		0.00095	0.00093		mg/L	2.2	20	16-MAY-20
Potassium (K)-Total		0.616	0.624		mg/L	1.2	20	16-MAY-20
Selenium (Se)-Total		0.0128	0.0126		mg/L	1.0	20	16-MAY-20
Silicon (Si)-Total		2.36	2.38		mg/L	1.1	20	16-MAY-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-MAY-20
Sodium (Na)-Total		2.70	2.79		mg/L	3.1	20	16-MAY-20
Strontium (Sr)-Total		0.256	0.254		mg/L	0.9	20	16-MAY-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-MAY-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-MAY-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-MAY-20
Uranium (U)-Total		0.00108	0.00112		mg/L	3.6	20	16-MAY-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-MAY-20
Zinc (Zn)-Total		0.0217	0.0218		mg/L	0.1	20	16-MAY-20
WG3324558-2	LCS							
Aluminum (Al)-Total			101.5		%		80-120	16-MAY-20
Antimony (Sb)-Total			103.2		%		80-120	16-MAY-20
Arsenic (As)-Total			101.7		%		80-120	16-MAY-20
Barium (Ba)-Total			98.7		%		80-120	16-MAY-20
Bismuth (Bi)-Total			105.4		%		80-120	16-MAY-20
Boron (B)-Total			95.6		%		80-120	16-MAY-20
Cadmium (Cd)-Total			96.8		%		80-120	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5089158							
WG3324558-2	LCS							
Calcium (Ca)-Total			101.3		%		80-120	16-MAY-20
Chromium (Cr)-Total			101.4		%		80-120	16-MAY-20
Cobalt (Co)-Total			101.4		%		80-120	16-MAY-20
Copper (Cu)-Total			97.2		%		80-120	16-MAY-20
Iron (Fe)-Total			95.4		%		80-120	16-MAY-20
Lead (Pb)-Total			103.0		%		80-120	16-MAY-20
Lithium (Li)-Total			98.9		%		80-120	16-MAY-20
Magnesium (Mg)-Total			101.9		%		80-120	16-MAY-20
Manganese (Mn)-Total			104.3		%		80-120	16-MAY-20
Molybdenum (Mo)-Total			98.0		%		80-120	16-MAY-20
Nickel (Ni)-Total			100.0		%		80-120	16-MAY-20
Potassium (K)-Total			103.3		%		80-120	16-MAY-20
Selenium (Se)-Total			94.2		%		80-120	16-MAY-20
Silicon (Si)-Total			104.3		%		80-120	16-MAY-20
Silver (Ag)-Total			95.9		%		80-120	16-MAY-20
Sodium (Na)-Total			103.2		%		80-120	16-MAY-20
Strontium (Sr)-Total			97.3		%		80-120	16-MAY-20
Thallium (Tl)-Total			102.3		%		80-120	16-MAY-20
Tin (Sn)-Total			95.8		%		80-120	16-MAY-20
Titanium (Ti)-Total			100.1		%		80-120	16-MAY-20
Uranium (U)-Total			103.0		%		80-120	16-MAY-20
Vanadium (V)-Total			102.2		%		80-120	16-MAY-20
Zinc (Zn)-Total			100.1		%		80-120	16-MAY-20
WG3324558-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	16-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5089158							
WG3324558-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-MAY-20
NH3-L-F-CL		Water						
Batch	R5094204							
WG3326149-26	LCS							
Ammonia as N			101.4		%		85-115	20-MAY-20
WG3326149-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-20
NO2-L-IC-N-CL		Water						
Batch	R5088828							
WG3324630-2	LCS							
Nitrite (as N)			104.7		%		90-110	15-MAY-20
WG3324630-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAY-20
NO3-L-IC-N-CL		Water						



Quality Control Report

Workorder: L2447099

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5088828							
WG3324630-2	LCS							
Nitrate (as N)			104.5		%		90-110	15-MAY-20
WG3324630-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAY-20
ORP-CL	Water							
Batch	R5093396							
WG3326267-3	CRM	CL-ORP						
ORP			218		mV		210-230	20-MAY-20
P-T-L-COL-CL	Water							
Batch	R5083659							
WG3323350-18	LCS							
Phosphorus (P)-Total			109.1		%		80-120	14-MAY-20
WG3323350-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-MAY-20
PH-CL	Water							
Batch	R5086005							
WG3323947-10	LCS							
pH			7.00		pH		6.9-7.1	14-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5084420							
WG3322991-31	LCS							
Orthophosphate-Dissolved (as P)			102.4		%		80-120	13-MAY-20
WG3322991-8	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAY-20
SO4-IC-N-CL	Water							
Batch	R5088828							
WG3324630-2	LCS							
Sulfate (SO4)			99.7		%		90-110	15-MAY-20
WG3324630-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5088711							
WG3323132-8	LCS							
Total Dissolved Solids			98.4		%		85-115	15-MAY-20
WG3323132-7	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL	Water							
Batch	R5088711							
WG3323132-7 MB								
Total Dissolved Solids			<10		mg/L		10	15-MAY-20
TKN-L-F-CL	Water							
Batch	R5094642							
WG3326879-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	20-MAY-20
WG3326879-14 LCS								
Total Kjeldahl Nitrogen			91.1		%		75-125	20-MAY-20
WG3326879-18 LCS								
Total Kjeldahl Nitrogen			91.9		%		75-125	20-MAY-20
WG3326879-2 LCS								
Total Kjeldahl Nitrogen			90.6		%		75-125	20-MAY-20
WG3326879-22 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	20-MAY-20
WG3326879-6 LCS								
Total Kjeldahl Nitrogen			91.7		%		75-125	20-MAY-20
WG3326879-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
TSS-L-CL	Water							
Batch	R5088638							
WG3323949-33 LCS								
Total Suspended Solids			94.9		%		85-115	15-MAY-20
WG3323949-32 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5088763							
WG3324134-2	LCS							
Turbidity			104.5		%		85-115	15-MAY-20
WG3324134-1	MB							
Turbidity			<0.10		NTU		0.1	15-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	12-MAY-20 14:04	20-MAY-20 09:15	0.25	187	hours	EHTR-FM
pH	1	12-MAY-20 14:04	14-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447099 were received on 13-MAY-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-40_Q2-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N				
RG_DW-02-40_WP_Q2-2020_NP -05-12	RG_DW-02-40	WP	N	12-May-20	14:04	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3					
								ALS_Package-DOC	ALS_Package-TKNTOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/13 2020

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
Sampler's Signature	<i>[Signature]</i>	Date/Time	May 12 2020



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 13-MAY-20
Report Date: 18-DEC-20 14:28 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2447112
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-20_Q2-2020
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:04

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447112-1 WP 12-MAY-20 14:04 RG_DW-02- 20_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	462			
	Hardness (as CaCO3) (mg/L)	245			
	pH (pH)	8.32			
	ORP (mV)	438			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	320			
	Turbidity (NTU)	0.85			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	154			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	158			
	Ammonia as N (mg/L)	0.0186			
	Bicarbonate (HCO3) (mg/L)	188			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	4.52			
	Fluoride (F) (mg/L)	0.086			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	95.8			
	Nitrate (as N) (mg/L)	3.04			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.178 ^{TKNI}			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	84.3			
	Anion Sum (meq/L)	5.26			
	Cation Sum (meq/L)	5.04			
	Cation - Anion Balance (%)	-2.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0902			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447112-1 WP 12-MAY-20 14:04 RG_DW-02- 20_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0065			
	Calcium (Ca)-Total (mg/L)	69.3			
	Chromium (Cr)-Total (mg/L)	0.00021			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00346			
	Iron (Fe)-Total (mg/L)	0.043			
	Lead (Pb)-Total (mg/L)	0.000320			
	Lithium (Li)-Total (mg/L)	0.0073			
	Magnesium (Mg)-Total (mg/L)	21.5			
	Manganese (Mn)-Total (mg/L)	0.00096			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00116			
	Nickel (Ni)-Total (mg/L)	0.00095			
	Potassium (K)-Total (mg/L)	0.616			
	Selenium (Se)-Total (ug/L)	12.6			
	Silicon (Si)-Total (mg/L)	2.39			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.70			
	Strontium (Sr)-Total (mg/L)	0.259			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00112			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0147			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0812			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0125			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447112-1 WP 12-MAY-20 14:04 RG_DW-02- 20_WP_Q2- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	64.0			
	Chromium (Cr)-Dissolved (mg/L)	0.00018			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00547 ^{DTC}			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000173			
	Lithium (Li)-Dissolved (mg/L)	0.0073			
	Magnesium (Mg)-Dissolved (mg/L)	20.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00077			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000952			
	Nickel (Ni)-Dissolved (mg/L)	0.00080			
	Potassium (K)-Dissolved (mg/L)	0.625			
	Selenium (Se)-Dissolved (ug/L)	13.4			
	Silicon (Si)-Dissolved (mg/L)	2.16			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.71			
	Strontium (Sr)-Dissolved (mg/L)	0.225			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000997			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0245 ^{DTC}			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2447112-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447112-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447112-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2447112-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2447112-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447112-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447112-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2447112-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2447112-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2447112-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2447112-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2447112-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447112-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447112-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2447112-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2447112-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2447112-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2447112-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2447112-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2447112-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by

Reference Information

subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL	Water	pH	APHA 4500 H-Electrode
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pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
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A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
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This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
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This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
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This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-20_Q2-2020

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447112

Report Date: 18-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5089516							
WG3324822-11	LCS							
Acidity (as CaCO3)			98.8		%		85-115	16-MAY-20
WG3324822-10	MB							
Acidity (as CaCO3)			1.5		mg/L		2	16-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5086005							
WG3323947-10	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	14-MAY-20
WG3323947-9	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-2	LCS							
Beryllium (Be)-Dissolved			91.1		%		80-120	16-MAY-20
WG3324569-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-2	LCS							
Beryllium (Be)-Total			101.9		%		80-120	16-MAY-20
WG3324558-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-MAY-20
WG3324558-4	MS	L2447112-1						
Beryllium (Be)-Total			101.2		%		70-130	16-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-6	LCS							
Bromide (Br)			97.9		%		85-115	15-MAY-20
WG3324630-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5092934							
WG3326204-6	LCS							
Dissolved Organic Carbon			85.2		%		80-120	19-MAY-20
WG3326204-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5092934							
WG3326204-6	LCS							
Total Organic Carbon			85.7		%		80-120	19-MAY-20
WG3326204-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-MAY-20
CL-IC-N-CL	Water							
Batch	R5088828							
WG3324630-6	LCS							
Chloride (Cl)			101.4		%		90-110	15-MAY-20
WG3324630-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAY-20
EC-L-PCT-CL	Water							
Batch	R5086005							
WG3323947-10	LCS							
Conductivity (@ 25C)			103.9		%		90-110	14-MAY-20
WG3323947-9	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-20
F-IC-N-CL	Water							
Batch	R5088828							
WG3324630-6	LCS							
Fluoride (F)			98.8		%		90-110	15-MAY-20
WG3324630-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	15-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5085901							
WG3324254-2	LCS							
Mercury (Hg)-Dissolved			104.7		%		80-120	15-MAY-20
WG3324254-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA	Water							
Batch	R5092316							
WG3325496-2	LCS							
Mercury (Hg)-Total			91.1		%		80-120	19-MAY-20
WG3325496-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-MAY-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2447112

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-2	LCS							
Aluminum (Al)-Dissolved			100.6		%		80-120	16-MAY-20
Antimony (Sb)-Dissolved			99.4		%		80-120	16-MAY-20
Arsenic (As)-Dissolved			98.5		%		80-120	16-MAY-20
Barium (Ba)-Dissolved			101.4		%		80-120	16-MAY-20
Bismuth (Bi)-Dissolved			103.1		%		80-120	16-MAY-20
Boron (B)-Dissolved			88.4		%		80-120	16-MAY-20
Cadmium (Cd)-Dissolved			101.1		%		80-120	16-MAY-20
Calcium (Ca)-Dissolved			97.5		%		80-120	16-MAY-20
Chromium (Cr)-Dissolved			101.3		%		80-120	16-MAY-20
Cobalt (Co)-Dissolved			99.9		%		80-120	16-MAY-20
Iron (Fe)-Dissolved			97.7		%		80-120	16-MAY-20
Lead (Pb)-Dissolved			105.9		%		80-120	16-MAY-20
Lithium (Li)-Dissolved			97.4		%		80-120	16-MAY-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	16-MAY-20
Manganese (Mn)-Dissolved			105.8		%		80-120	16-MAY-20
Molybdenum (Mo)-Dissolved			101.4		%		80-120	16-MAY-20
Nickel (Ni)-Dissolved			99.4		%		80-120	16-MAY-20
Potassium (K)-Dissolved			106.3		%		80-120	16-MAY-20
Selenium (Se)-Dissolved			100.7		%		80-120	16-MAY-20
Silicon (Si)-Dissolved			98.0		%		60-140	16-MAY-20
Silver (Ag)-Dissolved			99.0		%		80-120	16-MAY-20
Sodium (Na)-Dissolved			105.2		%		80-120	16-MAY-20
Strontium (Sr)-Dissolved			98.9		%		80-120	16-MAY-20
Thallium (Tl)-Dissolved			106.3		%		80-120	16-MAY-20
Tin (Sn)-Dissolved			98.9		%		80-120	16-MAY-20
Titanium (Ti)-Dissolved			101.0		%		80-120	16-MAY-20
Uranium (U)-Dissolved			106.6		%		80-120	16-MAY-20
Vanadium (V)-Dissolved			101.5		%		80-120	16-MAY-20
WG3324569-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5088783							
WG3324569-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-MAY-20
Batch	R5091536							
WG3325487-2	LCS							
Aluminum (Al)-Dissolved			99.1		%		80-120	19-MAY-20
Antimony (Sb)-Dissolved			93.9		%		80-120	19-MAY-20
Arsenic (As)-Dissolved			97.5		%		80-120	19-MAY-20
Barium (Ba)-Dissolved			95.5		%		80-120	19-MAY-20
Bismuth (Bi)-Dissolved			110.4		%		80-120	19-MAY-20
Boron (B)-Dissolved			95.0		%		80-120	19-MAY-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	19-MAY-20
Calcium (Ca)-Dissolved			99.4		%		80-120	19-MAY-20
Chromium (Cr)-Dissolved			102.2		%		80-120	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5091536							
WG3325487-2	LCS							
Cobalt (Co)-Dissolved			99.1		%		80-120	19-MAY-20
Copper (Cu)-Dissolved			99.0		%		80-120	19-MAY-20
Iron (Fe)-Dissolved			90.4		%		80-120	19-MAY-20
Lead (Pb)-Dissolved			96.0		%		80-120	19-MAY-20
Lithium (Li)-Dissolved			103.8		%		80-120	19-MAY-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	19-MAY-20
Manganese (Mn)-Dissolved			101.2		%		80-120	19-MAY-20
Molybdenum (Mo)-Dissolved			96.4		%		80-120	19-MAY-20
Nickel (Ni)-Dissolved			102.2		%		80-120	19-MAY-20
Potassium (K)-Dissolved			101.7		%		80-120	19-MAY-20
Selenium (Se)-Dissolved			98.4		%		80-120	19-MAY-20
Silicon (Si)-Dissolved			101.9		%		60-140	19-MAY-20
Silver (Ag)-Dissolved			101.7		%		80-120	19-MAY-20
Sodium (Na)-Dissolved			114.8		%		80-120	19-MAY-20
Strontium (Sr)-Dissolved			100.2		%		80-120	19-MAY-20
Thallium (Tl)-Dissolved			104.4		%		80-120	19-MAY-20
Tin (Sn)-Dissolved			97.3		%		80-120	19-MAY-20
Titanium (Ti)-Dissolved			95.1		%		80-120	19-MAY-20
Uranium (U)-Dissolved			97.2		%		80-120	19-MAY-20
Vanadium (V)-Dissolved			102.7		%		80-120	19-MAY-20
Zinc (Zn)-Dissolved			99.2		%		80-120	19-MAY-20
WG3325487-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5091536							
WG3325487-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
WG3325487-4	MS	L2447112-1						
Aluminum (Al)-Dissolved			96.0		%		70-130	19-MAY-20
Antimony (Sb)-Dissolved			99.98		%		70-130	19-MAY-20
Arsenic (As)-Dissolved			103.8		%		70-130	19-MAY-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	19-MAY-20
Bismuth (Bi)-Dissolved			84.9		%		70-130	19-MAY-20
Boron (B)-Dissolved			95.0		%		70-130	19-MAY-20
Cadmium (Cd)-Dissolved			98.0		%		70-130	19-MAY-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	19-MAY-20
Chromium (Cr)-Dissolved			99.1		%		70-130	19-MAY-20
Cobalt (Co)-Dissolved			94.8		%		70-130	19-MAY-20
Copper (Cu)-Dissolved			93.0		%		70-130	19-MAY-20
Iron (Fe)-Dissolved			96.9		%		70-130	19-MAY-20
Lead (Pb)-Dissolved			90.8		%		70-130	19-MAY-20
Lithium (Li)-Dissolved			104.9		%		70-130	19-MAY-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	19-MAY-20



Quality Control Report

Workorder: L2447112

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5091536							
WG3325487-4	MS	L2447112-1						
Manganese (Mn)-Dissolved			98.1		%		70-130	19-MAY-20
Molybdenum (Mo)-Dissolved			96.5		%		70-130	19-MAY-20
Nickel (Ni)-Dissolved			94.4		%		70-130	19-MAY-20
Potassium (K)-Dissolved			97.6		%		70-130	19-MAY-20
Selenium (Se)-Dissolved			107.1		%		70-130	19-MAY-20
Silicon (Si)-Dissolved			87.7		%		70-130	19-MAY-20
Silver (Ag)-Dissolved			101.1		%		70-130	19-MAY-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	19-MAY-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	19-MAY-20
Thallium (Tl)-Dissolved			88.6		%		70-130	19-MAY-20
Tin (Sn)-Dissolved			98.3		%		70-130	19-MAY-20
Titanium (Ti)-Dissolved			89.6		%		70-130	19-MAY-20
Uranium (U)-Dissolved			92.9		%		70-130	19-MAY-20
Vanadium (V)-Dissolved			100.8		%		70-130	19-MAY-20
Zinc (Zn)-Dissolved			95.9		%		70-130	19-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-2	LCS							
Aluminum (Al)-Total			101.5		%		80-120	16-MAY-20
Antimony (Sb)-Total			103.2		%		80-120	16-MAY-20
Arsenic (As)-Total			101.7		%		80-120	16-MAY-20
Barium (Ba)-Total			98.7		%		80-120	16-MAY-20
Bismuth (Bi)-Total			105.4		%		80-120	16-MAY-20
Boron (B)-Total			95.6		%		80-120	16-MAY-20
Cadmium (Cd)-Total			96.8		%		80-120	16-MAY-20
Calcium (Ca)-Total			101.3		%		80-120	16-MAY-20
Chromium (Cr)-Total			101.4		%		80-120	16-MAY-20
Cobalt (Co)-Total			101.4		%		80-120	16-MAY-20
Copper (Cu)-Total			97.2		%		80-120	16-MAY-20
Iron (Fe)-Total			95.4		%		80-120	16-MAY-20
Lead (Pb)-Total			103.0		%		80-120	16-MAY-20
Lithium (Li)-Total			98.9		%		80-120	16-MAY-20
Magnesium (Mg)-Total			101.9		%		80-120	16-MAY-20
Manganese (Mn)-Total			104.3		%		80-120	16-MAY-20



Quality Control Report

Workorder: L2447112

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5089158							
WG3324558-2	LCS							
Molybdenum (Mo)-Total			98.0		%		80-120	16-MAY-20
Nickel (Ni)-Total			100.0		%		80-120	16-MAY-20
Potassium (K)-Total			103.3		%		80-120	16-MAY-20
Selenium (Se)-Total			94.2		%		80-120	16-MAY-20
Silicon (Si)-Total			104.3		%		80-120	16-MAY-20
Silver (Ag)-Total			95.9		%		80-120	16-MAY-20
Sodium (Na)-Total			103.2		%		80-120	16-MAY-20
Strontium (Sr)-Total			97.3		%		80-120	16-MAY-20
Thallium (Tl)-Total			102.3		%		80-120	16-MAY-20
Tin (Sn)-Total			95.8		%		80-120	16-MAY-20
Titanium (Ti)-Total			100.1		%		80-120	16-MAY-20
Uranium (U)-Total			103.0		%		80-120	16-MAY-20
Vanadium (V)-Total			102.2		%		80-120	16-MAY-20
Zinc (Zn)-Total			100.1		%		80-120	16-MAY-20
WG3324558-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	16-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-MAY-20



Quality Control Report

Workorder: L2447112

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-1	MB							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-MAY-20
WG3324558-4	MS	L2447112-1						
Aluminum (Al)-Total			100.2		%		70-130	16-MAY-20
Antimony (Sb)-Total			100.5		%		70-130	16-MAY-20
Arsenic (As)-Total			102.8		%		70-130	16-MAY-20
Barium (Ba)-Total			N/A	MS-B	%		-	16-MAY-20
Bismuth (Bi)-Total			101.5		%		70-130	16-MAY-20
Boron (B)-Total			106.8		%		70-130	16-MAY-20
Cadmium (Cd)-Total			98.1		%		70-130	16-MAY-20
Calcium (Ca)-Total			N/A	MS-B	%		-	16-MAY-20
Chromium (Cr)-Total			98.1		%		70-130	16-MAY-20
Cobalt (Co)-Total			96.5		%		70-130	16-MAY-20
Copper (Cu)-Total			91.7		%		70-130	16-MAY-20
Iron (Fe)-Total			97.2		%		70-130	16-MAY-20
Lead (Pb)-Total			99.7		%		70-130	16-MAY-20
Lithium (Li)-Total			97.9		%		70-130	16-MAY-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	16-MAY-20
Manganese (Mn)-Total			100.8		%		70-130	16-MAY-20
Molybdenum (Mo)-Total			102.2		%		70-130	16-MAY-20
Nickel (Ni)-Total			94.5		%		70-130	16-MAY-20
Potassium (K)-Total			99.4		%		70-130	16-MAY-20
Selenium (Se)-Total			104.1		%		70-130	16-MAY-20
Silicon (Si)-Total			95.9		%		70-130	16-MAY-20
Silver (Ag)-Total			95.8		%		70-130	16-MAY-20



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Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324558-4	MS	L2447112-1						
Sodium (Na)-Total			N/A	MS-B	%		-	16-MAY-20
Strontium (Sr)-Total			N/A	MS-B	%		-	16-MAY-20
Thallium (Tl)-Total			98.9		%		70-130	16-MAY-20
Tin (Sn)-Total			98.3		%		70-130	16-MAY-20
Titanium (Ti)-Total			98.2		%		70-130	16-MAY-20
Uranium (U)-Total			103.2		%		70-130	16-MAY-20
Vanadium (V)-Total			102.0		%		70-130	16-MAY-20
Zinc (Zn)-Total			97.3		%		70-130	16-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5094204							
WG3326149-26	LCS							
Ammonia as N			101.4		%		85-115	20-MAY-20
WG3326149-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-6	LCS							
Nitrite (as N)			102.9		%		90-110	15-MAY-20
WG3324630-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-6	LCS							
Nitrate (as N)			102.7		%		90-110	15-MAY-20
WG3324630-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAY-20
ORP-CL								
	Water							
Batch	R5093396							
WG3326267-3	CRM	CL-ORP						
ORP			218		mV		210-230	20-MAY-20
P-T-L-COL-CL								
	Water							
Batch	R5083659							
WG3323350-18	LCS							
Phosphorus (P)-Total			109.1		%		80-120	14-MAY-20
WG3323350-17	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5094642							
WG3326879-22	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	20-MAY-20
WG3326879-6	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	20-MAY-20
WG3326879-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
TSS-L-CL		Water						
Batch	R5088638							
WG3323949-33	LCS							
Total Suspended Solids			94.9		%		85-115	15-MAY-20
WG3323949-32	MB							
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL		Water						
Batch	R5088763							
WG3324134-2	LCS							
Turbidity			104.5		%		85-115	15-MAY-20
WG3324134-1	MB							
Turbidity			<0.10		NTU		0.1	15-MAY-20

Quality Control Report

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Report Date: 18-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Quality Control Report

Workorder: L2447112

Report Date: 18-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-MAY-20 14:04	20-MAY-20 09:15	0.25	187	hours	EHTR-FM
pH	1	12-MAY-20 14:04	14-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447112 were received on 13-MAY-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 21-DEC-20 17:57 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2447147
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: RG_DW-F_Q2-2020
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]



AM Work Order Review
Close

Work Order #: L2447147
Account #: TEC600 Account Name: Teck Coal Ltd.
Project #: Quote #: Status: RAPP Set Status to MONTHLY

Save Approve WO Invoice Preview Analytical Report QC Report AM Review Report (X)
Client CofC (Y) View Attachments (Z) Close

Work Order Details
Sample Info
Report Comments
WO Notes
Account Info
WO Criteria



Lab Sample #

Sample ID



Sampled By

Sampled Date

Sample Type

Pr.

Job/WaterTrax #

LSD

Received Date

Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2447147-1.

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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Environmental 

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447147-1 WP 12-MAY-20 14:04 RG_DW- F_WP_Q2- 2020_NP-05-12			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.53			
	ORP (mV)	447			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	0.0295 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2447147-1 WP 12-MAY-20 14:04 RG_DW- F_WP_Q2- 2020_NP-05-12			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			
	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2447147-1 WP 12-MAY-20 14:04 RG_DW- F_WP_Q2- 2020_NP-05-12				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Lead (Pb)-Total	MB-LOR	L2447147-1
Laboratory Control Sample	Boron (B)-Dissolved	MES	L2447147-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2447147-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447147-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447147-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447147-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2447147-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2447147-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2447147-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2447147-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2447147-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

RG_DW-F_Q2-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447147

Report Date: 21-DEC-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5086637							
WG3324150-2	LCS							
Acidity (as CaCO3)			105.2		%		85-115	15-MAY-20
WG3324150-1	MB							
Acidity (as CaCO3)			1.5		mg/L		2	15-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5086005							
WG3323947-12	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	14-MAY-20
WG3323947-11	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5091400							
WG3324766-2	LCS							
Beryllium (Be)-Dissolved			92.4		%		80-120	17-MAY-20
WG3324766-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-MAY-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5089158							
WG3324557-2	LCS							
Beryllium (Be)-Total			101.6		%		80-120	16-MAY-20
WG3324557-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-MAY-20
BIC-CL								
	Water							
Batch	R5086005							
WG3323947-11	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-6	LCS							
Bromide (Br)			97.9		%		85-115	15-MAY-20
WG3324630-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5092708							
WG3325046-10 LCS								
Dissolved Organic Carbon			95.9		%		80-120	19-MAY-20
WG3325046-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5092708							
WG3325046-10 LCS								
Total Organic Carbon			106.9		%		80-120	19-MAY-20
WG3325046-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
CL-IC-N-CL	Water							
Batch	R5088828							
WG3324630-6 LCS								
Chloride (Cl)			101.4		%		90-110	15-MAY-20
WG3324630-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	15-MAY-20
CO3-CL	Water							
Batch	R5086005							
WG3323947-11 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5086005							
WG3323947-12 LCS								
Conductivity (@ 25C)			101.1		%		90-110	14-MAY-20
WG3323947-11 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-20
F-IC-N-CL	Water							
Batch	R5088828							
WG3324630-6 LCS								
Fluoride (F)			98.8		%		90-110	15-MAY-20
WG3324630-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	15-MAY-20
HG-D-CVAA-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA		Water						
Batch	R5085901							
WG3324254-2 LCS								
Mercury (Hg)-Dissolved			104.7		%		80-120	15-MAY-20
WG3324254-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
HG-T-CVAA-VA		Water						
Batch	R5092316							
WG3325496-2 LCS								
Mercury (Hg)-Total			91.1		%		80-120	19-MAY-20
WG3325496-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-MAY-20
MET-D-CCMS-VA		Water						
Batch	R5091400							
WG3324766-2 LCS								
Aluminum (Al)-Dissolved			96.2		%		80-120	17-MAY-20
Antimony (Sb)-Dissolved			95.4		%		80-120	17-MAY-20
Arsenic (As)-Dissolved			95.8		%		80-120	17-MAY-20
Barium (Ba)-Dissolved			94.6		%		80-120	17-MAY-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	17-MAY-20
Boron (B)-Dissolved			79.6	MES	%		80-120	17-MAY-20
Cadmium (Cd)-Dissolved			96.1		%		80-120	17-MAY-20
Calcium (Ca)-Dissolved			94.5		%		80-120	17-MAY-20
Chromium (Cr)-Dissolved			97.9		%		80-120	17-MAY-20
Cobalt (Co)-Dissolved			97.3		%		80-120	17-MAY-20
Copper (Cu)-Dissolved			96.4		%		80-120	17-MAY-20
Iron (Fe)-Dissolved			92.0		%		80-120	17-MAY-20
Lead (Pb)-Dissolved			98.6		%		80-120	17-MAY-20
Lithium (Li)-Dissolved			91.4		%		80-120	17-MAY-20
Magnesium (Mg)-Dissolved			99.2		%		80-120	17-MAY-20
Manganese (Mn)-Dissolved			97.6		%		80-120	17-MAY-20
Molybdenum (Mo)-Dissolved			94.8		%		80-120	17-MAY-20
Nickel (Ni)-Dissolved			98.2		%		80-120	17-MAY-20
Potassium (K)-Dissolved			98.8		%		80-120	17-MAY-20
Selenium (Se)-Dissolved			98.2		%		80-120	17-MAY-20
Silicon (Si)-Dissolved			96.3		%		60-140	17-MAY-20
Silver (Ag)-Dissolved			95.2		%		80-120	17-MAY-20
Sodium (Na)-Dissolved			97.7		%		80-120	17-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5091400							
WG3324766-2	LCS							
Strontium (Sr)-Dissolved			96.4		%		80-120	17-MAY-20
Thallium (Tl)-Dissolved			98.4		%		80-120	17-MAY-20
Tin (Sn)-Dissolved			95.8		%		80-120	17-MAY-20
Titanium (Ti)-Dissolved			96.8		%		80-120	17-MAY-20
Uranium (U)-Dissolved			96.0		%		80-120	17-MAY-20
Vanadium (V)-Dissolved			96.3		%		80-120	17-MAY-20
Zinc (Zn)-Dissolved			99.7		%		80-120	17-MAY-20
WG3324766-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5091400							
WG3324766-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-MAY-20
MET-T-CCMS-VA								
	Water							
Batch	R5089158							
WG3324557-2	LCS							
Aluminum (Al)-Total			103.2		%		80-120	16-MAY-20
Antimony (Sb)-Total			105.4		%		80-120	16-MAY-20
Arsenic (As)-Total			101.4		%		80-120	16-MAY-20
Barium (Ba)-Total			100.2		%		80-120	16-MAY-20
Bismuth (Bi)-Total			110.8		%		80-120	16-MAY-20
Boron (B)-Total			95.9		%		80-120	16-MAY-20
Cadmium (Cd)-Total			103.8		%		80-120	16-MAY-20
Calcium (Ca)-Total			104.0		%		80-120	16-MAY-20
Chromium (Cr)-Total			98.9		%		80-120	16-MAY-20
Cobalt (Co)-Total			100.5		%		80-120	16-MAY-20
Copper (Cu)-Total			101.2		%		80-120	16-MAY-20
Iron (Fe)-Total			93.0		%		80-120	16-MAY-20
Lead (Pb)-Total			107.7		%		80-120	16-MAY-20
Lithium (Li)-Total			99.5		%		80-120	16-MAY-20
Magnesium (Mg)-Total			101.2		%		80-120	16-MAY-20
Manganese (Mn)-Total			102.1		%		80-120	16-MAY-20
Molybdenum (Mo)-Total			102.0		%		80-120	16-MAY-20
Nickel (Ni)-Total			101.1		%		80-120	16-MAY-20
Potassium (K)-Total			102.8		%		80-120	16-MAY-20
Selenium (Se)-Total			96.1		%		80-120	16-MAY-20
Silicon (Si)-Total			104.0		%		80-120	16-MAY-20
Silver (Ag)-Total			100.4		%		80-120	16-MAY-20
Sodium (Na)-Total			106.4		%		80-120	16-MAY-20
Strontium (Sr)-Total			104.6		%		80-120	16-MAY-20
Thallium (Tl)-Total			104.7		%		80-120	16-MAY-20
Tin (Sn)-Total			100.8		%		80-120	16-MAY-20
Titanium (Ti)-Total			92.6		%		80-120	16-MAY-20



Quality Control Report

Workorder: L2447147

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5089158							
WG3324557-2	LCS							
Uranium (U)-Total			105.0		%		80-120	16-MAY-20
Vanadium (V)-Total			101.3		%		80-120	16-MAY-20
Zinc (Zn)-Total			105.5		%		80-120	16-MAY-20
WG3324557-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	16-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-MAY-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-MAY-20
Lead (Pb)-Total			0.000053	MB-LOR	mg/L		0.00005	16-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-MAY-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-MAY-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-MAY-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5091837							
WG3325366-6	LCS							
Ammonia as N			101.3		%		85-115	19-MAY-20
WG3325366-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL								
Water								
Batch	R5088828							
WG3324630-6	LCS							
Nitrite (as N)			102.9		%		90-110	15-MAY-20
WG3324630-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAY-20
NO3-L-IC-N-CL								
Water								
Batch	R5088828							
WG3324630-6	LCS							
Nitrate (as N)			102.7		%		90-110	15-MAY-20
WG3324630-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAY-20
OH-CL								
Water								
Batch	R5086005							
WG3323947-11	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-MAY-20
ORP-CL								
Water								
Batch	R5082421							
WG3322688-5	CRM	CL-ORP						
ORP			226		mV		210-230	13-MAY-20
P-T-L-COL-CL								
Water								
Batch	R5083659							
WG3323350-18	LCS							
Phosphorus (P)-Total			109.1		%		80-120	14-MAY-20
WG3323350-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-MAY-20
PH-CL								
Water								
Batch	R5086005							
WG3323947-12	LCS							
pH			7.00		pH		6.9-7.1	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5084420							
WG3322991-31 LCS								
Orthophosphate-Dissolved (as P)			102.4		%		80-120	13-MAY-20
WG3322991-8 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAY-20
SO4-IC-N-CL	Water							
Batch	R5088828							
WG3324630-6 LCS								
Sulfate (SO4)			91.4		%		90-110	15-MAY-20
WG3324630-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5088711							
WG3323132-5 LCS								
Total Dissolved Solids			98.4		%		85-115	15-MAY-20
WG3323132-4 MB								
Total Dissolved Solids			<10		mg/L		10	15-MAY-20
TKN-L-F-CL	Water							
Batch	R5092351							
WG3325518-10 LCS								
Total Kjeldahl Nitrogen			86.2		%		75-125	19-MAY-20
WG3325518-14 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	19-MAY-20
WG3325518-18 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	19-MAY-20
WG3325518-2 LCS								
Total Kjeldahl Nitrogen			88.2		%		75-125	19-MAY-20
WG3325518-22 LCS								
Total Kjeldahl Nitrogen			94.4		%		75-125	19-MAY-20
WG3325518-6 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	19-MAY-20
WG3325518-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20
WG3325518-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20
WG3325518-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20
WG3325518-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20



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Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5092351							
WG3325518-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20
WG3325518-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-MAY-20
TSS-L-CL	Water							
Batch	R5088638							
WG3323949-33 LCS								
Total Suspended Solids			94.9		%		85-115	15-MAY-20
WG3323949-32 MB								
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL	Water							
Batch	R5088763							
WG3324134-2 LCS								
Turbidity			104.5		%		85-115	15-MAY-20
WG3324134-1 MB								
Turbidity			<0.10		NTU		0.1	15-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-MAY-20 14:04	13-MAY-20 14:00	0.25	24	hours	EHTR-FM
pH	1	12-MAY-20 14:04	14-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447147 were received on 12-MAY-20 14:04.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: RG_DW-F_Q2-2020		TURNAROUND TIME:			RUSH:				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Regional Effects Program				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Cam Jaeger				Lab Contact Lyudmyla Shvets			Email 1: cam.jaeger@teck.com X X X		
Email cam.jaeger@teck.com				Email lyudmyla.shvets@alsglobal.com			Email 2: jennifer.dewerk@teck.com X X X		
Address 421 Pine Ave				Address 2559 29 st NE			Email 3: teckcoal@equisonline.com X X X		
							Email 4: X		
City Sparwood		Province BC		City Calgary		Province AB		Email 5:	
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada			
Phone Number 250-425-8449				Phone Number 403-407-1800			PO number		

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered by Field, Lab, Field & Lab, No.		
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA			
RG_DW-F_WP_Q2-2020_NP-05-12	RG_DW-F	WP	N	May 12, 2020	14:04	G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/13/20

SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #	
Regular (default) X		Jennifer de Werk		250-910-7287	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	
Emergency (1 Business Day) - 100% surcharge		<i>[Signature]</i>		May 12, 2020	
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 13-MAY-20
Report Date: 23-MAY-20 15:37 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2447196
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200512Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2447196-1	L2447196-2	L2447196-3	L2447196-4
					L2447196-1 WG 12-MAY-20 14:28 EV_ER1GWS_WG _2020_Q2_NP	L2447196-2 WG 12-MAY-20 13:25 EV_ER1GWD_WG _2020_Q2_NP	L2447196-3 WG 12-MAY-20 12:57 EV_MW_MC3_WG _2020_Q2_NP	L2447196-4 WG 12-MAY-20 12:00 EV_MW_MC4_WG _2020_Q2_NP
Grouping	Analyte							
WATER								
Physical Tests	Conductivity (@ 25C) (uS/cm)	525	369	516	646			
	Hardness (as CaCO3) (mg/L)	291	234	44.7	509			
	pH (pH)	8.48	8.19	8.50	8.74			
	ORP (mV)	439	305	231	311			
	Total Suspended Solids (mg/L)	<1.0	16.0	1.3	<1.0			
	Total Dissolved Solids (mg/L)	364	254	425	547			DLHC
	Turbidity (NTU)	<0.10	11.5	2.61	5.08			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	2.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	187	165	344	325			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	12.8	<1.0	13.2	26.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	199	165	357	352			
	Ammonia as N (mg/L)	<0.0050	0.0433	0.0565	<0.0050			
	Bicarbonate (HCO3) (mg/L)	228	202	420	397			
	Bromide (Br) (mg/L)	<0.050	0.552	0.053	0.170			
	Carbonate (CO3) (mg/L)	7.7	<5.0	7.9	16.0			
	Chloride (Cl) (mg/L)	20.2	4.47	3.65	30.0			
	Fluoride (F) (mg/L)	0.144	0.197	1.87	0.115			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	99.6	113	104	105			
	Nitrate (as N) (mg/L)	1.76	0.585	0.0108	0.0110			
	Nitrite (as N) (mg/L)	<0.0010	0.0042	<0.0010	0.0011			
	Total Kjeldahl Nitrogen (mg/L)	0.350	0.336	0.131	0.114			
	Total Nitrogen (mg/L)	2.11	0.925	0.142	0.126			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0032 ^{RRV}	<0.0010	0.0338	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	<0.0020	0.038 ^{DLM}	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{RRV}	0.0088	0.042 ^{DLM}	0.0023			
	Sulfate (SO4) (mg/L)	79.3	38.0	9.75	108			
	Anion Sum (meq/L)	6.34	4.27	7.54	10.1			
	Cation Sum (meq/L)	6.31	4.85	7.87	10.6			
	Cation - Anion Balance (%)	-0.2	6.3	2.1	2.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.78 ^{DTC}	0.88	1.24	1.16			
	Total Organic Carbon (mg/L)	<0.50 ^{DTC}	0.73	1.27	1.15			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0041	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2447196-1	L2447196-2	L2447196-3	L2447196-4
					L2447196-1 WG 12-MAY-20 14:28 EV_ER1GWS_WG _2020_Q2_NP	L2447196-2 WG 12-MAY-20 13:25 EV_ER1GWD_WG _2020_Q2_NP	L2447196-3 WG 12-MAY-20 12:57 EV_MW_MC3_WG _2020_Q2_NP	L2447196-4 WG 12-MAY-20 12:00 EV_MW_MC4_WG _2020_Q2_NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00035	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00020	0.00178	0.00054			
	Barium (Ba)-Dissolved (mg/L)	0.129	0.0821	0.427	0.111			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	0.010	0.104	0.037			
	Cadmium (Cd)-Dissolved (ug/L)	0.0135	<0.0050	<0.0050	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	77.7	61.4	9.24	137			
	Chromium (Cr)-Dissolved (mg/L)	0.00024	0.00014	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	0.47			
	Copper (Cu)-Dissolved (mg/L)	0.00026	0.00031	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.011	0.039	0.433			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0092	0.0075	0.155	0.0219			
	Magnesium (Mg)-Dissolved (mg/L)	23.6	19.6	5.24	40.4			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00691	0.0476	0.0643			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000841	0.00271	0.0286	0.00315			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00062	<0.00050	0.00258			
	Potassium (K)-Dissolved (mg/L)	0.882	1.25	0.652	2.30			
	Selenium (Se)-Dissolved (ug/L)	9.43	3.16	<0.050	<0.050			
	Silicon (Si)-Dissolved (mg/L)	2.37	3.53	2.57	5.04			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	10.8	3.24	160	7.94			
	Strontium (Sr)-Dissolved (mg/L)	0.219	0.197	0.154	0.610			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000015			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000959	0.000998	0.000549	0.00110			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0124	0.0017	0.0038			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447196-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447196-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447196-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200512Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447196

Report Date: 23-MAY-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5089516							
WG3324822-14	LCS							
Acidity (as CaCO3)			103.2		%		85-115	16-MAY-20
WG3324822-13	MB							
Acidity (as CaCO3)			1.3		mg/L		2	16-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5086005							
WG3323947-12	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	14-MAY-20
WG3323947-14	LCS							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	14-MAY-20
WG3323947-11	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
WG3323947-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5094643							
WG3326651-2	LCS							
Beryllium (Be)-Dissolved			98.6		%		80-120	21-MAY-20
WG3326651-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-MAY-20
BIC-CL								
	Water							
Batch	R5086005							
WG3323947-11	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-MAY-20
WG3323947-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5092822							
WG3326062-6	LCS							
Bromide (Br)			109.6		%		85-115	15-MAY-20
WG3326062-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5092369							
WG3325047-20	DUP	L2447196-4						
Dissolved Organic Carbon		1.16	1.13		mg/L	1.8	20	19-MAY-20
WG3325047-18	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5092369							
WG3325047-18	LCS							
Dissolved Organic Carbon			95.9		%		80-120	19-MAY-20
WG3325047-17	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
WG3325047-19	MS	L2447196-4						
Dissolved Organic Carbon			99.7		%		70-130	19-MAY-20
C-TOT-ORG-LOW-CL Water								
Batch	R5092369							
WG3325047-20	DUP	L2447196-4						
Total Organic Carbon		1.15	0.96		mg/L	18	20	19-MAY-20
WG3325047-18	LCS							
Total Organic Carbon			99.7		%		80-120	19-MAY-20
WG3325047-17	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
WG3325047-19	MS	L2447196-4						
Total Organic Carbon			108.5		%		70-130	19-MAY-20
CL-IC-N-CL Water								
Batch	R5092822							
WG3326062-6	LCS							
Chloride (Cl)			102.3		%		90-110	15-MAY-20
WG3326062-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAY-20
CO3-CL Water								
Batch	R5086005							
WG3323947-11	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
WG3323947-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL Water								
Batch	R5086005							
WG3323947-12	LCS							
Conductivity (@ 25C)			101.1		%		90-110	14-MAY-20
WG3323947-14	LCS							
Conductivity (@ 25C)			101.0		%		90-110	14-MAY-20
WG3323947-11	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-20
WG3323947-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5086005								
WG3323947-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-20
F-IC-N-CL								
Water								
Batch R5092822								
WG3326062-6 LCS								
Fluoride (F)			96.4		%		90-110	15-MAY-20
WG3326062-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	15-MAY-20
HG-D-CVAA-VA								
Water								
Batch R5088857								
WG3324551-2 LCS								
Mercury (Hg)-Dissolved			105.7		%		80-120	16-MAY-20
WG3324551-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-MAY-20
MET-D-CCMS-VA								
Water								
Batch R5094643								
WG3326651-2 LCS								
Aluminum (Al)-Dissolved			98.6		%		80-120	21-MAY-20
Antimony (Sb)-Dissolved			99.0		%		80-120	21-MAY-20
Arsenic (As)-Dissolved			98.0		%		80-120	21-MAY-20
Barium (Ba)-Dissolved			105.0		%		80-120	21-MAY-20
Bismuth (Bi)-Dissolved			95.2		%		80-120	21-MAY-20
Boron (B)-Dissolved			90.9		%		80-120	21-MAY-20
Cadmium (Cd)-Dissolved			99.2		%		80-120	21-MAY-20
Calcium (Ca)-Dissolved			103.8		%		80-120	21-MAY-20
Chromium (Cr)-Dissolved			100.2		%		80-120	21-MAY-20
Cobalt (Co)-Dissolved			98.3		%		80-120	21-MAY-20
Copper (Cu)-Dissolved			97.0		%		80-120	21-MAY-20
Iron (Fe)-Dissolved			93.1		%		80-120	21-MAY-20
Lead (Pb)-Dissolved			92.8		%		80-120	21-MAY-20
Lithium (Li)-Dissolved			101.7		%		80-120	21-MAY-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	21-MAY-20
Manganese (Mn)-Dissolved			106.0		%		80-120	21-MAY-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	21-MAY-20
Nickel (Ni)-Dissolved			95.4		%		80-120	21-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5094643							
WG3326651-2	LCS							
Potassium (K)-Dissolved			101.4		%		80-120	21-MAY-20
Selenium (Se)-Dissolved			99.3		%		80-120	21-MAY-20
Silicon (Si)-Dissolved			95.1		%		60-140	21-MAY-20
Silver (Ag)-Dissolved			101.1		%		80-120	21-MAY-20
Sodium (Na)-Dissolved			102.6		%		80-120	21-MAY-20
Strontium (Sr)-Dissolved			102.3		%		80-120	21-MAY-20
Thallium (Tl)-Dissolved			93.5		%		80-120	21-MAY-20
Tin (Sn)-Dissolved			99.5		%		80-120	21-MAY-20
Titanium (Ti)-Dissolved			98.8		%		80-120	21-MAY-20
Uranium (U)-Dissolved			90.2		%		80-120	21-MAY-20
Vanadium (V)-Dissolved			102.7		%		80-120	21-MAY-20
Zinc (Zn)-Dissolved			95.8		%		80-120	21-MAY-20
WG3326651-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5094643							
WG3326651-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5094204							
WG3326149-26	LCS							
Ammonia as N			101.4		%		85-115	20-MAY-20
WG3326149-30	LCS							
Ammonia as N			109.1		%		85-115	20-MAY-20
WG3326149-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-20
WG3326149-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5092822							
WG3326062-6	LCS							
Nitrite (as N)			107.2		%		90-110	15-MAY-20
WG3326062-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5092822							
WG3326062-6	LCS							
Nitrate (as N)			102.2		%		90-110	15-MAY-20
WG3326062-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAY-20
OH-CL								
	Water							
Batch	R5086005							
WG3323947-11	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-MAY-20
WG3323947-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5086005							
WG3323947-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	14-MAY-20
ORP-CL	Water							
Batch	R5093396							
WG3326267-3 CRM		CL-ORP						
ORP			218		mV		210-230	20-MAY-20
WG3326267-5 CRM		CL-ORP						
ORP			226		mV		210-230	20-MAY-20
WG3326267-6 DUP		L2447196-3						
ORP		231	242	J	mV	10.2	15	20-MAY-20
P-T-L-COL-CL	Water							
Batch	R5086876							
WG3324125-10 LCS								
Phosphorus (P)-Total			111.3		%		80-120	15-MAY-20
WG3324125-6 LCS								
Phosphorus (P)-Total			110.2		%		80-120	15-MAY-20
WG3324125-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-MAY-20
WG3324125-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-MAY-20
P-TD-L-COL-CL	Water							
Batch	R5086876							
WG3324125-10 LCS								
Phosphorus (P)-Total Dissolved			111.3		%		80-120	15-MAY-20
WG3324125-6 LCS								
Phosphorus (P)-Total Dissolved			110.2		%		80-120	15-MAY-20
WG3324125-5 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	15-MAY-20
WG3324125-9 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	15-MAY-20
PH-CL	Water							
Batch	R5086005							
WG3323947-12 LCS								
pH			7.00		pH		6.9-7.1	14-MAY-20
WG3323947-14 LCS								
pH			7.00		pH		6.9-7.1	14-MAY-20
	Water							



Quality Control Report

Workorder: L2447196

Report Date: 23-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5094642							
WG3326879-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
TSS-L-CL		Water						
Batch	R5088638							
WG3323949-33	LCS							
Total Suspended Solids			94.9		%		85-115	15-MAY-20
WG3323949-32	MB							
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL		Water						
Batch	R5088763							
WG3324134-2	LCS							
Turbidity			104.5		%		85-115	15-MAY-20
WG3324134-5	LCS							
Turbidity			105.0		%		85-115	15-MAY-20
WG3324134-1	MB							
Turbidity			<0.10		NTU		0.1	15-MAY-20
WG3324134-4	MB							
Turbidity			<0.10		NTU		0.1	15-MAY-20

Quality Control Report

Workorder: L2447196

Report Date: 23-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2447196

Report Date: 23-MAY-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	12-MAY-20 14:28	20-MAY-20 09:15	0.25	187	hours	EHTR-FM
	2	12-MAY-20 13:25	20-MAY-20 09:15	0.25	188	hours	EHTR-FM
	3	12-MAY-20 12:57	20-MAY-20 16:00	0.25	195	hours	EHTR-FM
	4	12-MAY-20 12:00	20-MAY-20 16:00	0.25	196	hours	EHTR-FM
pH							
	1	12-MAY-20 14:28	14-MAY-20 13:00	0.25	47	hours	EHTR-FM
	2	12-MAY-20 13:25	14-MAY-20 13:00	0.25	48	hours	EHTR-FM
	3	12-MAY-20 12:57	23-MAY-20 08:00	0.25	259	hours	EHTR-FM
	4	12-MAY-20 12:00	14-MAY-20 13:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447196 were received on 13-MAY-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: **20200512Q2GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Excel	PDF	EDD
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 1:	kimberley.hackett@teck.com	
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 2:	cameron.griffin@teck.com	
Address	RR#1 HWY# 3							Email 3:	kennedy.allan@teck.com	
								Email 4:	Teck Lab Results @ sharepoint teck.com	
								Email 5:	teckcoal@equisonline.com	
City	Sparwood	Province	BC	City	Calgary	Province	AB			
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877	

SAMPLE DETAILS							ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	DATE	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury		
EV_ERIGWS_WG_2020_Q2_NP	EV_ERIGWS	WG	N	5/12/2020	14:28	G	5		1	1	1										
EV_ERIGWD_WG_2020_Q2_NP	EV_ERIGWD	WG	N	5/12/2020	13:25	G	5		1	1	1										
EV_MW_MC3_WG_2020_Q2_NP	EV_MW_MC3	WG	N	5/12/2020	12:57	G	5		1	1	1										
EV_MW_MC3_WG_2020_Q2_NP	EV_MW_MC4	WG	N	5/7/2020	14:24	G	5		1	1	1										
Total							20														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	May 12, 2020	<i>OK</i>	5/13 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X		
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
Sampler's Name	Kennedy Allen/Chris Emslie	Mobile #	
Sampler's Signature	<i>Kennedy Allen</i>	Date/Time	May 12, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 14-MAY-20
Report Date: 03-FEB-21 16:15 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2447968
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200513Q2GW
Legal Site Desc:

Comments: 24-JUN-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on samples L2447968-1 to -5.

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2447968-1	L2447968-2	L2447968-3	L2447968-4	L2447968-5
					WG	WG	WG	WG	WG
		13-MAY-20	12:10		13-MAY-20	13-MAY-20	13-MAY-20	13-MAY-20	13-MAY-20
					EV_OCGW_WG_2_020_Q2_NP	EV_MC5GW_WS_2020_Q2_NP	EV_MC6GW_WS_2020_Q2_NP	EV_MC7GW_WS_2020_Q2_NP	EV_MW_AQ2_WG_2020_Q2_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	340	340	<2.0	<2.0	686			
	Hardness (as CaCO3) (mg/L)	147	144	<0.50	<0.50	633			
	pH (pH)	8.41	8.42	5.69	5.67	8.19			
	ORP (mV)	312	414	338	316	444			
	Total Suspended Solids (mg/L)	3.1	3.7	<1.0	<1.0	4.7			
	Total Dissolved Solids (mg/L)	275 ^{DLHC}	295 ^{DLHC}	<10	<10	677 ^{DLHC}			
	Turbidity (NTU)	2.48	3.15	<0.10	<0.10	7.06			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	1.5	1.4	7.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	174	178	<1.0	<1.0	415			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	7.0	8.2	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	181	186	<1.0	<1.0	415			
	Ammonia as N (mg/L)	0.0188	0.0068	<0.0050	<0.0050	0.0507			
	Bicarbonate (HCO3) (mg/L)	202	204	<5.0	<5.0	326			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	8.2	7.6	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	2.01	2.02	<0.50	<0.50	13.8			
	Fluoride (F) (mg/L)	1.17	1.19	<0.020	<0.020	0.145			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	99.9	96.7	0.0	0.0	115 ^{BL:INT}			
	Nitrate (as N) (mg/L)	0.0913	0.0995	<0.0050	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Total Nitrogen (mg/L)	0.091	0.100	<0.050	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0080 ^{RRV}	0.0081	<0.0010	<0.0010	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0031 ^{RRV}	0.0071	<0.0020	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0107	0.0108	<0.0020	<0.0020	0.0032			
	Sulfate (SO4) (mg/L)	60.3	60.4	<0.30	<0.30	153			
	Anion Sum (meq/L)	5.00	5.11	<0.10	<0.10	11.9			
	Cation Sum (meq/L)	4.99	4.94	<0.10	<0.10	13.6			
Cation - Anion Balance (%)	-0.1	-1.7	0.0	0.0	7.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
Total Metals	Mercury (Hg)-Total (ug/L)	<0.00050	<0.00050	<0.00050	<0.00050				
Dissolved Metals	Dissolved Mercury Filtration Location					FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2447968-1 WG 13-MAY-20 12:10 EV_OCGW_WG_2 020_Q2_NP	L2447968-2 WG 13-MAY-20 12:15 EV_MC5GW_WS_ 2020_Q2_NP	L2447968-3 WG 13-MAY-20 12:20 EV_MC6GW_WS_ 2020_Q2_NP	L2447968-4 WG 13-MAY-20 12:25 EV_MC7GW_WS_ 2020_Q2_NP	L2447968-5 WG 13-MAY-20 13:50 EV_MW_AQ2_WG_ _2020_Q2_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00107	0.00101	<0.00010	<0.00010	0.00017
	Barium (Ba)-Dissolved (mg/L)	0.0531	0.0542	<0.00010	<0.00010	0.0194
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.113	0.112	<0.010	<0.010	0.090
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}	<0.010 ^{DLM}	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	27.4	26.4	<0.050	<0.050	151
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00040	0.00035	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.565
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0253	0.0253	<0.0010	<0.0010	0.0582
	Magnesium (Mg)-Dissolved (mg/L)	19.0	18.9	<0.10	<0.10	62.1
	Manganese (Mn)-Dissolved (mg/L)	0.0189	0.0195	<0.00010	<0.00010	0.0808
	Mercury (Hg)-Dissolved (mg/L)					<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0153	0.0149	<0.000050	<0.000050	0.000262
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00066
	Potassium (K)-Dissolved (mg/L)	1.68	1.69	<0.050	<0.050	2.28
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	4.35	4.35	<0.050	<0.050	6.60
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	46.4	46.5	<0.050	<0.050	20.8
	Strontium (Sr)-Dissolved (mg/L)	0.410	0.406	<0.00020	<0.00020	1.23
	Thallium (Tl)-Dissolved (mg/L)	0.000023	0.000023	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00127	0.00124	<0.000010	<0.000010	0.000116
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Hydrocarbons	EPH10-19 (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	EPH19-32 (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2447968-1	L2447968-2	L2447968-3	L2447968-4	L2447968-5
					L2447968-1 WG 13-MAY-20 12:10 EV_OCGW_WG_2 020_Q2_NP	L2447968-2 WG 13-MAY-20 12:15 EV_MC5GW_WS_ 2020_Q2_NP	L2447968-3 WG 13-MAY-20 12:20 EV_MC6GW_WS_ 2020_Q2_NP	L2447968-4 WG 13-MAY-20 12:25 EV_MC7GW_WS_ 2020_Q2_NP	L2447968-5 WG 13-MAY-20 13:50 EV_MW_AQ2_WG_ _2020_Q2_NP
Grouping	Analyte								
WATER									
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)				89.3	87.9	89.6	87.7	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Acidity (as CaCO ₃)	MB-LOR	L2447968-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2447968-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2447968-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2447968-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2447968-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2447968-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration

Reference Information

CR6-D-IC-ED	Water	Chromium, Dissolved Hexavalent (Cr +6)	APHA 3500-Cr C (Ion Chromatography)
<p>This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.</p> <p>Results are based on a field-filtered, field-preserved sample.</p>			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
EPH(10-32)-CALC-CL	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
<p>The sum of EPH(C10-C19) and EPH(C19-C32)</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
<p>Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			

Reference Information

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200513Q2GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447968

Report Date: 03-FEB-21

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5093739							
WG3326478-5	LCS							
Acidity (as CaCO3)			108.0		%		85-115	20-MAY-20
WG3326478-4	MB							
Acidity (as CaCO3)			2.6	MB-LOR	mg/L		2	20-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5092350							
WG3325534-2	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	17-MAY-20
WG3325534-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-MAY-20
Batch	R5094850							
WG3327204-2	LCS							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	21-MAY-20
WG3327204-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	19-MAY-20
WG3324889-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAY-20
BIC-CL								
	Water							
Batch	R5094850							
WG3327204-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5094918							
WG3327253-7	DUP	L2447968-4						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Bromide (Br)			109.9		%		85-115	16-MAY-20
WG3327253-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	16-MAY-20
WG3327253-8	MS	L2447968-4						
Bromide (Br)			115.0		%		75-125	16-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5095737							
WG3328297-2	LCS							
Dissolved Organic Carbon			102.7		%		80-120	24-MAY-20
WG3328297-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
C-TOT-ORG-LOW-CL Water								
Batch	R5095737							
WG3328297-2	LCS							
Total Organic Carbon			105.8		%		80-120	24-MAY-20
WG3328297-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
CL-IC-N-CL Water								
Batch	R5094918							
WG3327253-7	DUP	L2447968-4						
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Chloride (Cl)			103.7		%		90-110	16-MAY-20
WG3327253-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	16-MAY-20
WG3327253-8	MS	L2447968-4						
Chloride (Cl)			114.5		%		75-125	16-MAY-20
CO3-CL Water								
Batch	R5094850							
WG3327204-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-MAY-20
CR6-D-IC-ED Water								
Batch	R5094622							
WG3325445-2	LCS							
Hexavalent Chromium-Dissolved			100.2		%		80-120	20-MAY-20
WG3325445-1	MB							
Hexavalent Chromium-Dissolved			<0.00050		mg/L		0.0005	20-MAY-20
EC-L-PCT-CL Water								
Batch	R5092350							
WG3325534-2	LCS							
Conductivity (@ 25C)			101.1		%		90-110	17-MAY-20
WG3325534-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5094850								
WG3327204-2	LCS							
Conductivity (@ 25C)			99.2		%		90-110	21-MAY-20
WG3327204-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-MAY-20
F-IC-N-CL								
Water								
Batch R5094918								
WG3327253-7	DUP	L2447968-4						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Fluoride (F)			100.1		%		90-110	16-MAY-20
WG3327253-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	16-MAY-20
WG3327253-8	MS	L2447968-4						
Fluoride (F)			107.9		%		75-125	16-MAY-20
HG-D-CVAA-VA								
Water								
Batch R5092516								
WG3326254-10	LCS							
Mercury (Hg)-Dissolved			102.0		%		80-120	20-MAY-20
WG3326254-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-MAY-20
HG-T-U-CVAF-VA								
Water								
Batch R5094736								
WG3326947-2	LCS							
Mercury (Hg)-Total			98.6		%		80-120	21-MAY-20
WG3326947-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-MAY-20
WG3326947-4	MS	L2447968-4						
Mercury (Hg)-Total			100.4		%		70-130	21-MAY-20
MET-D-CCMS-VA								
Water								
Batch R5092413								
WG3324889-2	LCS							
Aluminum (Al)-Dissolved			98.2		%		80-120	19-MAY-20
Antimony (Sb)-Dissolved			96.9		%		80-120	19-MAY-20
Arsenic (As)-Dissolved			93.3		%		80-120	19-MAY-20
Barium (Ba)-Dissolved			96.8		%		80-120	19-MAY-20
Bismuth (Bi)-Dissolved			100.0		%		80-120	19-MAY-20
Boron (B)-Dissolved			88.3		%		80-120	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-2	LCS							
Cadmium (Cd)-Dissolved			96.2		%		80-120	19-MAY-20
Calcium (Ca)-Dissolved			96.8		%		80-120	19-MAY-20
Chromium (Cr)-Dissolved			96.2		%		80-120	19-MAY-20
Cobalt (Co)-Dissolved			95.2		%		80-120	19-MAY-20
Copper (Cu)-Dissolved			94.9		%		80-120	19-MAY-20
Iron (Fe)-Dissolved			96.6		%		80-120	19-MAY-20
Lead (Pb)-Dissolved			97.6		%		80-120	19-MAY-20
Lithium (Li)-Dissolved			96.6		%		80-120	19-MAY-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	19-MAY-20
Manganese (Mn)-Dissolved			97.7		%		80-120	19-MAY-20
Molybdenum (Mo)-Dissolved			98.0		%		80-120	19-MAY-20
Nickel (Ni)-Dissolved			95.4		%		80-120	19-MAY-20
Potassium (K)-Dissolved			104.0		%		80-120	19-MAY-20
Selenium (Se)-Dissolved			94.3		%		80-120	19-MAY-20
Silicon (Si)-Dissolved			95.8		%		60-140	19-MAY-20
Silver (Ag)-Dissolved			98.6		%		80-120	19-MAY-20
Sodium (Na)-Dissolved			104.2		%		80-120	19-MAY-20
Strontium (Sr)-Dissolved			100.9		%		80-120	19-MAY-20
Thallium (Tl)-Dissolved			97.8		%		80-120	19-MAY-20
Tin (Sn)-Dissolved			97.7		%		80-120	19-MAY-20
Titanium (Ti)-Dissolved			92.7		%		80-120	19-MAY-20
Uranium (U)-Dissolved			96.1		%		80-120	19-MAY-20
Vanadium (V)-Dissolved			96.5		%		80-120	19-MAY-20
Zinc (Zn)-Dissolved			95.1		%		80-120	19-MAY-20
WG3324889-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5096597							
WG3328628-23	DUP	L2447968-5						
Ammonia as N		0.0507	0.0536		mg/L	5.6	20	25-MAY-20
WG3328628-18	LCS							
Ammonia as N			108.9		%		85-115	25-MAY-20
WG3328628-22	LCS							
Ammonia as N			108.9		%		85-115	25-MAY-20
WG3328628-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-20
WG3328628-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-20
WG3328628-24	MS	L2447968-5						
Ammonia as N			117.4		%		75-125	25-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R5094918								
WG3327253-7	DUP	L2447968-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Nitrite (as N)			106.7		%		90-110	16-MAY-20
WG3327253-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-MAY-20
WG3327253-8	MS	L2447968-4						
Nitrite (as N)			111.2		%		75-125	16-MAY-20
NO3-L-IC-N-CL								
Batch R5094918								
WG3327253-7	DUP	L2447968-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Nitrate (as N)			103.6		%		90-110	16-MAY-20
WG3327253-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-MAY-20
WG3327253-8	MS	L2447968-4						
Nitrate (as N)			114.4		%		75-125	16-MAY-20
OH-CL								
Batch R5094850								
WG3327204-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-MAY-20
ORP-CL								
Batch R5097316								
WG3328812-1	CRM	CL-ORP						
ORP			222		mV		210-230	25-MAY-20
P-T-L-COL-CL								
Batch R5090848								
WG3324610-17	LCS							
Phosphorus (P)-Total			99.4		%		80-120	16-MAY-20
WG3324610-16	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-20
P-TD-L-COL-CL								
Batch R5090848								



Quality Control Report

Workorder: L2447968

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-TD-L-COL-CL Water								
Batch	R5090848							
WG3324610-17	LCS							
Phosphorus (P)-Total	Dissolved		99.4		%		80-120	16-MAY-20
WG3324610-16	MB							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	16-MAY-20
PH-CL Water								
Batch	R5092350							
WG3325534-2	LCS							
pH			6.98		pH		6.9-7.1	17-MAY-20
Batch	R5094850							
WG3327204-2	LCS							
pH			6.98		pH		6.9-7.1	21-MAY-20
PO4-DO-L-COL-CL Water								
Batch	R5088258							
WG3324035-10	LCS							
Orthophosphate-Dissolved (as P)			102.2		%		80-120	15-MAY-20
WG3324035-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-MAY-20
SO4-IC-N-CL Water								
Batch	R5094918							
WG3327253-7	DUP	L2447968-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	16-MAY-20
WG3327253-6	LCS							
Sulfate (SO4)			105.6		%		90-110	16-MAY-20
WG3327253-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-MAY-20
WG3327253-8	MS	L2447968-4						
Sulfate (SO4)			115.8		%		75-125	16-MAY-20
SOLIDS-TDS-CL Water								
Batch	R5094704							
WG3325623-49	LCS							
Total Dissolved Solids			105.3		%		85-115	20-MAY-20
WG3325623-52	LCS							
Total Dissolved Solids			96.1		%		85-115	20-MAY-20
WG3325623-48	MB							
Total Dissolved Solids			<10		mg/L		10	20-MAY-20
WG3325623-51	MB							



Quality Control Report

Workorder: L2447968

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch R5094704								
WG3325623-51 MB								
Total Dissolved Solids			<10		mg/L		10	20-MAY-20
TEH-BC-VA-CL								
Water								
Batch R5091616								
WG3325315-2 LCS								
EPH10-19			80.4		%		70-130	19-MAY-20
EPH19-32			72.8		%		70-130	19-MAY-20
WG3325315-4 LCS								
EPH10-19			88.3		%		70-130	20-MAY-20
EPH19-32			77.7		%		70-130	20-MAY-20
WG3325315-1 MB								
EPH10-19			<0.25		mg/L		0.25	19-MAY-20
EPH19-32			<0.25		mg/L		0.25	19-MAY-20
Surrogate: 2-Bromobenzotrifluoride			94.9		%		60-140	19-MAY-20
WG3325315-3 MB								
EPH10-19			<0.25		mg/L		0.25	20-MAY-20
EPH19-32			<0.25		mg/L		0.25	20-MAY-20
Surrogate: 2-Bromobenzotrifluoride			96.7		%		60-140	20-MAY-20
TEH-WATER-VA-CL								
Water								
Batch R5091616								
WG3325315-2 LCS								
TEH (C10-C30)			78.6		%		70-130	19-MAY-20
WG3325315-4 LCS								
TEH (C10-C30)			85.9		%		70-130	20-MAY-20
WG3325315-1 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	19-MAY-20
Surrogate: 2-Bromobenzotrifluoride			94.9		%		60-140	19-MAY-20
WG3325315-3 MB								
TEH (C10-C30)			<0.25		mg/L		0.25	20-MAY-20
Surrogate: 2-Bromobenzotrifluoride			96.7		%		60-140	20-MAY-20
TKN-L-F-CL								
Water								
Batch R5095308								
WG3327709-6 DUP								
Total Kjeldahl Nitrogen		L2447968-4	<0.050		mg/L	RPD-NA	20	22-MAY-20
WG3327709-2 LCS								
Total Kjeldahl Nitrogen			100.9		%		75-125	22-MAY-20



Quality Control Report

Workorder: L2447968

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5095308							
WG3327709-5	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	22-MAY-20
WG3327709-9	LCS							
Total Kjeldahl Nitrogen			87.5		%		75-125	22-MAY-20
WG3327709-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-MAY-20
WG3327709-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-MAY-20
WG3327709-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-MAY-20
WG3327709-7	MS	L2447968-4						
Total Kjeldahl Nitrogen			98.2		%		70-130	22-MAY-20
TSS-L-CL								
Water								
Batch	R5094657							
WG3325810-8	LCS							
Total Suspended Solids			97.2		%		85-115	20-MAY-20
WG3325810-7	MB							
Total Suspended Solids			<1.0		mg/L		1	20-MAY-20
TURBIDITY-CL								
Water								
Batch	R5089048							
WG3324774-8	LCS							
Turbidity			104.0		%		85-115	16-MAY-20
WG3324774-7	MB							
Turbidity			<0.10		NTU		0.1	16-MAY-20

Quality Control Report

Workorder: L2447968

Report Date: 03-FEB-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2447968

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	13-MAY-20 12:10	25-MAY-20 19:00	0.25	295	hours	EHTR-FM
	2	13-MAY-20 12:15	25-MAY-20 19:00	0.25	295	hours	EHTR-FM
	3	13-MAY-20 12:20	25-MAY-20 19:00	0.25	295	hours	EHTR-FM
	4	13-MAY-20 12:25	25-MAY-20 19:00	0.25	294	hours	EHTR-FM
	5	13-MAY-20 13:50	25-MAY-20 19:00	0.25	293	hours	EHTR-FM
pH	1	13-MAY-20 12:10	21-MAY-20 13:00	0.25	193	hours	EHTR-FM
	2	13-MAY-20 12:15	21-MAY-20 13:00	0.25	193	hours	EHTR-FM
	3	13-MAY-20 12:20	17-MAY-20 13:00	0.25	97	hours	EHTR-FM
	4	13-MAY-20 12:25	17-MAY-20 13:00	0.25	96	hours	EHTR-FM
	5	13-MAY-20 13:50	17-MAY-20 13:00	0.25	95	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447968 were received on 14-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

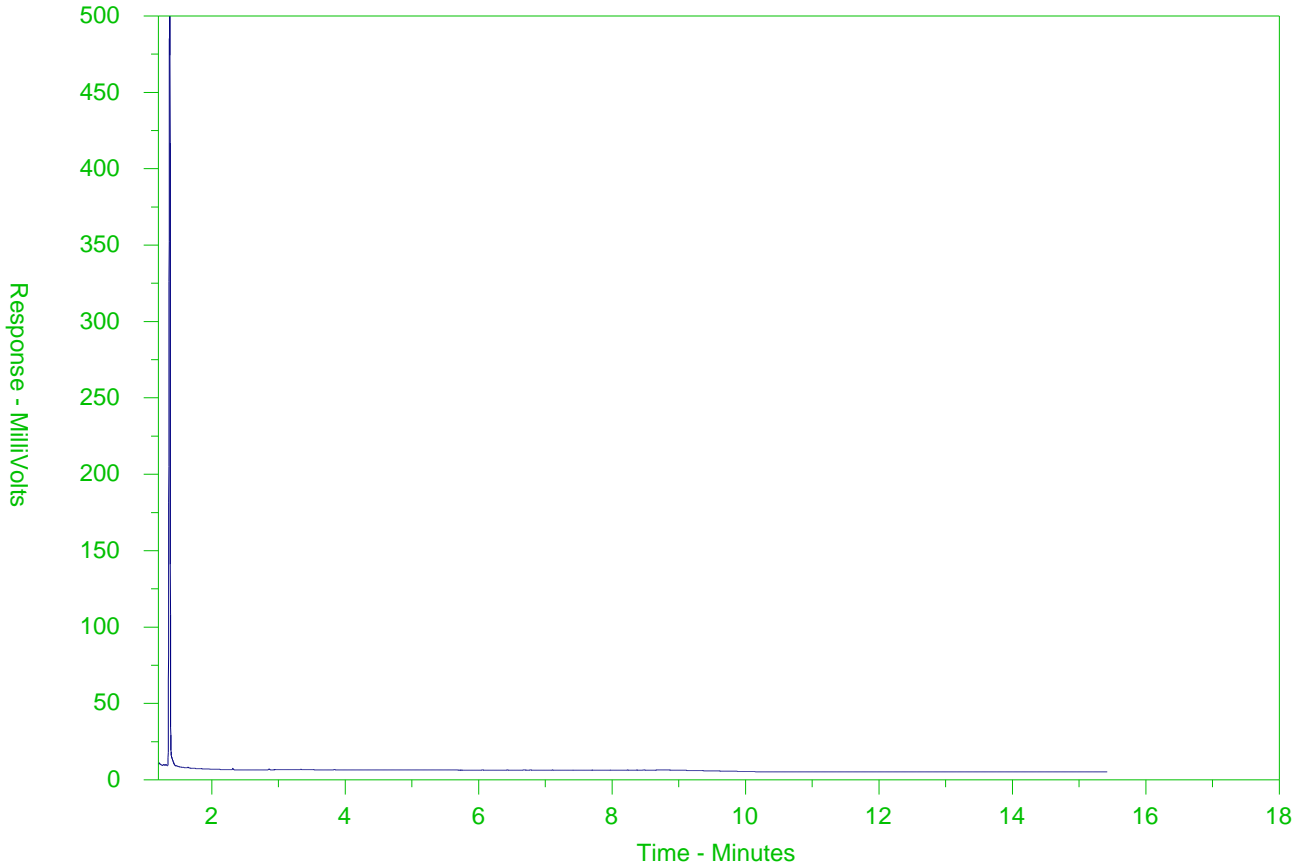
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447968-1
 Client Sample ID: EV_OCGW_WG_2020_Q2_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

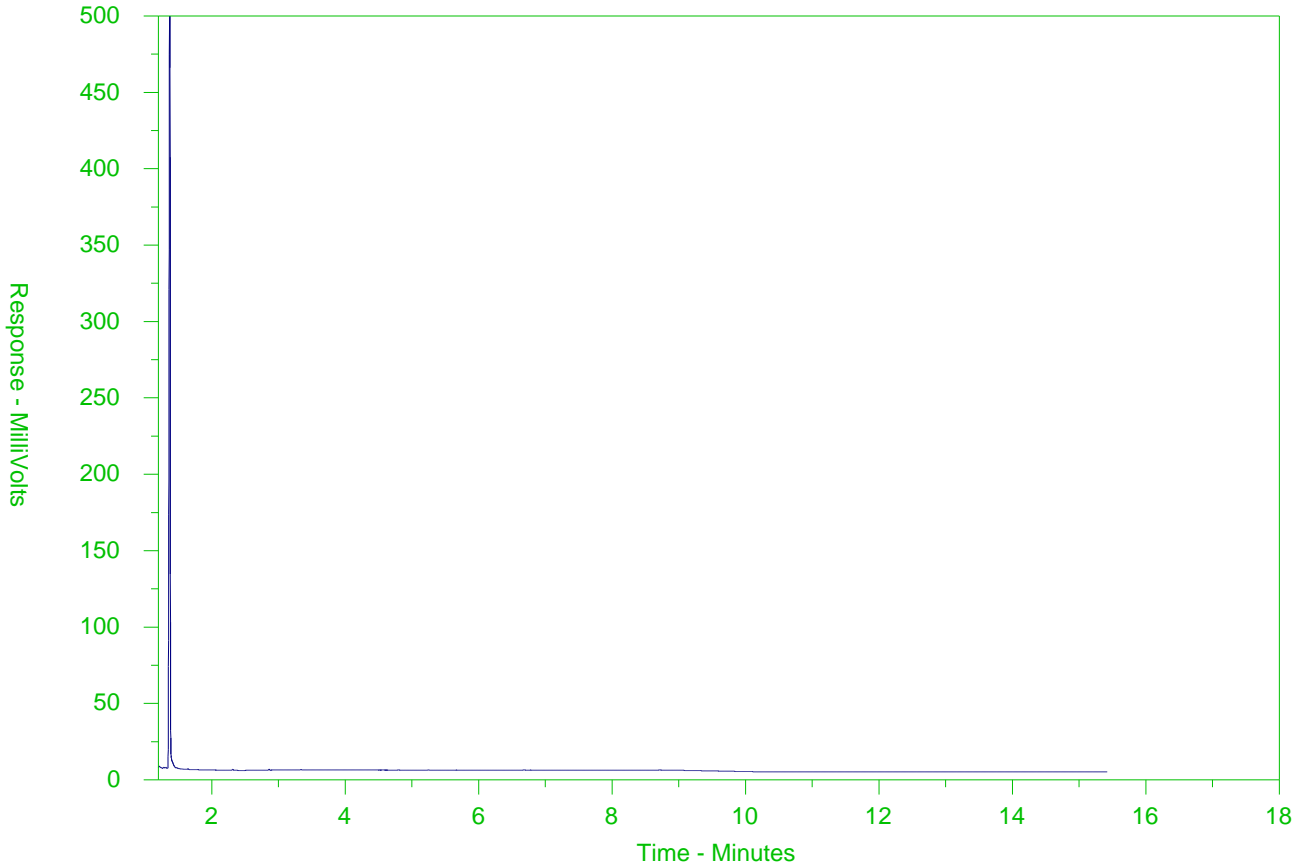
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447968-2
 Client Sample ID: EV_MC5GW_WS_2020_Q2_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

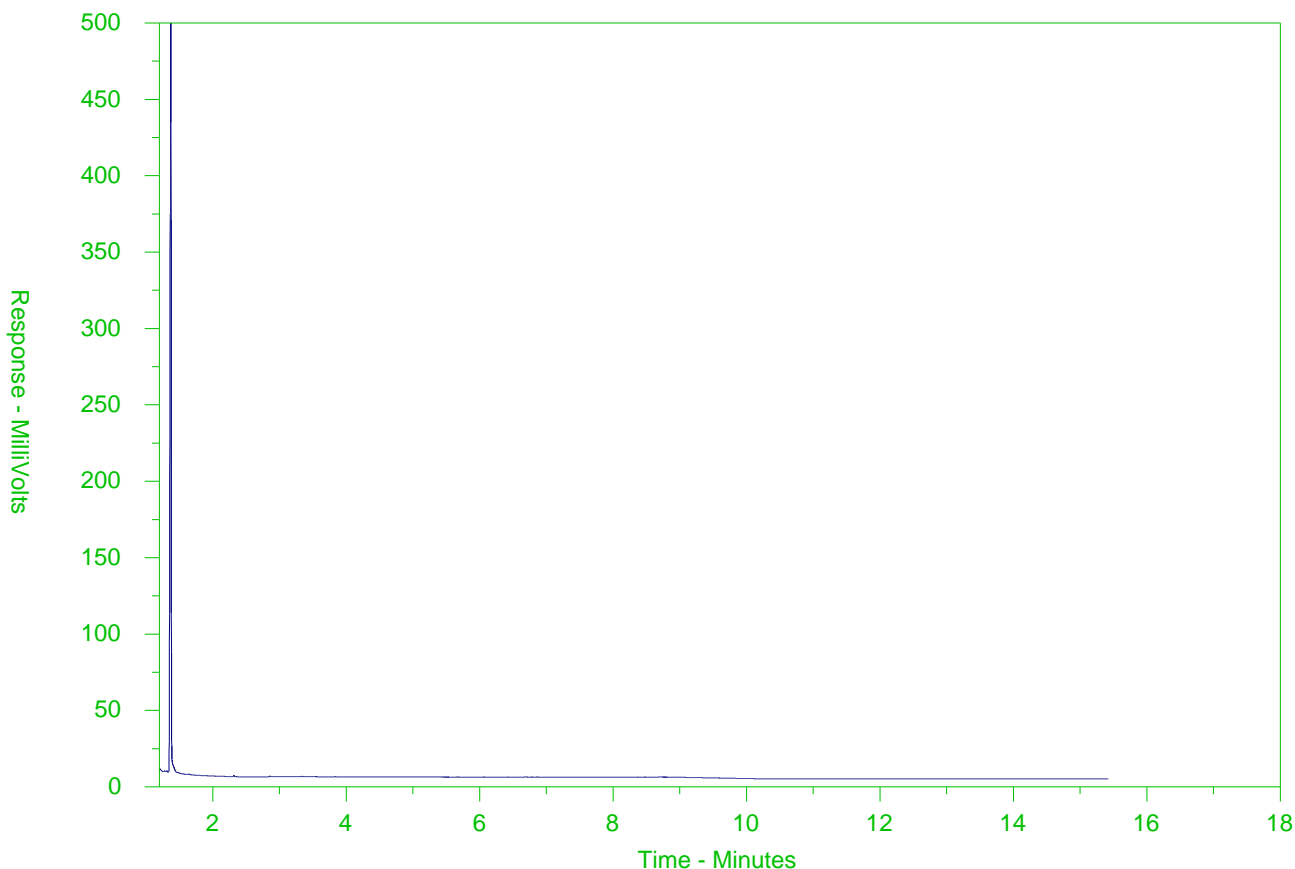
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447968-3
 Client Sample ID: EV_MC6GW_WS_2020_Q2_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

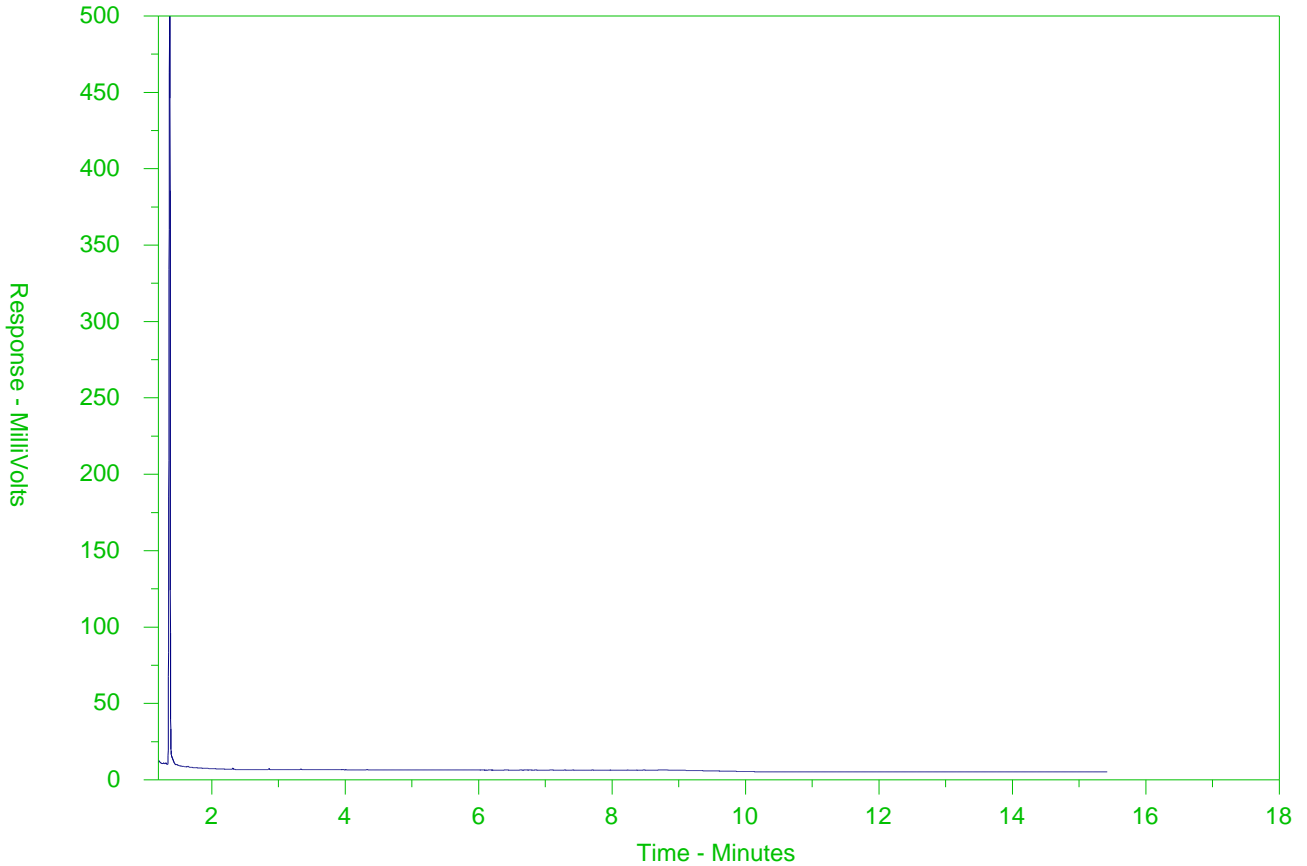
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447968-4
 Client Sample ID: EV_MC7GW_WS_2020_Q2_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	20200513Q2GW	TURNAROUND TIME:		RUSH:		
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		
Job Description	Q2 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		
Project Manager	Cameron Griffin		Email	kimberley.hackett@teck.com		
Email	Cameron.Griffin@Teck.com		Email 2	cameron.griffin@teck.com		
Address	RR#1 HWY# 3		Address	2559 29 Street NE		
			Email 3	kennedy.allan@teck.com		
			Email 4	Teck.Lab.Results@sharepoint.teck.com		
			Email 5	teckcoal@equisonline.com		
City	Sparwood	Province	BC	City	Calgary	
Postal Code		Country	Canada	Province	AB	
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada	
		Phone Number	403-407-1800	PO number	VPQ00678877	

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PREP	No	Yes	Yes	No	No	No	No	Yes	Yes
										Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH
EV_OCgw_WG_2020_Q2_NP	EV_OCgw	WG	N	5/13/2020	12:10	G	8	TECK COAL-ROUTINE-VA (E305.1)	1	1	1	1	1		2		1
EV_MC5GW_WS_2020_Q2_NP	EV_MC5GW	WG	N	5/13/2020	12:15	G	8	TECK COAL-MET-D-VA (SW6020)	1	1	1	1	1		2		1
EV_MC6GW_WG_2020_Q2_NP	EV_MC6GW	WG	N	5/13/2020	12:20	G	8	DOC (APHA 5310)	1	1	1	1	1		2		1
EV_MC7GW_WG_2020_Q2_NP	EV_MC7GW	WG	N	5/13/2020	12:25	G	8	Dissolved Phosphorus	1	1	1	1	1		2		1
EV_MW_AQ2_WG_2020_Q2_NP	EV_MW_AQ2	WG	N	5/13/2020	13:50	G	5	TKN/TOC (APHA 4500-NORG)	1	1	1	1	1			1	
								Total Nitrogen for BC (NO2 and NO3)	1	1	1	1	1				
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
							Total										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME								
	Kennedy Allen	May 13, 2020	<i>JA</i>	5/14/2020								
SERVICE REQUEST (rush - subject to availability) <table border="1" style="width:100%"> <tr> <td>Regular (default)</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Priority (2-3 business days) - 50% surcharge</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Emergency (1 Business Day) - 100% surcharge</td> <td><input type="checkbox"/></td> </tr> <tr> <td>For Emergency <1 Day, ASAP or Weekend - Contact ALS</td> <td><input type="checkbox"/></td> </tr> </table>					Regular (default)	<input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>	For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>
Regular (default)	<input checked="" type="checkbox"/>											
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>											
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>											
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>											
Sampler's Name	Kennedy Allen		Mobile #									
Sampler's Signature		Date/Time	May 13, 2020									



L2447968-COFC

[Handwritten signature]



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 15-MAY-20
Report Date: 24-JUN-20 17:00 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2448297
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200514Q2GW
Legal Site Desc:

Comments: 24-JUN-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2448297-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2448297-1 WG 14-MAY-20 12:55 EV_MCGWD_WG_ 2020_Q2_NP	L2448297-2 WG 14-MAY-20 13:20 EV_MCGWS_WG_ 2020_Q2_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	463	575		
	Hardness (as CaCO3) (mg/L)	241	387		
	pH (pH)	8.31	8.14		
	ORP (mV)	504	447		
	Total Suspended Solids (mg/L)	20.1	7.3		
	Total Dissolved Solids (mg/L)	316 ^{DLHC}	496 ^{DLHC}		
	Turbidity (NTU)	14.7	31.4		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	2.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	239	267		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.4	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	242	267		
	Ammonia as N (mg/L)	0.244	0.128		
	Bicarbonate (HCO3) (mg/L)	229	207		
	Bromide (Br) (mg/L)	<0.050	0.210		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.87	40.3		
	Fluoride (F) (mg/L)	1.04	0.379		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	101	102		
	Nitrate (as N) (mg/L)	<0.0050	<0.0050		
	Nitrite (as N) (mg/L)	0.0012	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.364	0.185		
	Total Nitrogen (mg/L)	0.365	0.185		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0068	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0211	<0.0020		
	Phosphorus (P)-Total (mg/L)	0.0614	0.0045		
	Sulfate (SO4) (mg/L)	61.0	111		
	Anion Sum (meq/L)	6.21	8.80		
	Cation Sum (meq/L)	6.29	9.01		
	Cation - Anion Balance (%)	0.6	1.2		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.73	0.53		
	Total Organic Carbon (mg/L)	0.82	0.69		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2448297-1 WG 14-MAY-20 12:55 EV_MCGWD_WG_ 2020_Q2_NP	L2448297-2 WG 14-MAY-20 13:20 EV_MCGWS_WG_ 2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00013	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00073	0.00132		
	Barium (Ba)-Dissolved (mg/L)	0.0579	0.0205		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.078	0.023		
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}	0.0060		
	Calcium (Ca)-Dissolved (mg/L)	53.6	102		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.48	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00032		
	Iron (Fe)-Dissolved (mg/L)	0.356	2.08		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0090	0.0209		
	Magnesium (Mg)-Dissolved (mg/L)	26.0	32.4		
	Manganese (Mn)-Dissolved (mg/L)	0.560	0.121		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0152	0.00356		
	Nickel (Ni)-Dissolved (mg/L)	0.00197	0.00063		
	Potassium (K)-Dissolved (mg/L)	1.32	1.42		
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050		
	Silicon (Si)-Dissolved (mg/L)	5.05	4.67		
	Silver (Ag)-Dissolved (mg/L)	0.000012	<0.000020 ^{DLM}		
	Sodium (Na)-Dissolved (mg/L)	32.2	25.7		
	Strontium (Sr)-Dissolved (mg/L)	0.523	0.334		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00262	0.00184		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2448297-1, -2
Matrix Spike	Ammonia as N	MS-B	L2448297-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)



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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5094898							
WG3327249-2	LCS							
Acidity (as CaCO3)			105.8		%		85-115	21-MAY-20
WG3327249-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	21-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5092350							
WG3325534-14	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	17-MAY-20
WG3325534-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-MAY-20
Batch	R5094850							
WG3327204-5	LCS							
Alkalinity, Total (as CaCO3)			98.9		%		85-115	21-MAY-20
WG3327204-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-3	DUP	L2448297-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	22-MAY-20
WG3327554-2	LCS							
Beryllium (Be)-Dissolved			93.0		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	22-MAY-20
WG3327554-4	MS	L2448297-2						
Beryllium (Be)-Dissolved			95.8		%		70-130	22-MAY-20
BIC-CL								
	Water							
Batch	R5094850							
WG3327204-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-6	LCS							
Bromide (Br)			100.5		%		85-115	17-MAY-20
WG3328693-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095737							
WG3328297-11	DUP	L2448297-2						
Dissolved Organic Carbon		0.53	0.76	J	mg/L	0.22	1	24-MAY-20
WG3328297-10	LCS							
Dissolved Organic Carbon			96.1		%		80-120	24-MAY-20
WG3328297-6	LCS							
Dissolved Organic Carbon			99.4		%		80-120	24-MAY-20
WG3328297-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-12	MS	L2448297-2						
Dissolved Organic Carbon			97.4		%		70-130	24-MAY-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5095737							
WG3328297-11	DUP	L2448297-2						
Total Organic Carbon		0.69	0.65		mg/L	6.6	20	24-MAY-20
WG3328297-10	LCS							
Total Organic Carbon			87.6		%		80-120	24-MAY-20
WG3328297-6	LCS							
Total Organic Carbon			102.4		%		80-120	24-MAY-20
WG3328297-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-12	MS	L2448297-2						
Total Organic Carbon			111.6		%		70-130	24-MAY-20
CL-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-6	LCS							
Chloride (Cl)			102.8		%		90-110	17-MAY-20
WG3328693-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
CO3-CL								
	Water							
Batch	R5094850							
WG3327204-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-MAY-20
EC-L-PCT-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
EC-L-PCT-CL		Water							
Batch R5092350									
WG3325534-14	LCS								
Conductivity (@ 25C)			99.9		%		90-110	17-MAY-20	
WG3325534-13		MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-MAY-20	
Batch R5094850									
WG3327204-5	LCS								
Conductivity (@ 25C)			101.0		%		90-110	21-MAY-20	
WG3327204-4		MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-MAY-20	
F-IC-N-CL		Water							
Batch R5096943									
WG3328693-6	LCS								
Fluoride (F)			100.8		%		90-110	17-MAY-20	
WG3328693-5		MB							
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20	
HG-D-CVAA-VA		Water							
Batch R5093659									
WG3326352-2	LCS								
Mercury (Hg)-Dissolved			103.1		%		80-120	21-MAY-20	
WG3326352-1		MB							
Mercury (Hg)-Dissolved			<0.00005C		mg/L		0.000005	21-MAY-20	
MET-D-CCMS-VA		Water							
Batch R5095710									
WG3327554-3	DUP	L2448297-1							
Aluminum (Al)-Dissolved			<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	22-MAY-20
Antimony (Sb)-Dissolved			0.00013	0.00012		mg/L	4.1	20	22-MAY-20
Arsenic (As)-Dissolved			0.00073	0.00072		mg/L	1.0	20	22-MAY-20
Barium (Ba)-Dissolved			0.0579	0.0571		mg/L	1.4	20	22-MAY-20
Bismuth (Bi)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-MAY-20
Boron (B)-Dissolved			0.078	0.077		mg/L	0.1	20	22-MAY-20
Cadmium (Cd)-Dissolved			<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-MAY-20
Calcium (Ca)-Dissolved			53.6	51.4		mg/L	4.2	20	22-MAY-20
Chromium (Cr)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-MAY-20
Cobalt (Co)-Dissolved			0.00048	0.00048		mg/L	0.5	20	22-MAY-20
Copper (Cu)-Dissolved			<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-MAY-20
Iron (Fe)-Dissolved			0.356	0.371		mg/L	4.2	20	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-3	DUP	L2448297-1						
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-MAY-20
Lithium (Li)-Dissolved		0.0090	0.0090		mg/L	0.1	20	22-MAY-20
Magnesium (Mg)-Dissolved		26.0	25.8		mg/L	0.7	20	22-MAY-20
Manganese (Mn)-Dissolved		0.560	0.523		mg/L	6.9	20	22-MAY-20
Molybdenum (Mo)-Dissolved		0.0152	0.0153		mg/L	0.5	20	22-MAY-20
Nickel (Ni)-Dissolved		0.00197	0.00199		mg/L	0.8	20	22-MAY-20
Potassium (K)-Dissolved		1.32	1.29		mg/L	1.8	20	22-MAY-20
Selenium (Se)-Dissolved		<0.000050	0.000067	RPD-NA	mg/L	N/A	20	22-MAY-20
Silicon (Si)-Dissolved		5.05	5.05		mg/L	0.0	20	22-MAY-20
Silver (Ag)-Dissolved		0.000012	<0.000010	RPD-NA	mg/L	N/A	20	22-MAY-20
Sodium (Na)-Dissolved		32.2	32.5		mg/L	0.8	20	22-MAY-20
Strontium (Sr)-Dissolved		0.523	0.519		mg/L	0.8	20	22-MAY-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-MAY-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-MAY-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-MAY-20
Uranium (U)-Dissolved		0.00262	0.00263		mg/L	0.3	20	22-MAY-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-MAY-20
Zinc (Zn)-Dissolved		0.0015	0.0016		mg/L	4.7	20	22-MAY-20
WG3327554-2	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	22-MAY-20
Antimony (Sb)-Dissolved			94.6		%		80-120	22-MAY-20
Arsenic (As)-Dissolved			94.4		%		80-120	22-MAY-20
Barium (Ba)-Dissolved			94.5		%		80-120	22-MAY-20
Bismuth (Bi)-Dissolved			99.4		%		80-120	22-MAY-20
Boron (B)-Dissolved			87.3		%		80-120	22-MAY-20
Cadmium (Cd)-Dissolved			98.5		%		80-120	22-MAY-20
Calcium (Ca)-Dissolved			103.9		%		80-120	22-MAY-20
Chromium (Cr)-Dissolved			97.5		%		80-120	22-MAY-20
Cobalt (Co)-Dissolved			95.8		%		80-120	22-MAY-20
Copper (Cu)-Dissolved			94.6		%		80-120	22-MAY-20
Iron (Fe)-Dissolved			87.4		%		80-120	22-MAY-20
Lead (Pb)-Dissolved			95.2		%		80-120	22-MAY-20
Lithium (Li)-Dissolved			92.0		%		80-120	22-MAY-20
Magnesium (Mg)-Dissolved			90.7		%		80-120	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-2	LCS							
Manganese (Mn)-Dissolved			95.1		%		80-120	22-MAY-20
Molybdenum (Mo)-Dissolved			99.0		%		80-120	22-MAY-20
Nickel (Ni)-Dissolved			95.3		%		80-120	22-MAY-20
Potassium (K)-Dissolved			97.2		%		80-120	22-MAY-20
Selenium (Se)-Dissolved			101.9		%		80-120	22-MAY-20
Silicon (Si)-Dissolved			101.5		%		60-140	22-MAY-20
Silver (Ag)-Dissolved			98.9		%		80-120	22-MAY-20
Sodium (Na)-Dissolved			100.4		%		80-120	22-MAY-20
Strontium (Sr)-Dissolved			103.5		%		80-120	22-MAY-20
Thallium (Tl)-Dissolved			92.0		%		80-120	22-MAY-20
Tin (Sn)-Dissolved			96.6		%		80-120	22-MAY-20
Titanium (Ti)-Dissolved			86.8		%		80-120	22-MAY-20
Uranium (U)-Dissolved			98.3		%		80-120	22-MAY-20
Vanadium (V)-Dissolved			96.3		%		80-120	22-MAY-20
Zinc (Zn)-Dissolved			96.3		%		80-120	22-MAY-20
WG3327554-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20



Quality Control Report

Workorder: L2448297

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-1	MB	NP						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-MAY-20
WG3327554-4	MS	L2448297-2						
Aluminum (Al)-Dissolved			90.9		%		70-130	22-MAY-20
Antimony (Sb)-Dissolved			94.5		%		70-130	22-MAY-20
Arsenic (As)-Dissolved			96.1		%		70-130	22-MAY-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Bismuth (Bi)-Dissolved			88.1		%		70-130	22-MAY-20
Boron (B)-Dissolved			91.4		%		70-130	22-MAY-20
Cadmium (Cd)-Dissolved			94.3		%		70-130	22-MAY-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Chromium (Cr)-Dissolved			92.9		%		70-130	22-MAY-20
Cobalt (Co)-Dissolved			89.3		%		70-130	22-MAY-20
Copper (Cu)-Dissolved			87.8		%		70-130	22-MAY-20
Iron (Fe)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Lead (Pb)-Dissolved			92.2		%		70-130	22-MAY-20
Lithium (Li)-Dissolved			97.1		%		70-130	22-MAY-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Molybdenum (Mo)-Dissolved			96.2		%		70-130	22-MAY-20
Nickel (Ni)-Dissolved			86.6		%		70-130	22-MAY-20
Potassium (K)-Dissolved			92.7		%		70-130	22-MAY-20
Selenium (Se)-Dissolved			103.3		%		70-130	22-MAY-20
Silicon (Si)-Dissolved			87.5		%		70-130	22-MAY-20



Quality Control Report

Workorder: L2448297

Report Date: 24-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095710							
WG3327554-4	MS	L2448297-2						
Sodium (Na)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	22-MAY-20
Thallium (Tl)-Dissolved			90.8		%		70-130	22-MAY-20
Tin (Sn)-Dissolved			92.4		%		70-130	22-MAY-20
Titanium (Ti)-Dissolved			87.0		%		70-130	22-MAY-20
Uranium (U)-Dissolved			97.7		%		70-130	22-MAY-20
Vanadium (V)-Dissolved			92.4		%		70-130	22-MAY-20
Zinc (Zn)-Dissolved			90.7		%		70-130	22-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5098750							
WG3329264-6	LCS							
Ammonia as N			102.1		%		85-115	26-MAY-20
WG3329264-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-6	LCS							
Nitrite (as N)			101.7		%		90-110	17-MAY-20
WG3328693-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-6	LCS							
Nitrate (as N)			103.4		%		90-110	17-MAY-20
WG3328693-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-MAY-20
OH-CL								
	Water							
Batch	R5094850							
WG3327204-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-MAY-20
ORP-CL								
	Water							
Batch	R5097520							
WG3328944-5	CRM	CL-ORP						
ORP			224		mV		210-230	26-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL		Water						
Batch	R5090848							
WG3324610-29	LCS							
Phosphorus (P)-Total			101.0		%		80-120	16-MAY-20
WG3324610-33	LCS							
Phosphorus (P)-Total			101.6		%		80-120	16-MAY-20
WG3324610-28	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-20
WG3324610-32	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-20
P-TD-L-COL-CL		Water						
Batch	R5090848							
WG3324610-29	LCS							
Phosphorus (P)-Total Dissolved			101.0		%		80-120	16-MAY-20
WG3324610-33	LCS							
Phosphorus (P)-Total Dissolved			101.6		%		80-120	16-MAY-20
WG3324610-28	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-MAY-20
WG3324610-32	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-MAY-20
PH-CL		Water						
Batch	R5092350							
WG3325534-14	LCS							
pH			6.98		pH		6.9-7.1	17-MAY-20
Batch	R5094850							
WG3327204-5	LCS							
pH			6.99		pH		6.9-7.1	21-MAY-20
PO4-DO-L-COL-CL		Water						
Batch	R5088258							
WG3324035-19	LCS							
Orthophosphate-Dissolved (as P)			102.1		%		80-120	15-MAY-20
WG3324035-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-MAY-20
SO4-IC-N-CL		Water						
Batch	R5096943							
WG3328693-6	LCS							
Sulfate (SO4)			104.5		%		90-110	17-MAY-20
WG3328693-5	MB							



Quality Control Report

Workorder: L2448297

Report Date: 24-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch	R5096943							
WG3328693-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
SOLIDS-TDS-CL								
Batch	R5095263							
WG3326604-6	DUP	L2448297-2						
Total Dissolved Solids		496	472		mg/L	5.1	20	21-MAY-20
WG3326604-5	LCS							
Total Dissolved Solids			100.3		%		85-115	21-MAY-20
WG3326604-4	MB							
Total Dissolved Solids			<10		mg/L		10	21-MAY-20
TKN-L-F-CL								
Batch	R5096876							
WG3328687-13	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	25-MAY-20
WG3328687-17	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	25-MAY-20
WG3328687-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	25-MAY-20
WG3328687-21	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	25-MAY-20
WG3328687-25	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	25-MAY-20
WG3328687-5	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	25-MAY-20
WG3328687-9	LCS							
Total Kjeldahl Nitrogen			86.0		%		75-125	25-MAY-20
WG3328687-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-24	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-4	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5096876							
WG3328687-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
TSS-L-CL	Water							
Batch	R5095261							
WG3326544-5 LCS								
Total Suspended Solids			108.5		%		85-115	21-MAY-20
WG3326544-4 MB								
Total Suspended Solids			<1.0		mg/L		1	21-MAY-20
TURBIDITY-CL	Water							
Batch	R5089048							
WG3324774-20 LCS								
Turbidity			104.0		%		85-115	16-MAY-20
WG3324774-19 MB								
Turbidity			<0.10		NTU		0.1	16-MAY-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2448297

Report Date: 24-JUN-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	14-MAY-20 12:55	26-MAY-20 09:30	0.25	285	hours	EHTR-FM
	2	14-MAY-20 13:20	26-MAY-20 09:30	0.25	284	hours	EHTR-FM
pH	1	14-MAY-20 12:55	21-MAY-20 13:00	0.25	168	hours	EHTR-FM
	2	14-MAY-20 13:20	17-MAY-20 13:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2448297 were received on 15-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200514Q2GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.heckett@teck.com					
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com					
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com					
Address	RR#1 HWY# 3							Email 4:	tecklabresults@harpoon.teck.com					
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	teckcoal@equisonline.com					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada							
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678872					

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	RESERVED	No	Yes	Yes	No	No	No	No	No	Yes	Yes		
								ASAP	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MCGWD_WG_2020_Q2_NP	EV_MCGWD	WG	N	5/14/2020	12:55	G	5		1	1	1			1	1					
EV_MCGWS_WS_2020_Q2_NP	EV_MCGWS	WG	N	5/14/2020	13:20	G	5		1	1	1			1	1					
							Total													10

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	May 14, 2020		5/18/20
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Heather Stevenson	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	May 14, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

6



SNC-Lavalin
ATTN: Kirsti Medig
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 20-MAY-20
Report Date: 28-MAY-20 16:25 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2450041
Project P.O. #: 672225
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2450041-1 WG 19-MAY-20 11:40 EV_MW_SP1A_W G_2020_05_19_NP	L2450041-2 WG 19-MAY-20 13:15 EV_MW_SP1B_W G_2020_05_19_NP	L2450041-3 WG 19-MAY-20 10:20 EV_MW_SP1C_W G_2020_05_19_NP	L2450041-4 WG 19-MAY-20 15:10 EV_MW_MCGWB_ WG_2020_05_19_ NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	489	319	319	594
	Hardness (as CaCO3) (mg/L)	335	257	246	432
	pH (pH)	8.33	8.27	8.27	8.11
	ORP (mV)	430	387	454	422
	Total Suspended Solids (mg/L)	1.5	<1.0	9.5	<1.0
	Total Dissolved Solids (mg/L)	348 ^{DLHC}	310 ^{DLHC}	300 ^{DLHC}	472 ^{DLHC}
	Turbidity (NTU)	12.1	0.18	3.80	0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	3.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	285	165	164	301
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	291	165	164	301
	Ammonia as N (mg/L)	0.829 ^{DLHC}	0.0076	0.0086	<0.0050
	Bicarbonate (HCO3) (mg/L)	348	202	200	367
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.182
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	3.58	7.39	18.3	36.5
	Fluoride (F) (mg/L)	0.313	0.105	0.076	0.171
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	112	107	112	116
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.583	0.319	2.29
	Nitrate (as N) (mg/L)	<0.0050	0.583	0.319	2.29
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.740	0.217	0.120	0.173 ^{TKNI}
	Total Nitrogen (mg/L)	0.740	0.800	0.439	2.46
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0030 ^{RRV}	0.0028	0.0051 ^{RRV}
	Phosphorus (P)-Total (mg/L)	0.0084 ^{RRV}	<0.0020 ^{RRV}	0.0031 ^{RRV}	<0.0020 ^{RRV}
	Sulfate (SO4) (mg/L)	31.2	71.6	45.5	39.0
	Anion Sum (meq/L)	6.59	5.05	4.76	8.02
	Cation Sum (meq/L)	7.38	5.39	5.32	9.32
	Cation - Anion Balance (%)	5.7	3.3	5.5	7.5
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0010	<0.0010	<0.0010	0.0019

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2450041-1 WG 19-MAY-20 11:40 EV_MW_SP1A_W G_2020_05_19_NP	L2450041-2 WG 19-MAY-20 13:15 EV_MW_SP1B_W G_2020_05_19_NP	L2450041-3 WG 19-MAY-20 10:20 EV_MW_SP1C_W G_2020_05_19_NP	L2450041-4 WG 19-MAY-20 15:10 EV_MW_MCGWB_ WG_2020_05_19_ NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00012	<0.00010	0.00013	0.00012
	Barium (Ba)-Dissolved (mg/L)	2.54 ^{DLHC}	0.185	0.164	0.271
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.030	<0.010	<0.010	0.040
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.0000114	0.0000461	0.0000737
	Calcium (Ca)-Dissolved (mg/L)	83.9	68.0	66.3	114
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	0.00013	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00011
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	0.00031
	Iron (Fe)-Dissolved (mg/L)	0.942	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.120	0.0066	0.0086	0.0169
	Magnesium (Mg)-Dissolved (mg/L)	30.5	21.2	19.4	36.1
	Manganese (Mn)-Dissolved (mg/L)	0.0673	0.00078	0.00089	0.00364
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000314	0.000754	0.000849	0.00348
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00164
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.85	0.68	0.80	2.37
	Selenium (Se)-Dissolved (mg/L)	0.000347	0.00504	0.00266	0.00117
	Silicon (Si)-Dissolved (mg/L)	3.18	2.37	2.61	4.86
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	11.0	5.45	8.94	14.3
	Strontium (Sr)-Dissolved (mg/L)	0.359	0.149	0.155	0.325
	Sulfur (S)-Dissolved (mg/L)	12.6	25.4	15.9	14.1
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000017
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000053	0.000725	0.000686	0.000672
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0011
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2450041-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2450041-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2450041-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2450041-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2450041-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2450041

Report Date: 28-MAY-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Kirsti Medig

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5095404							
WG3327856-11	LCS							
Acidity (as CaCO3)			107.0		%		85-115	22-MAY-20
WG3327856-10	MB							
Acidity (as CaCO3)			1.9		mg/L		2	22-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5095393							
WG3327834-14	LCS							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	22-MAY-20
WG3327834-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-MAY-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5098814							
WG3329361-10	LCS	TMRM						
Beryllium (Be)-Dissolved			104.1		%		80-120	26-MAY-20
WG3329361-6	LCS	TMRM						
Beryllium (Be)-Dissolved			104.6		%		80-120	26-MAY-20
WG3329361-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-MAY-20
WG3329361-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-MAY-20
BIC-CL								
	Water							
Batch	R5095393							
WG3327834-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5099539							
WG3330277-2	LCS							
Bromide (Br)			106.6		%		85-115	22-MAY-20
WG3330277-6	LCS							
Bromide (Br)			113.7		%		85-115	22-MAY-20
WG3330277-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-MAY-20
WG3330277-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5098277							
WG3329091-6	LCS							
Dissolved Organic Carbon			89.2		%		80-120	25-MAY-20
WG3329091-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-MAY-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5098277							
WG3329091-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	25-MAY-20
CL-IC-N-CL	Water							
Batch	R5099539							
WG3330277-2	LCS							
Chloride (Cl)			105.3		%		90-110	22-MAY-20
WG3330277-6	LCS							
Chloride (Cl)			107.4		%		90-110	22-MAY-20
WG3330277-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-MAY-20
WG3330277-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-MAY-20
CO3-CL	Water							
Batch	R5095393							
WG3327834-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	22-MAY-20
EC-L-PCT-CL	Water							
Batch	R5095393							
WG3327834-14	LCS							
Conductivity (@ 25C)			96.9		%		90-110	22-MAY-20
WG3327834-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-MAY-20
F-IC-N-CL	Water							
Batch	R5099539							
WG3330277-2	LCS							
Fluoride (F)			99.0		%		90-110	22-MAY-20
WG3330277-6	LCS							
Fluoride (F)			98.5		%		90-110	22-MAY-20
WG3330277-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
	Water							
Batch	R5099539							
WG3330277-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	22-MAY-20
WG3330277-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	22-MAY-20
HG-D-CVAA-CL								
	Water							
Batch	R5096716							
WG3328612-10	LCS							
Mercury (Hg)-Dissolved			103.0		%		80-120	25-MAY-20
WG3328612-9	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-MAY-20
MET-D-CCMS-CL								
	Water							
Batch	R5098814							
WG3329361-10	LCS	TMRM						
Aluminum (Al)-Dissolved			105.6		%		80-120	26-MAY-20
Antimony (Sb)-Dissolved			110.3		%		80-120	26-MAY-20
Arsenic (As)-Dissolved			105.0		%		80-120	26-MAY-20
Barium (Ba)-Dissolved			103.2		%		80-120	26-MAY-20
Bismuth (Bi)-Dissolved			100.5		%		80-120	26-MAY-20
Boron (B)-Dissolved			94.5		%		80-120	26-MAY-20
Cadmium (Cd)-Dissolved			102.9		%		80-120	26-MAY-20
Calcium (Ca)-Dissolved			100.5		%		80-120	26-MAY-20
Chromium (Cr)-Dissolved			101.5		%		80-120	26-MAY-20
Cobalt (Co)-Dissolved			104.2		%		80-120	26-MAY-20
Copper (Cu)-Dissolved			104.5		%		80-120	26-MAY-20
Iron (Fe)-Dissolved			94.6		%		80-120	26-MAY-20
Lead (Pb)-Dissolved			101.8		%		80-120	26-MAY-20
Lithium (Li)-Dissolved			100.6		%		80-120	26-MAY-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	26-MAY-20
Manganese (Mn)-Dissolved			106.6		%		80-120	26-MAY-20
Molybdenum (Mo)-Dissolved			103.1		%		80-120	26-MAY-20
Nickel (Ni)-Dissolved			103.8		%		80-120	26-MAY-20
Phosphorus (P)-Dissolved			113.0		%		70-130	26-MAY-20
Potassium (K)-Dissolved			100.6		%		80-120	26-MAY-20
Selenium (Se)-Dissolved			102.2		%		80-120	26-MAY-20
Silicon (Si)-Dissolved			101.4		%		60-140	26-MAY-20
Silver (Ag)-Dissolved			96.2		%		80-120	26-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL	Water							
Batch	R5098814							
WG3329361-10 LCS		TMRM						
Sodium (Na)-Dissolved			102.1		%		80-120	26-MAY-20
Strontium (Sr)-Dissolved			96.7		%		80-120	26-MAY-20
Sulfur (S)-Dissolved			98.7		%		80-120	26-MAY-20
Thallium (Tl)-Dissolved			102.1		%		80-120	26-MAY-20
Tin (Sn)-Dissolved			104.1		%		80-120	26-MAY-20
Titanium (Ti)-Dissolved			99.0		%		80-120	26-MAY-20
Uranium (U)-Dissolved			96.0		%		80-120	26-MAY-20
Vanadium (V)-Dissolved			105.2		%		80-120	26-MAY-20
Zinc (Zn)-Dissolved			104.0		%		80-120	26-MAY-20
Zirconium (Zr)-Dissolved			94.8		%		80-120	26-MAY-20
WG3329361-6 LCS		TMRM						
Aluminum (Al)-Dissolved			106.9		%		80-120	26-MAY-20
Antimony (Sb)-Dissolved			112.2		%		80-120	26-MAY-20
Arsenic (As)-Dissolved			105.3		%		80-120	26-MAY-20
Barium (Ba)-Dissolved			106.6		%		80-120	26-MAY-20
Bismuth (Bi)-Dissolved			101.6		%		80-120	26-MAY-20
Boron (B)-Dissolved			92.9		%		80-120	26-MAY-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	26-MAY-20
Calcium (Ca)-Dissolved			102.8		%		80-120	26-MAY-20
Chromium (Cr)-Dissolved			102.1		%		80-120	26-MAY-20
Cobalt (Co)-Dissolved			103.1		%		80-120	26-MAY-20
Copper (Cu)-Dissolved			103.2		%		80-120	26-MAY-20
Iron (Fe)-Dissolved			95.3		%		80-120	26-MAY-20
Lead (Pb)-Dissolved			103.6		%		80-120	26-MAY-20
Lithium (Li)-Dissolved			103.8		%		80-120	26-MAY-20
Magnesium (Mg)-Dissolved			106.0		%		80-120	26-MAY-20
Manganese (Mn)-Dissolved			104.4		%		80-120	26-MAY-20
Molybdenum (Mo)-Dissolved			105.6		%		80-120	26-MAY-20
Nickel (Ni)-Dissolved			101.1		%		80-120	26-MAY-20
Phosphorus (P)-Dissolved			108.6		%		70-130	26-MAY-20
Potassium (K)-Dissolved			103.3		%		80-120	26-MAY-20
Selenium (Se)-Dissolved			102.5		%		80-120	26-MAY-20
Silicon (Si)-Dissolved			104.5		%		60-140	26-MAY-20
Silver (Ag)-Dissolved			98.2		%		80-120	26-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5098814							
WG3329361-6	LCS	TMRM						
Sodium (Na)-Dissolved			104.0		%		80-120	26-MAY-20
Strontium (Sr)-Dissolved			106.9		%		80-120	26-MAY-20
Sulfur (S)-Dissolved			107.4		%		80-120	26-MAY-20
Thallium (Tl)-Dissolved			103.8		%		80-120	26-MAY-20
Tin (Sn)-Dissolved			106.1		%		80-120	26-MAY-20
Titanium (Ti)-Dissolved			97.4		%		80-120	26-MAY-20
Uranium (U)-Dissolved			96.2		%		80-120	26-MAY-20
Vanadium (V)-Dissolved			103.5		%		80-120	26-MAY-20
Zinc (Zn)-Dissolved			99.4		%		80-120	26-MAY-20
Zirconium (Zr)-Dissolved			97.9		%		80-120	26-MAY-20
WG3329361-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-MAY-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20



Quality Control Report

Workorder: L2450041

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5098814							
WG3329361-5 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
WG3329361-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-MAY-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5098814							
WG3329361-9	MB							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	26-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-MAY-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	26-MAY-20
NH3-L-F-CL		Water						
Batch	R5098750							
WG3329264-30	LCS							
Ammonia as N			97.5		%		85-115	26-MAY-20
WG3329264-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
NO2-L-IC-N-CL		Water						
Batch	R5099539							
WG3330277-2	LCS							
Nitrite (as N)			105.8		%		90-110	22-MAY-20
WG3330277-6	LCS							
Nitrite (as N)			105.4		%		90-110	22-MAY-20
WG3330277-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-MAY-20
WG3330277-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-MAY-20
NO3-L-IC-N-CL		Water						
Batch	R5099539							
WG3330277-2	LCS							
Nitrate (as N)			103.9		%		90-110	22-MAY-20
WG3330277-6	LCS							
Nitrate (as N)			108.8		%		90-110	22-MAY-20
WG3330277-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-MAY-20
WG3330277-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5095393							
WG3327834-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	22-MAY-20
ORP-CL	Water							
Batch	R5099365							
WG3330015-9 CRM		CL-ORP						
ORP			225		mV		210-230	27-MAY-20
P-T-L-COL-CL	Water							
Batch	R5095081							
WG3327403-18 LCS								
Phosphorus (P)-Total			94.2		%		80-120	22-MAY-20
WG3327403-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-MAY-20
PH-CL	Water							
Batch	R5095393							
WG3327834-14 LCS								
pH			6.98		pH		6.9-7.1	22-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5094759							
WG3326869-9 LCS								
Orthophosphate-Dissolved (as P)			103.7		%		80-120	21-MAY-20
WG3326869-2 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-MAY-20
SO4-IC-N-CL	Water							
Batch	R5099539							
WG3330277-2 LCS								
Sulfate (SO4)			104.9		%		90-110	22-MAY-20
WG3330277-6 LCS								
Sulfate (SO4)			109.1		%		90-110	22-MAY-20
WG3330277-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-MAY-20
WG3330277-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-MAY-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5098839							
WG3328701-5	LCS							
Total Dissolved Solids			103.6		%		85-115	25-MAY-20
WG3328701-8	LCS							
Total Dissolved Solids			100.4		%		85-115	25-MAY-20
WG3328701-4	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAY-20
WG3328701-7	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAY-20
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-10	LCS							
Total Kjeldahl Nitrogen			79.0		%		75-125	27-MAY-20
WG3330275-14	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-18	LCS							
Total Kjeldahl Nitrogen			84.0		%		75-125	27-MAY-20
WG3330275-2	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	27-MAY-20
WG3330275-22	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-28	LCS							
Total Kjeldahl Nitrogen			84.5		%		75-125	27-MAY-20
WG3330275-32	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	27-MAY-20
WG3330275-36	LCS							
Total Kjeldahl Nitrogen			86.7		%		75-125	27-MAY-20
WG3330275-40	LCS							
Total Kjeldahl Nitrogen			88.8		%		75-125	27-MAY-20
WG3330275-6	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	27-MAY-20
WG3330275-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-27	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-39 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
TSS-L-CL		Water						
Batch	R5098811							
WG3328694-4 LCS								
Total Suspended Solids			100.4		%		85-115	25-MAY-20
WG3328694-6 LCS								
Total Suspended Solids			104.6		%		85-115	25-MAY-20
WG3328694-3 MB								
Total Suspended Solids			<1.0		mg/L		1	25-MAY-20
WG3328694-5 MB								
Total Suspended Solids			<1.0		mg/L		1	25-MAY-20
TURBIDITY-CL		Water						
Batch	R5095528							
WG3327684-11 LCS								
Turbidity			104.5		%		85-115	22-MAY-20
WG3327684-8 LCS								
Turbidity			104.0		%		85-115	22-MAY-20
WG3327684-10 MB								
Turbidity			<0.10		NTU		0.1	22-MAY-20
WG3327684-7 MB								
Turbidity			<0.10		NTU		0.1	22-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	19-MAY-20 11:40	27-MAY-20 07:45	0.25	188	hours	EHTR-FM
	2	19-MAY-20 13:15	27-MAY-20 07:45	0.25	186	hours	EHTR-FM
	3	19-MAY-20 10:20	27-MAY-20 07:45	0.25	189	hours	EHTR-FM
	4	19-MAY-20 15:10	27-MAY-20 07:45	0.25	185	hours	EHTR-FM
pH							
	1	19-MAY-20 11:40	22-MAY-20 13:00	0.25	73	hours	EHTR-FM
	2	19-MAY-20 13:15	22-MAY-20 13:00	0.25	72	hours	EHTR-FM
	3	19-MAY-20 10:20	22-MAY-20 13:00	0.25	75	hours	EHTR-FM
	4	19-MAY-20 15:10	22-MAY-20 13:00	0.25	70	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450041 were received on 20-MAY-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2450041-COFC

COC Number: 20 -

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Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																										
Company: SNC-Lavalin ~Cranbrook		Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																										
Contact: Kirsti Medig		Quality Control (QC) Report with Report <input type="checkbox"/> NO		PRIORITY (Business Days)		EMERGENCY																								
Phone: Cell.: 250.421.9408		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>																								
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>																								
Street: 4500 Mennie Road		Emails: SNC - 'Kirsti.Medig', 'Vicky.Lipinski'		Date and Time Required for all E&P TATs:																										
City/Province: Cranbrook, BC		@snclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																										
Postal Code: V1C 4J6		Teck - 'Cam.Jaeger', 'Jennifer.DeWerk' @teck.com		Analysis Request																										
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																										
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P	P	F/P			P																					
Company:		Emails: Kirsti.Medig@snclavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS														
Contact:		payables@snclavalin.com																												
Project Information		Oil and Gas Required Fields (client use)																												
ALS Account # / Quote #:		AFE/Cost Center:																												
Job #: RGMP		Major/Minor Code:																												
PO / AFE: 67225 67225		Requisitioner:																												
LSD:		Location:																												
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784															Sampler: MTB													
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)															Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type							
	EV_MW_SP1A_WG_2020_05_19_NP	EV_MW_SP1A															19-MAY-20		11:40		Water		R	R	R	R	R	R	R	R
	EV_MW_SP1B_WG_2020_05_19_NP	EV_MW_SP1B		19-MAY-20		13:15		Water		R	R	R	R	R	R	R	R													
	EV_MW_SP1C_WG_2020_05_19_NP	EV_MW_SP1C		19-MAY-20		10:20		Water		R	R	R	R	R	R	R	R													
	EV_MW_MCgWA_WG_2020_05_19_NP	EV_MW_MCgWA		19-MAY-20		15:10		Water		R	R	R	R	R	R	R	R													
	EV_MW_MCgWB_WG_2020_05_19_NP	EV_MW_MCgWB		19-MAY-20		15:10		Water		R	R	R	R	R	R	R	R													
	LC_MW_ER4A_WG_2020_05_19_NP	LC_MW_ER4A		19-MAY-20		15:10		Water		R	R	R	R	R	R	R	R													
	LC_MW_ER4B_WG_2020_05_19_NP	LC_MW_ER4B		19-MAY-20		15:10		Water		R	R	R	R	R	R	R	R													

Drinking Water (DW) Samples (client use) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Are samples taken from a Regulated DW System? PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com

Are samples for human consumption/ use? Teck Facility Name: Regional FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS

SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only)

Released by: MARC BEATON Date: MAY 19 2020 Time: 16:30 Received by: [Signature] Date: [Signature] Time: [Signature]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin
ATTN: Kirsti Medig
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 21-MAY-20
Report Date: 29-MAY-20 15:37 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2450173
Project P.O. #: 672225
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2450173-1 WG 20-MAY-20 12:45 EV_MW_MCGWA_ WG_2020_05_20_ NP	L2450173-2 WG 20-MAY-20 10:55 LC_MW_ER4A_W G_2020_05_20_NP	L2450173-3 WG 20-MAY-20 09:45 LC_MW_ER4B_W G_2020_05_20_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	493	323	350		
	Hardness (as CaCO3) (mg/L)	354	248	278		
	pH (pH)	7.94	8.17	8.18		
	ORP (mV)	447	318	498		
	Total Suspended Solids (mg/L)	6.0	2.3	<1.0		
	Total Dissolved Solids (mg/L)	393 ^{DLHC}	304 ^{DLHC}	326 ^{DLHC}		
	Turbidity (NTU)	5.10	2.16	0.13		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.8	2.6	3.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	247	161	187		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	247	161	187		
	Ammonia as N (mg/L)	0.0133	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	301	196	228		
	Bromide (Br) (mg/L)	0.155	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	36.9	2.26	2.35		
	Fluoride (F) (mg/L)	0.187	0.151	0.145		
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	116	98.0	97.1		
	Nitrate and Nitrite (as N) (mg/L)	1.06	<0.0051	3.07		
	Nitrate (as N) (mg/L)	1.04	<0.0050	3.07		
	Nitrite (as N) (mg/L)	0.0123	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.252	<0.050	0.059 ^{TKNI}		
	Total Nitrogen (mg/L)	1.31	<0.050	3.13		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0024	<0.0010	0.0014		
	Phosphorus (P)-Total (mg/L)	0.0064	0.0035	<0.0020		
	Sulfate (SO4) (mg/L)	26.6	92.2	86.9		
	Anion Sum (meq/L)	6.62	5.21	5.84		
	Cation Sum (meq/L)	7.68	5.10	5.67		
	Cation - Anion Balance (%)	7.4	-1.0	-1.4		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0021	0.0011	0.0012		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2450173-1	L2450173-2	L2450173-3
		Description	WG	WG	WG
		Sampled Date	20-MAY-20	20-MAY-20	20-MAY-20
		Sampled Time	12:45	10:55	09:45
		Client ID	EV_MW_MCGWA_ WG_2020_05_20_ NP	LC_MW_ER4A_W G_2020_05_20_NP	LC_MW_ER4B_W G_2020_05_20_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)		0.00119	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00039	0.00122	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.354	0.0578	0.0787
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.032	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000457	<0.0000050	0.0000129
	Calcium (Ca)-Dissolved (mg/L)		89.5	68.3	73.6
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00014
	Cobalt (Co)-Dissolved (mg/L)		0.00041	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.255	<0.010
	Lead (Pb)-Dissolved (mg/L)		0.000102	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0228	0.0054	0.0076
	Magnesium (Mg)-Dissolved (mg/L)		31.6	18.9	22.9
	Manganese (Mn)-Dissolved (mg/L)		0.0528	0.0586	0.00045
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00484	0.00376	0.00102
	Nickel (Ni)-Dissolved (mg/L)		0.00206	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		2.19	0.51	0.42
	Selenium (Se)-Dissolved (mg/L)		0.00252	0.000093	0.0163
	Silicon (Si)-Dissolved (mg/L)		4.88	2.55	1.96
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		12.7	2.60	2.52
	Strontium (Sr)-Dissolved (mg/L)		0.418	0.281	0.242
	Sulfur (S)-Dissolved (mg/L)		9.94	30.8	28.9
	Thallium (Tl)-Dissolved (mg/L)		0.000020	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		0.00015	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00117	0.000450	0.00116
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0026	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2450173-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2450173-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

Page 1 of 10

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Kirsti Medig

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5095404							
WG3327856-14	LCS							
Acidity (as CaCO3)			103.3		%		85-115	22-MAY-20
WG3327856-13	MB							
Acidity (as CaCO3)			1.6		mg/L		2	22-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5097136							
WG3328697-5	LCS							
Alkalinity, Total (as CaCO3)			105.6		%		85-115	24-MAY-20
WG3328697-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-MAY-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5099432							
WG3330117-2	LCS	TMRM						
Beryllium (Be)-Dissolved			101.3		%		80-120	27-MAY-20
WG3330117-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-MAY-20
BIC-CL								
	Water							
Batch	R5097136							
WG3328697-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5098769							
WG3329308-6	LCS							
Bromide (Br)			102.8		%		85-115	23-MAY-20
WG3329308-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5099191							
WG3329869-10	LCS							
Dissolved Organic Carbon			92.7		%		80-120	26-MAY-20
WG3329869-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5099191							
WG3329869-10 LCS								
Total Organic Carbon			96.3		%		80-120	26-MAY-20
WG3329869-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
CL-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6 LCS								
Chloride (Cl)			100.9		%		90-110	23-MAY-20
WG3329308-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-MAY-20
CO3-CL	Water							
Batch	R5097136							
WG3328697-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-MAY-20
EC-L-PCT-CL	Water							
Batch	R5097136							
WG3328697-5 LCS								
Conductivity (@ 25C)			93.1		%		90-110	24-MAY-20
WG3328697-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-MAY-20
F-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6 LCS								
Fluoride (F)			104.7		%		90-110	23-MAY-20
WG3329308-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-MAY-20
HG-D-CVAA-CL	Water							
Batch	R5098787							
WG3329359-2 LCS								
Mercury (Hg)-Dissolved			109.0		%		80-120	26-MAY-20
WG3329359-6 LCS								
Mercury (Hg)-Dissolved			112.0		%		80-120	26-MAY-20
WG3329359-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-MAY-20
WG3329359-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-MAY-20



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5099432							
WG3330117-2	LCS	TMRM						
Aluminum (Al)-Dissolved			103.9		%		80-120	27-MAY-20
Antimony (Sb)-Dissolved			100.8		%		80-120	27-MAY-20
Arsenic (As)-Dissolved			102.6		%		80-120	27-MAY-20
Barium (Ba)-Dissolved			105.3		%		80-120	27-MAY-20
Bismuth (Bi)-Dissolved			102.6		%		80-120	27-MAY-20
Boron (B)-Dissolved			88.6		%		80-120	27-MAY-20
Cadmium (Cd)-Dissolved			104.5		%		80-120	27-MAY-20
Calcium (Ca)-Dissolved			100.9		%		80-120	27-MAY-20
Chromium (Cr)-Dissolved			101.3		%		80-120	27-MAY-20
Cobalt (Co)-Dissolved			103.4		%		80-120	27-MAY-20
Copper (Cu)-Dissolved			101.5		%		80-120	27-MAY-20
Iron (Fe)-Dissolved			108.1		%		80-120	27-MAY-20
Lead (Pb)-Dissolved			103.0		%		80-120	27-MAY-20
Lithium (Li)-Dissolved			101.0		%		80-120	27-MAY-20
Magnesium (Mg)-Dissolved			103.6		%		80-120	27-MAY-20
Manganese (Mn)-Dissolved			105.0		%		80-120	27-MAY-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	27-MAY-20
Nickel (Ni)-Dissolved			101.3		%		80-120	27-MAY-20
Phosphorus (P)-Dissolved			104.8		%		70-130	27-MAY-20
Potassium (K)-Dissolved			100.9		%		80-120	27-MAY-20
Selenium (Se)-Dissolved			100.4		%		80-120	27-MAY-20
Silicon (Si)-Dissolved			101.6		%		60-140	27-MAY-20
Silver (Ag)-Dissolved			101.5		%		80-120	27-MAY-20
Sodium (Na)-Dissolved			99.9		%		80-120	27-MAY-20
Strontium (Sr)-Dissolved			102.7		%		80-120	27-MAY-20
Sulfur (S)-Dissolved			95.1		%		80-120	27-MAY-20
Thallium (Tl)-Dissolved			102.6		%		80-120	27-MAY-20
Tin (Sn)-Dissolved			101.8		%		80-120	27-MAY-20
Titanium (Ti)-Dissolved			103.6		%		80-120	27-MAY-20
Uranium (U)-Dissolved			104.8		%		80-120	27-MAY-20
Vanadium (V)-Dissolved			102.8		%		80-120	27-MAY-20
Zinc (Zn)-Dissolved			103.6		%		80-120	27-MAY-20
Zirconium (Zr)-Dissolved			99.3		%		80-120	27-MAY-20
WG3330117-1	MB							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5099432							
WG3330117-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-MAY-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-MAY-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	27-MAY-20

NH3-L-F-CL

Water



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5099747								
WG3330212-38	LCS							
Ammonia as N			100.7		%		85-115	27-MAY-20
WG3330212-54	LCS							
Ammonia as N			98.8		%		85-115	27-MAY-20
WG3330212-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
WG3330212-53	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
NO2-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrite (as N)			98.5		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-MAY-20
NO3-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrate (as N)			102.0		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-MAY-20
OH-CL								
Water								
Batch R5097136								
WG3328697-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-MAY-20
ORP-CL								
Water								
Batch R5100136								
WG3330985-1	CRM	CL-ORP						
ORP			224		mV		210-230	28-MAY-20
P-T-L-COL-CL								
Water								
Batch R5098761								
WG3329209-6	LCS							
Phosphorus (P)-Total			107.9		%		80-120	26-MAY-20
WG3329209-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-MAY-20
PH-CL								
Water								



Quality Control Report

Workorder: L2450173

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5097136							
WG3328697-5	LCS							
pH			6.98		pH		6.9-7.1	24-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5094759							
WG3326869-15	LCS							
Orthophosphate-Dissolved (as P)			107.5		%		80-120	21-MAY-20
WG3326869-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-MAY-20
SO4-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6	LCS							
Sulfate (SO4)			104.6		%		90-110	23-MAY-20
WG3329308-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5099604							
WG3328958-21	DUP	L2450173-1						
Total Dissolved Solids		393	415		mg/L	5.6	20	26-MAY-20
WG3328958-20	LCS							
Total Dissolved Solids			102.8		%		85-115	26-MAY-20
WG3328958-19	MB							
Total Dissolved Solids			<10		mg/L		10	26-MAY-20
TKN-L-F-CL	Water							
Batch	R5099526							
WG3330275-10	LCS							
Total Kjeldahl Nitrogen			79.0		%		75-125	27-MAY-20
WG3330275-14	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-18	LCS							
Total Kjeldahl Nitrogen			84.0		%		75-125	27-MAY-20
WG3330275-2	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	27-MAY-20
WG3330275-22	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-28	LCS							
Total Kjeldahl Nitrogen			84.5		%		75-125	27-MAY-20
WG3330275-32	LCS							



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-32	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	27-MAY-20
WG3330275-36	LCS							
Total Kjeldahl Nitrogen			86.7		%		75-125	27-MAY-20
WG3330275-40	LCS							
Total Kjeldahl Nitrogen			88.8		%		75-125	27-MAY-20
WG3330275-6	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	27-MAY-20
WG3330275-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-31	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-39	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
TSS-L-CL		Water						
Batch	R5099537							
WG3328959-14	LCS							
Total Suspended Solids			105.1		%		85-115	26-MAY-20
WG3328959-13	MB							
Total Suspended Solids			<1.0		mg/L		1	26-MAY-20
TURBIDITY-CL		Water						



Quality Control Report

Workorder: L2450173

Report Date: 29-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5095522							
WG3327876-5	LCS							
Turbidity			103.5		%		85-115	23-MAY-20
WG3327876-4	MB							
Turbidity			<0.10		NTU		0.1	23-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-MAY-20 12:45	28-MAY-20 06:30	0.25	186	hours	EHTR-FM
	2	20-MAY-20 10:55	28-MAY-20 06:30	0.25	188	hours	EHTR-FM
	3	20-MAY-20 09:45	28-MAY-20 06:30	0.25	189	hours	EHTR-FM
pH	1	20-MAY-20 12:45	24-MAY-20 15:00	0.25	98	hours	EHTR-FM
	2	20-MAY-20 10:55	24-MAY-20 15:00	0.25	100	hours	EHTR-FM
	3	20-MAY-20 09:45	24-MAY-20 15:00	0.25	101	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450173 were received on 21-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2450173-COFC-

Report To Contact and company name below will appear on the final report		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																												
Company: SNC-Lavalin ~Cranbrook		Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																												
Contact: Kirsti Medig		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>				EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>																						
Phone: Cell.: 250.421.9408		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box				3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% <input type="checkbox"/>																						
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>				[Laboratory opening fees may apply] <input type="checkbox"/>																								
Street: 4500 Mennie Road		Emails: SNC - 'Kirsti.Medig', 'Vicky.Lipinski'			Date and Time Required for all E&P TATs:																												
City/Province: Cranbrook, BC		@sncivalain.com			For tests that can not be performed according to the service level selected, you will be contacted.																												
Postal Code: V1C 4J6		Teck - 'Cam.Jaeger', 'Jennifer.DeWerk' @teck.com			Analysis Request																												
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F	P	F	P																									
Company:		Emails: Kirsti.Medig@sncivalain.com			DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																
Contact:		payables@sncivalain.com																															
Project Information		Oil and Gas Required Fields (client use)																															
ALS Account # / Quote #:		AFE/Cost Center:		PO#:																													
Job #: RGMP		Major/Minor Code:		Routing Code:																													
PO / AFE: 629117 672225		Requisitioner:																															
LSD:		Location:																															
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB																													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)														Sample Type															
	EV_MW_SP1A_WG_2020_NP	EV_MW_SP1A																	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	EV_MW_SP1B_WG_2020_NP	EV_MW_SP1B																	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	EV_MW_SP1C_WG_2020_NP	EV_MW_SP1C																	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	EV_MW_MCgwA_WG_2020_05_20_NP	EV_MW_MCgwA	20-MAY-20	12:45	Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R													
	EV_MW_MCgwB_WG_2020_05_20_NP	EV_MW_MCgwB				R	R	R	R	R	R	R	R	R	R	R	R	R	R	R													
	LC_MW_ER4A_WG_2020_05_20_NP	LC_MW_ER4A	20-MAY-20	10:55	Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R													
	LC_MW_ER4B_WG_2020_05_20_NP	LC_MW_ER4B	20-MAY-20	9:45	Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R													



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 28-MAY-20
Report Date: 03-FEB-21 15:17 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2453309
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200527Q2GW
Legal Site Desc:

Comments: 24-JUN-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2453309-1.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2453309-1 WG 27-MAY-20 11:35 EV_MW_AQ1_WG _2020_Q2_NP				
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	810			
	Hardness (as CaCO3) (mg/L)	493			
	pH (pH)	7.89			
	ORP (mV)	298			
	Total Suspended Solids (mg/L)	13.6			
	Total Dissolved Solids (mg/L)	541	DLHC		
	Turbidity (NTU)	9.18			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	11.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	369			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	369			
	Ammonia as N (mg/L)	0.0056			
	Bicarbonate (HCO3) (mg/L)	450			
	Bromide (Br) (mg/L)	0.183			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	36.9			
	Fluoride (F) (mg/L)	0.156			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	99.3			
	Nitrate (as N) (mg/L)	0.606			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.220			
	Total Nitrogen (mg/L)	0.826			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0158			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0175			
	Phosphorus (P)-Total (mg/L)	0.023	DLM		
	Sulfate (SO4) (mg/L)	83.6			
	Anion Sum (meq/L)	10.2			
	Cation Sum (meq/L)	10.1			
	Cation - Anion Balance (%)	-0.3			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	0.71			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2453309-1 WG 27-MAY-20 11:35 EV_MW_AQ1_WG _2020_Q2_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.176			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.021			
	Cadmium (Cd)-Dissolved (ug/L)	0.0418			
	Calcium (Ca)-Dissolved (mg/L)	121			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00061			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0202			
	Magnesium (Mg)-Dissolved (mg/L)	46.5			
	Manganese (Mn)-Dissolved (mg/L)	0.00028			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000320			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.56			
	Selenium (Se)-Dissolved (ug/L)	4.46			
	Silicon (Si)-Dissolved (mg/L)	3.89			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.39			
	Strontium (Sr)-Dissolved (mg/L)	0.346			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000456			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0033			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2453309-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2453309-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2453309-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2453309-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2453309-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2453309-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200527Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2453309

Report Date: 03-FEB-21

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-5	LCS							
Acidity (as CaCO3)			101.4		%		85-115	02-JUN-20
WG3334185-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-8	LCS							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	02-JUN-20
WG3334218-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5108496							
WG3333962-2	LCS							
Beryllium (Be)-Dissolved			102.5		%		80-120	04-JUN-20
WG3333962-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5106357							
WG3335111-6	LCS							
Bromide (Br)			106.1		%		85-115	30-MAY-20
WG3335111-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5108456							
WG3335674-2	LCS							
Dissolved Organic Carbon			96.5		%		80-120	04-JUN-20
WG3335674-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5108456							
WG3335674-2	LCS							
Total Organic Carbon			101.9		%		80-120	04-JUN-20
WG3335674-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-20
CL-IC-N-CL	Water							
Batch	R5106357							
WG3335111-6	LCS							
Chloride (Cl)			103.6		%		90-110	30-MAY-20
WG3335111-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-MAY-20
CO3-CL	Water							
Batch	R5103909							
WG3334218-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL	Water							
Batch	R5103909							
WG3334218-8	LCS							
Conductivity (@ 25C)			103.7		%		90-110	02-JUN-20
WG3334218-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20
F-IC-N-CL	Water							
Batch	R5106357							
WG3335111-6	LCS							
Fluoride (F)			99.4		%		90-110	30-MAY-20
WG3335111-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5109296							
WG3335971-2	LCS							
Mercury (Hg)-Dissolved			101.2		%		80-120	05-JUN-20
WG3335971-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-JUN-20
MET-D-CCMS-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3333962-2	LCS							
Aluminum (Al)-Dissolved			101.2		%		80-120	04-JUN-20
Antimony (Sb)-Dissolved			97.0		%		80-120	04-JUN-20
Arsenic (As)-Dissolved			98.9		%		80-120	04-JUN-20
Barium (Ba)-Dissolved			98.9		%		80-120	04-JUN-20
Bismuth (Bi)-Dissolved			102.2		%		80-120	04-JUN-20
Boron (B)-Dissolved			96.0		%		80-120	04-JUN-20
Cadmium (Cd)-Dissolved			98.3		%		80-120	04-JUN-20
Calcium (Ca)-Dissolved			100.6		%		80-120	04-JUN-20
Chromium (Cr)-Dissolved			102.5		%		80-120	04-JUN-20
Cobalt (Co)-Dissolved			99.99		%		80-120	04-JUN-20
Copper (Cu)-Dissolved			97.1		%		80-120	04-JUN-20
Iron (Fe)-Dissolved			93.4		%		80-120	04-JUN-20
Lead (Pb)-Dissolved			98.2		%		80-120	04-JUN-20
Lithium (Li)-Dissolved			100.1		%		80-120	04-JUN-20
Magnesium (Mg)-Dissolved			99.1		%		80-120	04-JUN-20
Manganese (Mn)-Dissolved			102.1		%		80-120	04-JUN-20
Molybdenum (Mo)-Dissolved			96.8		%		80-120	04-JUN-20
Nickel (Ni)-Dissolved			97.6		%		80-120	04-JUN-20
Potassium (K)-Dissolved			99.7		%		80-120	04-JUN-20
Selenium (Se)-Dissolved			94.5		%		80-120	04-JUN-20
Silicon (Si)-Dissolved			94.0		%		60-140	04-JUN-20
Silver (Ag)-Dissolved			98.5		%		80-120	04-JUN-20
Sodium (Na)-Dissolved			100.5		%		80-120	04-JUN-20
Strontium (Sr)-Dissolved			97.4		%		80-120	04-JUN-20
Thallium (Tl)-Dissolved			97.9		%		80-120	04-JUN-20
Tin (Sn)-Dissolved			96.2		%		80-120	04-JUN-20
Titanium (Ti)-Dissolved			103.0		%		80-120	04-JUN-20
Uranium (U)-Dissolved			97.3		%		80-120	04-JUN-20
Vanadium (V)-Dissolved			99.8		%		80-120	04-JUN-20
Zinc (Zn)-Dissolved			98.3		%		80-120	04-JUN-20
WG3333962-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5108496							
WG3333962-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5108000							
WG3335569-42	LCS							
Ammonia as N			100.1		%		85-115	04-JUN-20
WG3335569-41	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-JUN-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2453309

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5106357							
WG3335111-6	LCS							
Nitrite (as N)			103.4		%		90-110	30-MAY-20
WG3335111-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5106357							
WG3335111-6	LCS							
Nitrate (as N)			104.2		%		90-110	30-MAY-20
WG3335111-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-MAY-20
OH-CL	Water							
Batch	R5103909							
WG3334218-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL	Water							
Batch	R5107817							
WG3335568-5	CRM	CL-ORP						
ORP			220		mV		210-230	04-JUN-20
P-T-L-COL-CL	Water							
Batch	R5102855							
WG3332850-34	LCS							
Phosphorus (P)-Total			101.2		%		80-120	01-JUN-20
WG3332850-33	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-JUN-20
P-TD-L-COL-CL	Water							
Batch	R5103589							
WG3333580-10	LCS							
Phosphorus (P)-Total Dissolved			110.9		%		80-120	02-JUN-20
WG3333580-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	02-JUN-20
PH-CL	Water							
Batch	R5103909							
WG3334218-8	LCS							
pH			6.98		pH		6.9-7.1	02-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5100319							
WG3331067-14 LCS								
Orthophosphate-Dissolved (as P)			105.3		%		80-120	28-MAY-20
WG3331067-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-MAY-20
SO4-IC-N-CL	Water							
Batch	R5106357							
WG3335111-6 LCS								
Sulfate (SO4)			103.5		%		90-110	30-MAY-20
WG3335111-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5108616							
WG3334208-8 LCS								
Total Dissolved Solids			96.3		%		85-115	03-JUN-20
WG3334208-7 MB								
Total Dissolved Solids			<10		mg/L		10	03-JUN-20
TKN-L-F-CL	Water							
Batch	R5108497							
WG3335711-10 LCS								
Total Kjeldahl Nitrogen			86.5		%		75-125	04-JUN-20
WG3335711-14 LCS								
Total Kjeldahl Nitrogen			85.2		%		75-125	04-JUN-20
WG3335711-2 LCS								
Total Kjeldahl Nitrogen			88.0		%		75-125	04-JUN-20
WG3335711-6 LCS								
Total Kjeldahl Nitrogen			85.2		%		75-125	04-JUN-20
WG3335711-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3335711-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3335711-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3335711-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
TSS-L-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5108476							
WG3334504-6	LCS							
Total Suspended Solids			98.5		%		85-115	03-JUN-20
WG3334504-5	MB							
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL	Water							
Batch	R5102327							
WG3332171-8	LCS							
Turbidity			103.0		%		85-115	30-MAY-20
WG3332171-7	MB							
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	27-MAY-20 11:35	04-JUN-20 13:00	0.25	193	hours	EHTR-FM
pH	1	27-MAY-20 11:35	02-JUN-20 13:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2453309 were received on 28-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200527Q2GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_AQ1_WG_2020_Q2_NP	EV_MW_AQ1	WG	N	5/27/2020	11:35	G	5	1	1	1		1		1					
Total							5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	May 27, 2020	<i>AK</i>	5/28 08:50

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Kennedy Allen
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Kennedy Allen</i>
Emergency (1 Business Day) - 100% surcharge		Date/Time	May 27, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



L2453309-COFC

60



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 29-MAY-20
Report Date: 29-JAN-21 15:32 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2454095
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200528Q2GW
Legal Site Desc:

Comments: Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2454095-1 WG 28-MAY-20 09:40 EV_ECGW_WG_2 020_Q2_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	405			
	Hardness (as CaCO3) (mg/L)	150			
	pH (pH)	8.17			
	ORP (mV)	268			
	Total Suspended Solids (mg/L)	727	DLHC		
	Total Dissolved Solids (mg/L)	413			
	Turbidity (NTU)	731			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	244			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	244			
	Ammonia as N (mg/L)	0.0322			
	Bicarbonate (HCO3) (mg/L)	298			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.76			
	Fluoride (F) (mg/L)	0.784			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	78.3	BL:INT		
	Nitrate (as N) (mg/L)	0.141			
	Nitrite (as N) (mg/L)	0.0059			
	Total Kjeldahl Nitrogen (mg/L)	1.00	DLM		
	Total Nitrogen (mg/L)	1.14			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0115			
	Phosphorus (P)-Total Dissolved (mg/L)	0.014	DLM		
	Phosphorus (P)-Total (mg/L)	0.734	DLHC		
	Sulfate (SO4) (mg/L)	26.8			
	Anion Sum (meq/L)	5.51			
	Cation Sum (meq/L)	4.31			
	Cation - Anion Balance (%)	-12.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2454095-1 WG 28-MAY-20 09:40 EV_ECGW_WG_2 020_Q2_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00033			
	Barium (Ba)-Dissolved (mg/L)	0.0468			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.091			
	Cadmium (Cd)-Dissolved (ug/L)	0.0256			
	Calcium (Ca)-Dissolved (mg/L)	32.5			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.12			
	Copper (Cu)-Dissolved (mg/L)	0.00084			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0112			
	Magnesium (Mg)-Dissolved (mg/L)	16.8			
	Manganese (Mn)-Dissolved (mg/L)	0.0528			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0131			
	Nickel (Ni)-Dissolved (mg/L)	0.00129			
	Potassium (K)-Dissolved (mg/L)	1.11			
	Selenium (Se)-Dissolved (ug/L)	0.219			
	Silicon (Si)-Dissolved (mg/L)	4.49			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	29.4			
	Strontium (Sr)-Dissolved (mg/L)	0.393			
	Thallium (Tl)-Dissolved (mg/L)	0.000026			
	Tin (Sn)-Dissolved (mg/L)	0.00023			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00166			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0013			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2454095-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2454095-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2454095-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2454095-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2454095-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2454095-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2454095-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2454095-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2454095-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2454095-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2454095-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
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Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
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Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
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ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
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This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
---------------------	-------	----------------------	------------------------

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL	Water	pH	APHA 4500 H-Electrode
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pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
------------------------	-------	---------------------------------	------------------------

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200528Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2454095

Report Date: 29-JAN-21

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5103895							
WG3334185-17	LCS							
Acidity (as CaCO3)			101.6		%		85-115	02-JUN-20
WG3334185-16	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	02-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5103909							
WG3334218-17	LCS							
Alkalinity, Total (as CaCO3)			103.0		%		85-115	02-JUN-20
WG3334218-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-2	LCS							
Beryllium (Be)-Dissolved			97.0		%		80-120	05-JUN-20
WG3334930-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-20
BIC-CL								
	Water							
Batch	R5103909							
WG3334218-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5104289							
WG3334322-2	LCS							
Bromide (Br)			99.6		%		85-115	31-MAY-20
WG3334322-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5110210							
WG3336830-6	LCS							
Dissolved Organic Carbon			103.3		%		80-120	05-JUN-20
WG3336830-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2454095

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5110210							
WG3336830-6	LCS							
Total Organic Carbon			104.9		%		80-120	05-JUN-20
WG3336830-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-JUN-20
CL-IC-N-CL	Water							
Batch	R5104289							
WG3334322-2	LCS							
Chloride (Cl)			104.5		%		90-110	31-MAY-20
WG3334322-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-20
CO3-CL	Water							
Batch	R5103909							
WG3334218-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-JUN-20
EC-L-PCT-CL	Water							
Batch	R5103909							
WG3334218-17	LCS							
Conductivity (@ 25C)			101.8		%		90-110	02-JUN-20
WG3334218-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUN-20
F-IC-N-CL	Water							
Batch	R5104289							
WG3334322-2	LCS							
Fluoride (F)			102.6		%		90-110	31-MAY-20
WG3334322-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5110081							
WG3336356-6	LCS							
Mercury (Hg)-Dissolved			103.2		%		80-120	06-JUN-20
WG3336356-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-JUN-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2454095

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-2	LCS							
Aluminum (Al)-Dissolved			107.0		%		80-120	05-JUN-20
Antimony (Sb)-Dissolved			98.2		%		80-120	05-JUN-20
Arsenic (As)-Dissolved			97.3		%		80-120	05-JUN-20
Barium (Ba)-Dissolved			99.1		%		80-120	05-JUN-20
Bismuth (Bi)-Dissolved			100.9		%		80-120	05-JUN-20
Boron (B)-Dissolved			90.9		%		80-120	05-JUN-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	05-JUN-20
Calcium (Ca)-Dissolved			96.5		%		80-120	05-JUN-20
Chromium (Cr)-Dissolved			100.1		%		80-120	05-JUN-20
Cobalt (Co)-Dissolved			101.6		%		80-120	05-JUN-20
Copper (Cu)-Dissolved			101.9		%		80-120	05-JUN-20
Iron (Fe)-Dissolved			99.97		%		80-120	05-JUN-20
Lead (Pb)-Dissolved			100.8		%		80-120	05-JUN-20
Lithium (Li)-Dissolved			98.1		%		80-120	05-JUN-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	05-JUN-20
Manganese (Mn)-Dissolved			99.9		%		80-120	05-JUN-20
Molybdenum (Mo)-Dissolved			99.4		%		80-120	05-JUN-20
Nickel (Ni)-Dissolved			100.6		%		80-120	05-JUN-20
Potassium (K)-Dissolved			103.6		%		80-120	05-JUN-20
Selenium (Se)-Dissolved			100.8		%		80-120	05-JUN-20
Silicon (Si)-Dissolved			104.2		%		60-140	05-JUN-20
Silver (Ag)-Dissolved			102.5		%		80-120	05-JUN-20
Sodium (Na)-Dissolved			103.3		%		80-120	05-JUN-20
Strontium (Sr)-Dissolved			103.9		%		80-120	05-JUN-20
Thallium (Tl)-Dissolved			102.0		%		80-120	05-JUN-20
Tin (Sn)-Dissolved			98.9		%		80-120	05-JUN-20
Titanium (Ti)-Dissolved			99.1		%		80-120	05-JUN-20
Uranium (U)-Dissolved			98.0		%		80-120	05-JUN-20
Vanadium (V)-Dissolved			101.2		%		80-120	05-JUN-20
Zinc (Zn)-Dissolved			100.2		%		80-120	05-JUN-20
WG3334930-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20



Quality Control Report

Workorder: L2454095

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5109760							
WG3334930-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5109816							
WG3336368-35	DUP	L2454095-1						
Ammonia as N		0.0322	0.0327		mg/L	1.5	20	05-JUN-20
WG3336368-34	LCS							
Ammonia as N			92.6		%		85-115	05-JUN-20
WG3336368-33	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-20



Quality Control Report

Workorder: L2454095

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch R5109816								
WG3336368-36 MS		L2454095-1						
Ammonia as N			100.4		%		75-125	05-JUN-20
NO2-L-IC-N-CL	Water							
Batch R5104289								
WG3334322-2 LCS								
Nitrite (as N)			101.7		%		90-110	31-MAY-20
WG3334322-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAY-20
NO3-L-IC-N-CL	Water							
Batch R5104289								
WG3334322-2 LCS								
Nitrate (as N)			105.2		%		90-110	31-MAY-20
WG3334322-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAY-20
OH-CL	Water							
Batch R5103909								
WG3334218-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	02-JUN-20
ORP-CL	Water							
Batch R5110031								
WG3336525-28 CRM		CL-ORP						
ORP			220		mV		210-230	05-JUN-20
P-T-L-COL-CL	Water							
Batch R5103589								
WG3333580-34 LCS								
Phosphorus (P)-Total			111.8		%		80-120	02-JUN-20
WG3333580-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-JUN-20
P-TD-L-COL-CL	Water							
Batch R5103589								
WG3333580-34 LCS								
Phosphorus (P)-Total Dissolved			111.8		%		80-120	02-JUN-20
WG3333580-33 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	02-JUN-20



Quality Control Report

Workorder: L2454095

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5103909							
WG3334218-17	LCS							
pH			6.98		pH		6.9-7.1	02-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5102388							
WG3332196-6	LCS							
Orthophosphate-Dissolved (as P)			105.3		%		80-120	30-MAY-20
WG3332196-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-MAY-20
SO4-IC-N-CL	Water							
Batch	R5104289							
WG3334322-2	LCS							
Sulfate (SO4)			103.4		%		90-110	31-MAY-20
WG3334322-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5110013							
WG3335047-11	LCS							
Total Dissolved Solids			100.6		%		85-115	04-JUN-20
WG3335047-10	MB							
Total Dissolved Solids			<10		mg/L		10	04-JUN-20
TKN-L-F-CL	Water							
Batch	R5109938							
WG3336303-10	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	04-JUN-20
WG3336303-13	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	04-JUN-20
WG3336303-2	LCS							
Total Kjeldahl Nitrogen			89.5		%		75-125	04-JUN-20
WG3336303-6	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	04-JUN-20
WG3336303-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
WG3336303-9	MB							



Quality Control Report

Workorder: L2454095

Report Date: 29-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5109938							
WG3336303-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-JUN-20
TSS-L-CL	Water							
Batch	R5108476							
WG3334504-16 LCS								
Total Suspended Solids			101.7		%		85-115	03-JUN-20
WG3334504-15 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-20
TURBIDITY-CL	Water							
Batch	R5102327							
WG3332171-23 LCS								
Turbidity			102.0		%		85-115	30-MAY-20
WG3332171-22 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

Workorder: L2454095

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	28-MAY-20 09:40	05-JUN-20 10:00	0.25	192	hours	EHTR-FM
pH	1	28-MAY-20 09:40	02-JUN-20 13:00	0.25	123	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2454095 were received on 29-MAY-20 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200528Q2GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	NO	Yes	Yes	No	No	No	No	Yes	Yes
EV_ECgw_WG_2020_Q2_NP	EV_ECgw	WG	N	5/28/2020	9:40	G	5	TECKCOAL-ROUTINE-VA (E305.1)	1	1	1	1				1	
								TECKCOAL-MET-D-VA (SW6020)									
								DOC (APHA 5310)									
								Dissolved Phosphorus									
								TKN/TOC (APHA 4500-NORG)									
								Total Nitrogen for BC (NO2 and NO3)									
								T-ULTRA MERCURY (SW6020)									
								D-ULTRA MERCURY (SW6020)									
								EPH (C10-C32)									
								D-Mercury									
								D-CrVI									
Total							5										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	May 28, 2020		
			<i>[Signature]</i>	5/29/20
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #		
Regular (default) X	Kennedy Allen			
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time		
Emergency (1 Business Day) - 100% surcharge	<i>[Signature]</i>	May 28, 2020		
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

[Handwritten mark]



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 04-JUN-20
Report Date: 03-FEB-21 16:27 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2456600
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200603Q2GW
Legal Site Desc:

Comments: 24-JUN-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2456600-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2456600-1 WG 03-JUN-20 12:55 EV_MW_GT1A_W G_2020_Q2_NP	L2456600-2 WG 03-JUN-20 13:35 EV_MW_GT1B_W G_2020_Q2_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	476	269		
	Hardness (as CaCO3) (mg/L)	266	141		
	pH (pH)	8.25	8.29		
	ORP (mV)	298	380		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	381 ^{DLHC}	188 ^{DLHC}		
	Turbidity (NTU)	0.72	2.72		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.8	1.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	162	101		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	162	101		
	Ammonia as N (mg/L)	0.116	<0.0050		
	Bicarbonate (HCO3) (mg/L)	198	123		
	Bromide (Br) (mg/L)	0.093	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	2.21	0.96		
	Fluoride (F) (mg/L)	0.116	0.172		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	99.6	97.5		
	Nitrate (as N) (mg/L)	0.0058	0.867		
	Nitrite (as N) (mg/L)	0.0013	0.0272		
	Total Kjeldahl Nitrogen (mg/L)	0.103	0.135		
	Total Nitrogen (mg/L)	0.110	1.03		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0053	0.0097		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0089 ^{DLM}	0.0094 ^{DLM}		
	Phosphorus (P)-Total (mg/L)	0.0129 ^{DLM}	0.0124 ^{DLM}		
	Sulfate (SO4) (mg/L)	105	42.2		
	Anion Sum (meq/L)	5.48	3.00		
	Cation Sum (meq/L)	5.46	2.92		
Cation - Anion Balance (%)	-0.2	-1.3			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.79	2.27		
	Total Organic Carbon (mg/L)	0.67	2.27		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2456600-1 WG 03-JUN-20 12:55 EV_MW_GT1A_W G_2020_Q2_NP	L2456600-2 WG 03-JUN-20 13:35 EV_MW_GT1B_W G_2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00052		
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00021		
	Barium (Ba)-Dissolved (mg/L)	0.0621	0.0120		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.011	0.012		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0226		
	Calcium (Ca)-Dissolved (mg/L)	71.4	31.5		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00013		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00082	0.00072		
	Iron (Fe)-Dissolved (mg/L)	0.134	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0091	0.0142		
	Magnesium (Mg)-Dissolved (mg/L)	21.3	15.1		
	Manganese (Mn)-Dissolved (mg/L)	0.0747	0.00011		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000628	0.00236		
	Nickel (Ni)-Dissolved (mg/L)	0.00088	0.00223		
	Potassium (K)-Dissolved (mg/L)	0.797	1.48		
	Selenium (Se)-Dissolved (ug/L)	0.474	6.58		
	Silicon (Si)-Dissolved (mg/L)	2.82	1.94		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	2.77	1.75		
	Strontium (Sr)-Dissolved (mg/L)	0.124	0.116		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000395	0.000898		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0013		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2456600-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2456600-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200603Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2456600

Report Date: 03-FEB-21

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5110365							
WG3336996-14	LCS							
Acidity (as CaCO3)			95.5		%		85-115	05-JUN-20
WG3336996-13	MB							
Acidity (as CaCO3)			1.4		mg/L		2	05-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5113639							
WG3338958-14	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	09-JUN-20
WG3338958-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5112796							
WG3336888-2	LCS							
Beryllium (Be)-Dissolved			104.9		%		80-120	09-JUN-20
WG3336888-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-JUN-20
BIC-CL								
	Water							
Batch	R5113639							
WG3338958-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5116060							
WG3340293-2	LCS							
Bromide (Br)			103.1		%		85-115	06-JUN-20
WG3340293-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5115683							
WG3339846-6	LCS							
Dissolved Organic Carbon			98.4		%		80-120	10-JUN-20
WG3339846-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-JUN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2456600

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5115683							
WG3339846-6	LCS							
Total Organic Carbon			108.8		%		80-120	10-JUN-20
WG3339846-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	10-JUN-20
CL-IC-N-CL	Water							
Batch	R5116060							
WG3340293-2	LCS							
Chloride (Cl)			100.2		%		90-110	06-JUN-20
WG3340293-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	06-JUN-20
CO3-CL	Water							
Batch	R5113639							
WG3338958-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	09-JUN-20
EC-L-PCT-CL	Water							
Batch	R5113639							
WG3338958-14	LCS							
Conductivity (@ 25C)			98.2		%		90-110	09-JUN-20
WG3338958-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	09-JUN-20
F-IC-N-CL	Water							
Batch	R5116060							
WG3340293-2	LCS							
Fluoride (F)			94.1		%		90-110	06-JUN-20
WG3340293-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	06-JUN-20
HG-D-CVAA-VA	Water							
Batch	R5115651							
WG3339585-6	LCS							
Mercury (Hg)-Dissolved			103.2		%		80-120	11-JUN-20
WG3339585-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2456600

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5112796							
WG3336888-2	LCS							
Aluminum (Al)-Dissolved			106.7		%		80-120	09-JUN-20
Antimony (Sb)-Dissolved			103.6		%		80-120	09-JUN-20
Arsenic (As)-Dissolved			100.5		%		80-120	09-JUN-20
Barium (Ba)-Dissolved			105.8		%		80-120	09-JUN-20
Bismuth (Bi)-Dissolved			103.7		%		80-120	09-JUN-20
Boron (B)-Dissolved			94.7		%		80-120	09-JUN-20
Cadmium (Cd)-Dissolved			101.1		%		80-120	09-JUN-20
Calcium (Ca)-Dissolved			101.8		%		80-120	09-JUN-20
Chromium (Cr)-Dissolved			105.9		%		80-120	09-JUN-20
Cobalt (Co)-Dissolved			101.7		%		80-120	09-JUN-20
Copper (Cu)-Dissolved			101.5		%		80-120	09-JUN-20
Iron (Fe)-Dissolved			108.6		%		80-120	09-JUN-20
Lead (Pb)-Dissolved			103.4		%		80-120	09-JUN-20
Lithium (Li)-Dissolved			102.0		%		80-120	09-JUN-20
Magnesium (Mg)-Dissolved			105.1		%		80-120	09-JUN-20
Manganese (Mn)-Dissolved			104.0		%		80-120	09-JUN-20
Molybdenum (Mo)-Dissolved			100.2		%		80-120	09-JUN-20
Nickel (Ni)-Dissolved			100.8		%		80-120	09-JUN-20
Potassium (K)-Dissolved			107.0		%		80-120	09-JUN-20
Selenium (Se)-Dissolved			99.7		%		80-120	09-JUN-20
Silicon (Si)-Dissolved			113.0		%		60-140	09-JUN-20
Silver (Ag)-Dissolved			97.6		%		80-120	09-JUN-20
Sodium (Na)-Dissolved			109.9		%		80-120	09-JUN-20
Strontium (Sr)-Dissolved			101.9		%		80-120	09-JUN-20
Thallium (Tl)-Dissolved			104.9		%		80-120	09-JUN-20
Tin (Sn)-Dissolved			98.6		%		80-120	09-JUN-20
Titanium (Ti)-Dissolved			103.8		%		80-120	09-JUN-20
Uranium (U)-Dissolved			102.2		%		80-120	09-JUN-20
Vanadium (V)-Dissolved			105.1		%		80-120	09-JUN-20
Zinc (Zn)-Dissolved			102.3		%		80-120	09-JUN-20
WG3336888-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20



Quality Control Report

Workorder: L2456600

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5112796							
WG3336888-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5115997							
WG3340204-14	LCS							
Ammonia as N			107.2		%		85-115	11-JUN-20
WG3340204-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-JUN-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2456600

Report Date: 03-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5116060							
WG3340293-2	LCS							
Nitrite (as N)			103.9		%		90-110	06-JUN-20
WG3340293-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-JUN-20
NO3-L-IC-N-CL	Water							
Batch	R5116060							
WG3340293-2	LCS							
Nitrate (as N)			102.6		%		90-110	06-JUN-20
WG3340293-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-JUN-20
OH-CL	Water							
Batch	R5113639							
WG3338958-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	09-JUN-20
ORP-CL	Water							
Batch	R5113237							
WG3338632-13	CRM	CL-ORP						
ORP			221		mV		210-230	09-JUN-20
P-T-L-COL-CL	Water							
Batch	R5115017							
WG3339266-30	LCS							
Phosphorus (P)-Total			98.3		%		80-120	10-JUN-20
WG3339266-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-JUN-20
P-TD-L-COL-CL	Water							
Batch	R5115017							
WG3339266-30	LCS							
Phosphorus (P)-Total Dissolved			98.3		%		80-120	10-JUN-20
WG3339266-29	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	10-JUN-20
PH-CL	Water							
Batch	R5113639							
WG3338958-14	LCS							
pH			7.02		pH		6.9-7.1	09-JUN-20



Quality Control Report

Workorder: L2456600

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R5110047							
WG3336396-14	LCS							
Orthophosphate-Dissolved (as P)			100.4		%		80-120	05-JUN-20
WG3336396-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-20
SO4-IC-N-CL								
	Water							
Batch	R5116060							
WG3340293-2	LCS							
Sulfate (SO4)			101.7		%		90-110	06-JUN-20
WG3340293-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	06-JUN-20
SOLIDS-TDS-CL								
	Water							
Batch	R5116226							
WG3338466-12	DUP	L2456600-1						
Total Dissolved Solids		381	364		mg/L	4.4	20	10-JUN-20
WG3338466-11	LCS							
Total Dissolved Solids			98.8		%		85-115	10-JUN-20
WG3338466-10	MB							
Total Dissolved Solids			<10		mg/L		10	10-JUN-20
TKN-L-F-CL								
	Water							
Batch	R5116986							
WG3341448-2	LCS							
Total Kjeldahl Nitrogen			95.8		%		75-125	12-JUN-20
WG3341448-5	LCS							
Total Kjeldahl Nitrogen			96.3		%		75-125	12-JUN-20
WG3341448-8	LCS							
Total Kjeldahl Nitrogen			95.7		%		75-125	12-JUN-20
WG3341448-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-20
WG3341448-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-20
WG3341448-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-20
TSS-L-CL								
	Water							
Batch	R5116094							
WG3339626-6	LCS							
Total Suspended Solids			92.6		%		85-115	10-JUN-20
WG3339626-5	MB							



Quality Control Report

Workorder: L2456600

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5116094							
WG3339626-5 MB								
Total Suspended Solids			<1.0		mg/L		1	10-JUN-20
TURBIDITY-CL	Water							
Batch	R5109951							
WG3336175-32 LCS								
Turbidity			99.96		%		85-115	05-JUN-20
WG3336175-31 MB								
Turbidity			<0.10		NTU		0.1	05-JUN-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	03-JUN-20 12:55	09-JUN-20 17:00	0.25	148	hours	EHTR-FM
	2	03-JUN-20 13:35	09-JUN-20 17:00	0.25	147	hours	EHTR-FM
pH	1	03-JUN-20 12:55	09-JUN-20 13:00	0.25	144	hours	EHTR-FM
	2	03-JUN-20 13:35	09-JUN-20 13:00	0.25	144	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2456600 were received on 04-JUN-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200603Q2GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_GT1A_WG_2020_Q2_NP	EV_MW_GT1A	WG	N	6/3/2020	12:55	G	5	1	1	1		1		1					
EV_MW_GT1B_WG_2020_Q2_NP	EV_MW_GT1B	WG	N	6/3/2020	13:35	G	5	1	1	1		1		1					
Total							10												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	June 3, 2020	<i>[Signature]</i>	6/4/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/>	Kennedy Allen		<i>[Signature]</i>	June 3, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



[Handwritten signatures and dates: Kennedy Allen, June 3, 2020, 6/4/20]



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 10-JUN-20
Report Date: 26-JUN-20 17:59 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2459108
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200609Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2459108-1 WG 09-JUN-20 12:15 EV_MW_SPR1A_ WG_2020_Q2_NP	L2459108-2 WG 09-JUN-20 12:20 EV_MW_BC10A_ WG_2020_Q2_NP	L2459108-3 WG 09-JUN-20 12:25 EV_MW_BC10B_ WG_2020_Q2_NP	L2459108-4 WG 09-JUN-20 12:30 EV_MW_BC10C_ WG_2020_Q2_NP	L2459108-5 WG 09-JUN-20 13:25 EV_MW_SPR1B_ WG_2020_Q2_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	525	418	<2.0	<2.0	372
	Hardness (as CaCO3) (mg/L)	326	319	<0.50	<0.50	170
	pH (pH)	8.08	8.06	5.54	5.49	8.25
	ORP (mV)	306	270	439	444	469
	Total Suspended Solids (mg/L)	477	417	<1.0	<1.0	218
	Total Dissolved Solids (mg/L)	361 ^{DLHC}	355 ^{DLHC}	<10	<10	284 ^{DLHC}
	Turbidity (NTU)	5.63	4.83	<0.10	<0.10	71.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.5	5.0	1.4	1.3	1.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	267	226	<1.0	<1.0	190
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	267	226	<1.0	<1.0	190
	Ammonia as N (mg/L)	0.0601	0.0089	0.0090 ^{RRV}	0.0088 ^{RRV}	0.159
	Bicarbonate (HCO3) (mg/L)	261	276	<5.0	<5.0	232
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	14.2	14.1	<0.50	<0.50	3.39
	Fluoride (F) (mg/L)	0.323	0.320	<0.020	<0.020	1.10
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	105	118	0.0	0.0	101
	Nitrate (as N) (mg/L)	0.0053	<0.0050	<0.0050	<0.0050	0.0229
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.220	0.204	<0.050	<0.050	0.267
	Total Nitrogen (mg/L)	0.225	0.204	<0.050	<0.050	0.290
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019	0.0019	<0.0010	<0.0010	0.0011
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.777 ^{DLHC}	0.696 ^{DLHC}	<0.0020	<0.0020	0.299 ^{DLHC}
	Sulfate (SO4) (mg/L)	32.8	32.6	<0.30	<0.30	51.2
	Anion Sum (meq/L)	6.43	5.62	<0.10	<0.10	5.02
	Cation Sum (meq/L)	6.78	6.63	<0.10	<0.10	5.09
	Cation - Anion Balance (%)	2.6	8.3	0.0	0.0	0.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.95	1.01	<0.50	<0.50	1.77
	Total Organic Carbon (mg/L)	1.36	1.19	<0.50	<0.50	1.69
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0057	0.0076	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2459108-6 WG 09-JUN-20 14:00 EV_MW_SPR1C_ WG_2020_Q2_NP				
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	422			
	Hardness (as CaCO3) (mg/L)	267			
	pH (pH)	8.26			
	ORP (mV)	433			
	Total Suspended Solids (mg/L)	77.8			
	Total Dissolved Solids (mg/L)	305	DLHC		
	Turbidity (NTU)	0.36			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	215			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	215			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	262			
	Bromide (Br) (mg/L)	0.057			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	7.59			
	Fluoride (F) (mg/L)	0.178			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	99.5			
	Nitrate (as N) (mg/L)	0.225			
	Nitrite (as N) (mg/L)	0.0017			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	0.227			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0047			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0068	DLM		
	Phosphorus (P)-Total (mg/L)	0.0071	DLM		
	Sulfate (SO4) (mg/L)	50.1			
	Anion Sum (meq/L)	5.58			
	Cation Sum (meq/L)	5.55			
	Cation - Anion Balance (%)	-0.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.65			
	Total Organic Carbon (mg/L)	1.99			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2459108-1 WG 09-JUN-20 12:15 EV_MW_SPR1A_ WG_2020_Q2_NP	L2459108-2 WG 09-JUN-20 12:20 EV_MW_BC10A_ WG_2020_Q2_NP	L2459108-3 WG 09-JUN-20 12:25 EV_MW_BC10B_ WG_2020_Q2_NP	L2459108-4 WG 09-JUN-20 12:30 EV_MW_BC10C_ WG_2020_Q2_NP	L2459108-5 WG 09-JUN-20 13:25 EV_MW_SPR1B_ WG_2020_Q2_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00026
	Arsenic (As)-Dissolved (mg/L)	0.00107	0.00100	<0.00010	<0.00010	0.00075
	Barium (Ba)-Dissolved (mg/L)	0.344	0.342	<0.00010	<0.00010	0.0513
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.025	0.023	<0.010	<0.010	0.131
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0064	<0.0050	<0.0050	<0.020 ^{DLM}
	Calcium (Ca)-Dissolved (mg/L)	85.1	83.4	<0.050	<0.050	42.3
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.62	0.65	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	0.00063
	Iron (Fe)-Dissolved (mg/L)	0.127	0.127	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0155	0.0146	<0.0010	<0.0010	0.0127
	Magnesium (Mg)-Dissolved (mg/L)	27.7	27.0	<0.10	<0.10	15.6
	Manganese (Mn)-Dissolved (mg/L)	0.311	0.309	<0.00010	<0.00010	0.0201
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00146	0.00148	<0.000050	<0.000050	0.0215
	Nickel (Ni)-Dissolved (mg/L)	0.00191	0.00196	<0.00050	<0.00050	0.00073
	Potassium (K)-Dissolved (mg/L)	1.66	1.67	<0.050	<0.050	1.29
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	0.237
	Silicon (Si)-Dissolved (mg/L)	4.16	4.17	<0.050	<0.050	4.20
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.47	4.44	<0.050	<0.050	37.8
	Strontium (Sr)-Dissolved (mg/L)	0.278	0.288	<0.00020	<0.00020	0.557
	Thallium (Tl)-Dissolved (mg/L)	0.000014	0.000013	<0.000010	<0.000010	0.000022
	Tin (Sn)-Dissolved (mg/L)	0.00012	0.00014	<0.00010	<0.00010	0.00036
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00105	0.00104	<0.000010	<0.000010	0.00168
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0013	0.0025	<0.0010	0.0017 ^{RRV}	0.0038

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2459108-6 WG 09-JUN-20 14:00 EV_MW_SPR1C_ WG_2020_Q2_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.110			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.014			
	Cadmium (Cd)-Dissolved (ug/L)	0.0409			
	Calcium (Ca)-Dissolved (mg/L)	74.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00043			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0116			
	Magnesium (Mg)-Dissolved (mg/L)	19.5			
	Manganese (Mn)-Dissolved (mg/L)	0.00011			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000708			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.979			
	Selenium (Se)-Dissolved (ug/L)	5.11			
	Silicon (Si)-Dissolved (mg/L)	2.46			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.59			
	Strontium (Sr)-Dissolved (mg/L)	0.152			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000833			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2459108-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2459108-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2459108-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2459108-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2459108-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2459108-4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2459108-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2459108-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2459108-4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200609Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2459108

Report Date: 26-JUN-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5117066							
WG3341576-17	LCS							
Acidity (as CaCO3)			109.7		%		85-115	12-JUN-20
WG3341576-16	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	12-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5119317							
WG3343075-8	LCS							
Alkalinity, Total (as CaCO3)			99.3		%		85-115	15-JUN-20
WG3343075-7	MB							
Alkalinity, Total (as CaCO3)			1.0		mg/L		1	15-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5117815							
WG3341705-3	DUP	L2459108-5						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	15-JUN-20
WG3341705-2	LCS							
Beryllium (Be)-Dissolved			99.8		%		80-120	15-JUN-20
WG3341705-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-JUN-20
WG3341705-4	MS	L2459108-6						
Beryllium (Be)-Dissolved			93.0		%		70-130	15-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5121418							
WG3343823-10	LCS							
Bromide (Br)			100.6		%		85-115	12-JUN-20
WG3343823-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5122100							
WG3344114-2	LCS							
Dissolved Organic Carbon			100.7		%		80-120	16-JUN-20
WG3344114-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-JUN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5122100							
WG3344114-2	LCS							
Total Organic Carbon			104.9		%		80-120	16-JUN-20
WG3344114-1	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch R5122100								
WG3344114-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-JUN-20
CL-IC-N-CL	Water							
Batch R5121418								
WG3343823-10 LCS								
Chloride (Cl)			103.9		%		90-110	12-JUN-20
WG3343823-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-JUN-20
EC-L-PCT-CL	Water							
Batch R5119317								
WG3343075-8 LCS								
Conductivity (@ 25C)			100.0		%		90-110	15-JUN-20
WG3343075-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	15-JUN-20
F-IC-N-CL	Water							
Batch R5121418								
WG3343823-10 LCS								
Fluoride (F)			99.2		%		90-110	12-JUN-20
WG3343823-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-20
HG-D-CVAA-VA	Water							
Batch R5118210								
WG3343064-7 DUP		L2459108-2						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	16-JUN-20
WG3343064-6 LCS								
Mercury (Hg)-Dissolved			101.9		%		80-120	16-JUN-20
WG3343064-5 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-20
WG3343064-8 MS		L2459108-5						
Mercury (Hg)-Dissolved			99.9		%		70-130	16-JUN-20
MET-D-CCMS-VA	Water							
Batch R5117815								
WG3341705-3 DUP		L2459108-5						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-JUN-20
Antimony (Sb)-Dissolved		0.00026	0.00027		mg/L	1.3	20	15-JUN-20
Arsenic (As)-Dissolved		0.00075	0.00073		mg/L	2.0	20	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341705-3	DUP	L2459108-5						
Barium (Ba)-Dissolved		0.0513	0.0521		mg/L	1.4	20	15-JUN-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-20
Boron (B)-Dissolved		0.131	0.131		mg/L	0.2	20	15-JUN-20
Cadmium (Cd)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	15-JUN-20
Calcium (Ca)-Dissolved		42.3	42.1		mg/L	0.3	20	15-JUN-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-20
Copper (Cu)-Dissolved		0.00063	0.00062		mg/L	2.2	20	15-JUN-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUN-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-20
Lithium (Li)-Dissolved		0.0127	0.0124		mg/L	2.2	20	15-JUN-20
Magnesium (Mg)-Dissolved		15.6	16.1		mg/L	2.8	20	15-JUN-20
Manganese (Mn)-Dissolved		0.0201	0.0201		mg/L	0.1	20	15-JUN-20
Molybdenum (Mo)-Dissolved		0.0215	0.0217		mg/L	0.6	20	15-JUN-20
Nickel (Ni)-Dissolved		0.00073	0.00072		mg/L	1.7	20	15-JUN-20
Potassium (K)-Dissolved		1.29	1.31		mg/L	1.4	20	15-JUN-20
Selenium (Se)-Dissolved		0.000237	0.000227		mg/L	4.2	20	15-JUN-20
Silicon (Si)-Dissolved		4.20	4.13		mg/L	1.7	20	15-JUN-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUN-20
Sodium (Na)-Dissolved		37.8	38.0		mg/L	0.6	20	15-JUN-20
Strontium (Sr)-Dissolved		0.557	0.545		mg/L	2.3	20	15-JUN-20
Thallium (Tl)-Dissolved		0.000022	0.000023		mg/L	7.0	20	15-JUN-20
Tin (Sn)-Dissolved		0.00036	0.00037		mg/L	1.9	20	15-JUN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUN-20
Uranium (U)-Dissolved		0.00168	0.00172		mg/L	2.3	20	15-JUN-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-JUN-20
Zinc (Zn)-Dissolved		0.0038	0.0039		mg/L	1.0	20	15-JUN-20
WG3341705-2								
LCS								
Aluminum (Al)-Dissolved			101.9		%		80-120	15-JUN-20
Antimony (Sb)-Dissolved			94.9		%		80-120	15-JUN-20
Arsenic (As)-Dissolved			99.6		%		80-120	15-JUN-20
Barium (Ba)-Dissolved			105.6		%		80-120	15-JUN-20
Bismuth (Bi)-Dissolved			97.2		%		80-120	15-JUN-20
Boron (B)-Dissolved			104.0		%		80-120	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341705-2	LCS							
Cadmium (Cd)-Dissolved			102.6		%		80-120	15-JUN-20
Calcium (Ca)-Dissolved			102.0		%		80-120	15-JUN-20
Chromium (Cr)-Dissolved			99.9		%		80-120	15-JUN-20
Cobalt (Co)-Dissolved			101.5		%		80-120	15-JUN-20
Copper (Cu)-Dissolved			98.1		%		80-120	15-JUN-20
Iron (Fe)-Dissolved			102.7		%		80-120	15-JUN-20
Lead (Pb)-Dissolved			100.0		%		80-120	15-JUN-20
Lithium (Li)-Dissolved			98.8		%		80-120	15-JUN-20
Magnesium (Mg)-Dissolved			97.1		%		80-120	15-JUN-20
Manganese (Mn)-Dissolved			105.1		%		80-120	15-JUN-20
Molybdenum (Mo)-Dissolved			102.8		%		80-120	15-JUN-20
Nickel (Ni)-Dissolved			100.9		%		80-120	15-JUN-20
Potassium (K)-Dissolved			97.5		%		80-120	15-JUN-20
Selenium (Se)-Dissolved			95.1		%		80-120	15-JUN-20
Silicon (Si)-Dissolved			97.6		%		60-140	15-JUN-20
Silver (Ag)-Dissolved			103.8		%		80-120	15-JUN-20
Sodium (Na)-Dissolved			104.5		%		80-120	15-JUN-20
Strontium (Sr)-Dissolved			104.2		%		80-120	15-JUN-20
Thallium (Tl)-Dissolved			97.3		%		80-120	15-JUN-20
Tin (Sn)-Dissolved			100.6		%		80-120	15-JUN-20
Titanium (Ti)-Dissolved			92.7		%		80-120	15-JUN-20
Uranium (U)-Dissolved			101.4		%		80-120	15-JUN-20
Vanadium (V)-Dissolved			102.1		%		80-120	15-JUN-20
Zinc (Zn)-Dissolved			93.2		%		80-120	15-JUN-20
WG3341705-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341705-1	MB	NP						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
WG3341705-4	MS	L2459108-6						
Aluminum (Al)-Dissolved			100.8		%		70-130	15-JUN-20
Antimony (Sb)-Dissolved			101.1		%		70-130	15-JUN-20
Arsenic (As)-Dissolved			100.8		%		70-130	15-JUN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	15-JUN-20
Bismuth (Bi)-Dissolved			91.7		%		70-130	15-JUN-20
Boron (B)-Dissolved			93.4		%		70-130	15-JUN-20
Cadmium (Cd)-Dissolved			99.5		%		70-130	15-JUN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	15-JUN-20
Chromium (Cr)-Dissolved			97.2		%		70-130	15-JUN-20
Cobalt (Co)-Dissolved			96.7		%		70-130	15-JUN-20
Copper (Cu)-Dissolved			94.2		%		70-130	15-JUN-20
Iron (Fe)-Dissolved			99.9		%		70-130	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341705-4	MS	L2459108-6						
Lead (Pb)-Dissolved			96.4		%		70-130	15-JUN-20
Lithium (Li)-Dissolved			88.0		%		70-130	15-JUN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	15-JUN-20
Manganese (Mn)-Dissolved			99.8		%		70-130	15-JUN-20
Molybdenum (Mo)-Dissolved			99.5		%		70-130	15-JUN-20
Nickel (Ni)-Dissolved			94.1		%		70-130	15-JUN-20
Potassium (K)-Dissolved			94.7		%		70-130	15-JUN-20
Selenium (Se)-Dissolved			102.9		%		70-130	15-JUN-20
Silicon (Si)-Dissolved			89.9		%		70-130	15-JUN-20
Silver (Ag)-Dissolved			101.9		%		70-130	15-JUN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	15-JUN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	15-JUN-20
Thallium (Tl)-Dissolved			97.5		%		70-130	15-JUN-20
Tin (Sn)-Dissolved			99.3		%		70-130	15-JUN-20
Titanium (Ti)-Dissolved			93.6		%		70-130	15-JUN-20
Uranium (U)-Dissolved			99.9		%		70-130	15-JUN-20
Vanadium (V)-Dissolved			100.6		%		70-130	15-JUN-20
Zinc (Zn)-Dissolved			92.2		%		70-130	15-JUN-20
Batch	R5118767							
WG3342555-2	LCS							
Aluminum (Al)-Dissolved			100.1		%		80-120	16-JUN-20
Antimony (Sb)-Dissolved			96.4		%		80-120	16-JUN-20
Arsenic (As)-Dissolved			97.0		%		80-120	16-JUN-20
Barium (Ba)-Dissolved			96.1		%		80-120	16-JUN-20
Bismuth (Bi)-Dissolved			102.5		%		80-120	16-JUN-20
Boron (B)-Dissolved			96.1		%		80-120	16-JUN-20
Cadmium (Cd)-Dissolved			98.6		%		80-120	16-JUN-20
Calcium (Ca)-Dissolved			99.6		%		80-120	16-JUN-20
Chromium (Cr)-Dissolved			98.5		%		80-120	16-JUN-20
Cobalt (Co)-Dissolved			96.3		%		80-120	16-JUN-20
Copper (Cu)-Dissolved			95.6		%		80-120	16-JUN-20
Iron (Fe)-Dissolved			89.7		%		80-120	16-JUN-20
Lead (Pb)-Dissolved			96.5		%		80-120	16-JUN-20
Lithium (Li)-Dissolved			89.5		%		80-120	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5118767							
WG3342555-2	LCS							
Magnesium (Mg)-Dissolved			98.0		%		80-120	16-JUN-20
Manganese (Mn)-Dissolved			98.6		%		80-120	16-JUN-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	16-JUN-20
Nickel (Ni)-Dissolved			96.6		%		80-120	16-JUN-20
Potassium (K)-Dissolved			101.1		%		80-120	16-JUN-20
Selenium (Se)-Dissolved			99.9		%		80-120	16-JUN-20
Silicon (Si)-Dissolved			96.9		%		60-140	16-JUN-20
Silver (Ag)-Dissolved			92.9		%		80-120	16-JUN-20
Sodium (Na)-Dissolved			102.6		%		80-120	16-JUN-20
Strontium (Sr)-Dissolved			102.2		%		80-120	16-JUN-20
Thallium (Tl)-Dissolved			100.2		%		80-120	16-JUN-20
Tin (Sn)-Dissolved			97.7		%		80-120	16-JUN-20
Titanium (Ti)-Dissolved			93.8		%		80-120	16-JUN-20
Uranium (U)-Dissolved			99.3		%		80-120	16-JUN-20
Vanadium (V)-Dissolved			96.8		%		80-120	16-JUN-20
Zinc (Zn)-Dissolved			95.1		%		80-120	16-JUN-20
WG3342555-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5118767							
WG3342555-1	MB	NP						
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5119596							
WG3343343-31	DUP	L2459108-6						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	16-JUN-20
WG3343343-30	LCS							
Ammonia as N			100.4		%		85-115	16-JUN-20
WG3343343-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-JUN-20
WG3343343-32	MS	L2459108-6						
Ammonia as N			115.5		%		75-125	16-JUN-20
NO2-L-IC-N-CL								
	Water							
Batch	R5121418							
WG3343823-10	LCS							
Nitrite (as N)			104.5		%		90-110	12-JUN-20
WG3343823-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-20
NO3-L-IC-N-CL								
	Water							
Batch	R5121418							
WG3343823-10	LCS							
Nitrate (as N)			98.1		%		90-110	12-JUN-20
WG3343823-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL		Water						
Batch	R5120436							
WG3343318-11	CRM	CL-ORP						
ORP			226		mV		210-230	16-JUN-20
WG3343318-9	CRM	CL-ORP						
ORP			223		mV		210-230	16-JUN-20
WG3343318-10	DUP	L2459108-1						
ORP		306	300	J	mV	6.1	15	16-JUN-20
P-T-L-COL-CL		Water						
Batch	R5119159							
WG3342956-14	LCS							
Phosphorus (P)-Total			95.3		%		80-120	16-JUN-20
WG3342956-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-20
P-TD-L-COL-CL		Water						
Batch	R5119159							
WG3342956-14	LCS							
Phosphorus (P)-Total Dissolved			95.3		%		80-120	16-JUN-20
WG3342956-13	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-JUN-20
PH-CL		Water						
Batch	R5119317							
WG3343075-8	LCS							
pH			7.00		pH		6.9-7.1	15-JUN-20
PO4-DO-L-COL-CL		Water						
Batch	R5116756							
WG3340334-7	DUP	L2459108-4						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-JUN-20
WG3340334-6	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	11-JUN-20
WG3340334-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUN-20
SO4-IC-N-CL		Water						
Batch	R5121418							
WG3343823-10	LCS							
Sulfate (SO4)			102.7		%		90-110	12-JUN-20
WG3343823-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5123500							
WG3342851-18 DUP		L2459108-5						
Total Dissolved Solids		284	298		mg/L	5.0	20	16-JUN-20
WG3342851-14 LCS								
Total Dissolved Solids			98.9		%		85-115	16-JUN-20
WG3342851-17 LCS								
Total Dissolved Solids			98.5		%		85-115	16-JUN-20
WG3342851-13 MB								
Total Dissolved Solids			<10		mg/L		10	16-JUN-20
WG3342851-16 MB								
Total Dissolved Solids			<10		mg/L		10	16-JUN-20
TKN-L-F-CL								
	Water							
Batch	R5123699							
WG3344505-8 DUP		L2459108-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-JUN-20
WG3344505-11 LCS								
Total Kjeldahl Nitrogen			103.6		%		75-125	17-JUN-20
WG3344505-15 LCS								
Total Kjeldahl Nitrogen			101.0		%		75-125	17-JUN-20
WG3344505-2 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	17-JUN-20
WG3344505-7 LCS								
Total Kjeldahl Nitrogen			105.6		%		75-125	17-JUN-20
WG3344505-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-6 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-9 MS		L2459108-3						
Total Kjeldahl Nitrogen			114.0		%		70-130	17-JUN-20
TSS-L-CL								
	Water							
Batch	R5122979							
WG3342928-8 LCS								
Total Suspended Solids			107.1		%		85-115	16-JUN-20
WG3342928-7 MB								
Total Suspended Solids			<1.0		mg/L		1	16-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5117062							
WG3341240-5	LCS							
Turbidity			99.96		%		85-115	12-JUN-20
WG3341240-4	MB							
Turbidity			<0.10		NTU		0.1	12-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	09-JUN-20 12:15	16-JUN-20 11:15	0.25	167	hours	EHTR-FM
	2	09-JUN-20 12:20	16-JUN-20 11:15	0.25	167	hours	EHTR-FM
	3	09-JUN-20 12:25	16-JUN-20 11:15	0.25	167	hours	EHTR-FM
	4	09-JUN-20 12:30	16-JUN-20 11:15	0.25	167	hours	EHTR-FM
	5	09-JUN-20 13:25	16-JUN-20 11:15	0.25	166	hours	EHTR-FM
	6	09-JUN-20 14:00	16-JUN-20 11:15	0.25	165	hours	EHTR-FM
pH							
	1	09-JUN-20 12:15	15-JUN-20 10:00	0.25	142	hours	EHTR-FM
	2	09-JUN-20 12:20	15-JUN-20 10:00	0.25	142	hours	EHTR-FM
	3	09-JUN-20 12:25	15-JUN-20 10:00	0.25	142	hours	EHTR-FM
	4	09-JUN-20 12:30	15-JUN-20 10:00	0.25	142	hours	EHTR-FM
	5	09-JUN-20 13:25	15-JUN-20 10:00	0.25	141	hours	EHTR-FM
	6	09-JUN-20 14:00	15-JUN-20 10:00	0.25	140	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2459108 were received on 10-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: **20200609Q2GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	EM	No	Yes	Yes	No	No	No	No	Yes	Yes		
								EMERGENCY	Nitric		Sulphuric		Sulphuric		NO	Sodium Bisulphate	HCl	NaOH	
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_SPR1A_WG_2020_Q2_NP	EV_MW_SPR1A	WG	N	6/9/2020	12:15	G	5		1	1	1	1					1		
EV_MW_BC10A_WG_2020_Q2_NP	EV_MW_BC10A	WG	N	6/9/2020	12:20	G	5		1	1	1	1					1		
EV_MW_BC10B_WG_2020_Q2_NP	EV_MW_BC10B	WG	N	6/9/2020	12:25	G	5		1	1	1	1					1		
EV_MW_BC10C_WG_2020_Q2_NP	EV_MW_BC10C	WG	N	6/9/2020	12:30	G	5		1	1	1	1					1		
EV_MW_SPR1B_WG_2020_Q2_NP	EV_MW_SPR1B	WG	N	6/9/2020	13:25	G	5		1	1	1	1					1		
EV_MW_SPR1C_WG_2020_Q2_NP	EV_MW_SPR1C	WG	N	6/9/2020	14:00	G	5		1	1	1	1					1		
							Total	130											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	June 9, 2020	<i>Ken</i>	6/10/2020

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	Kennedy Allen	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Kennedy Allen</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				June 9, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



L2459108-COFC

Handwritten initials

Handwritten signatures and dates: Ken 6/10/2020

Handwritten signature: Kennedy Allen

Handwritten initials: JA



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 11-JUN-20
Report Date: 19-JUN-20 09:37 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2459497
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200610Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2459497-1 WG 10-JUN-20 11:00 EV_MW_MC2A_W G_2020_Q2_NP	L2459497-2 WG 10-JUN-20 11:45 EV_MW_MC2B_W G_2020_Q2_NP	L2459497-3 WG 10-JUN-20 12:55 EV_MW_BC1A_W G_2020_Q2_NP	L2459497-4 WG 10-JUN-20 13:40 EV_MW_BC1B_W G_2020_Q2_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	876	1140	1870	1930
	Hardness (as CaCO3) (mg/L)	388	624	1130	1170
	pH (pH)	8.23	8.15	8.08	8.12
	ORP (mV)	233	264	230	300
	Total Suspended Solids (mg/L)	1.2	<1.0	35.1	2.9
	Total Dissolved Solids (mg/L)	492 ^{DLHC}	887 ^{DLHC}	1660 ^{DLHC}	1700 ^{DLHC}
	Turbidity (NTU)	19.8	<0.10	28.1	0.62
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.5	<1.0	4.2	1.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	369	244	244	246
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	369	244	244	246
	Ammonia as N (mg/L)	0.957	0.0188	0.0210	0.0228
	Bicarbonate (HCO3) (mg/L)	451	298	297	300
	Bromide (Br) (mg/L)	<0.050	0.63 ^{DLHC}	0.59 ^{DLHC}	0.45 ^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	77.8	28.4 ^{DLHC}	26.8 ^{DLHC}	32.4 ^{DLHC}
	Fluoride (F) (mg/L)	0.235	0.10 ^{DLHC}	0.14 ^{DLHC}	0.17 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	101	89.9	92.0	92.5
	Nitrate (as N) (mg/L)	<0.0050	7.84 ^{DLHC}	29.3 ^{DLHC}	32.8 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	0.0227 ^{DLHC}	0.0072 ^{DLHC}	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	0.852	<0.25 ^{TKNI}	<0.25 ^{TKNI}	<0.25 ^{TKNI}
	Total Nitrogen (mg/L)	0.852	7.86	29.3	32.8
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0035	0.0126	0.0259
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0058 ^{DLM}	0.014 ^{DLM}	0.023 ^{DLM}
	Phosphorus (P)-Total (mg/L)	0.0025	0.0058 ^{DLM}	0.077 ^{DLM}	0.027 ^{DLM}
	Sulfate (SO4) (mg/L)	<0.30	393 ^{DLHC}	843 ^{DLHC}	865 ^{DLHC}
	Anion Sum (meq/L)	9.59	14.4	25.3	26.2
	Cation Sum (meq/L)	9.65	13.0	23.3	24.2
	Cation - Anion Balance (%)	0.3	-5.3	-4.2	-3.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	1.26 ^{DTC}	0.73	1.71 ^{DTC}
	Total Organic Carbon (mg/L)	<0.50	0.88 ^{DTC}	0.89	0.59 ^{DTC}
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	0.0098	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2459497-1	L2459497-2	L2459497-3	L2459497-4
					WG	WG	WG	WG
		10-JUN-20	11:00		10-JUN-20	11:45	10-JUN-20	13:40
					EV_MW_MC2A_W G_2020_Q2_NP	EV_MW_MC2B_W G_2020_Q2_NP	EV_MW_BC1A_W G_2020_Q2_NP	EV_MW_BC1B_W G_2020_Q2_NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00011	0.00075	0.00174			
	Arsenic (As)-Dissolved (mg/L)	0.00119	0.00011	0.00021	0.00020			
	Barium (Ba)-Dissolved (mg/L)	5.37	0.0532	0.0570	0.0437			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.065	0.025	0.043	0.056			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.107	0.211	0.272			
	Calcium (Ca)-Dissolved (mg/L)	104	150	231	232			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00017	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.62	0.28			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00022	0.00055	0.00040			
	Iron (Fe)-Dissolved (mg/L)	1.44	<0.010	0.011	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.243	0.0536	0.185	0.201			
	Magnesium (Mg)-Dissolved (mg/L)	31.3	60.2	134	144			
	Manganese (Mn)-Dissolved (mg/L)	0.0511	0.00011	0.0195	0.00026			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000154	0.000660	0.00617	0.00993			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00065	0.00273	0.00475			
	Potassium (K)-Dissolved (mg/L)	3.55	2.07	5.41	7.75			
	Selenium (Se)-Dissolved (ug/L)	<0.050	51.4	178	216			
	Silicon (Si)-Dissolved (mg/L)	3.87	3.22	2.90	2.76			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	39.9	10.9	12.7	14.2			
	Strontium (Sr)-Dissolved (mg/L)	1.45	0.327	0.951	1.12			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000011	0.000025			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000018	0.00160	0.00810	0.00924			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0033	0.0012	0.0055	0.0057			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2459497-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2459497-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2459497-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2459497-1, -2, -3, -4
Matrix Spike	Nitrate (as N)	MS-B	L2459497-1, -2, -3, -4
Matrix Spike	Sulfate (SO ₄)	MS-B	L2459497-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200610Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2459497

Report Date: 19-JUN-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5121262							
WG3343782-5	LCS							
Acidity (as CaCO3)			103.9		%		85-115	16-JUN-20
WG3343782-4	MB							
Acidity (as CaCO3)			1.2		mg/L		2	16-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5121059							
WG3343776-14	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	16-JUN-20
WG3343776-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5117815							
WG3341704-2	LCS							
Beryllium (Be)-Dissolved			94.5		%		80-120	15-JUN-20
WG3341704-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-2	LCS							
Bromide (Br)			101.5		%		85-115	13-JUN-20
WG3344258-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5124700							
WG3344838-7	DUP	L2459497-1						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	17-JUN-20
WG3344838-6	LCS							
Dissolved Organic Carbon			90.9		%		80-120	17-JUN-20
WG3344838-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-20
WG3344838-8	MS	L2459497-1						
Dissolved Organic Carbon			103.0		%		70-130	17-JUN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5124700							
WG3344838-7	DUP	L2459497-1						
Total Organic Carbon		<0.50	0.55	RPD-NA	mg/L	N/A	20	17-JUN-20
WG3344838-6	LCS							



Quality Control Report

Workorder: L2459497

Report Date: 19-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5124700							
WG3344838-6	LCS							
Total Organic Carbon			97.9		%		80-120	17-JUN-20
WG3344838-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-20
WG3344838-8	MS	L2459497-1						
Total Organic Carbon			107.6		%		70-130	17-JUN-20
CL-IC-N-CL								
Water								
Batch	R5122937							
WG3344258-2	LCS							
Chloride (Cl)			101.6		%		90-110	13-JUN-20
WG3344258-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-JUN-20
EC-L-PCT-CL								
Water								
Batch	R5121059							
WG3343776-14	LCS							
Conductivity (@ 25C)			99.8		%		90-110	16-JUN-20
WG3343776-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-JUN-20
F-IC-N-CL								
Water								
Batch	R5122937							
WG3344258-2	LCS							
Fluoride (F)			98.3		%		90-110	13-JUN-20
WG3344258-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-JUN-20
HG-D-CVAA-VA								
Water								
Batch	R5118210							
WG3343064-10	LCS							
Mercury (Hg)-Dissolved			99.6		%		80-120	16-JUN-20
WG3343064-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-JUN-20
MET-D-CCMS-VA								
Water								
Batch	R5117815							
WG3341704-2	LCS							
Aluminum (Al)-Dissolved			101.8		%		80-120	15-JUN-20
Antimony (Sb)-Dissolved			93.5		%		80-120	15-JUN-20
Arsenic (As)-Dissolved			97.3		%		80-120	15-JUN-20
Barium (Ba)-Dissolved			103.2		%		80-120	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341704-2	LCS							
Bismuth (Bi)-Dissolved			96.4		%		80-120	15-JUN-20
Boron (B)-Dissolved			96.5		%		80-120	15-JUN-20
Cadmium (Cd)-Dissolved			99.6		%		80-120	15-JUN-20
Calcium (Ca)-Dissolved			96.2		%		80-120	15-JUN-20
Chromium (Cr)-Dissolved			98.3		%		80-120	15-JUN-20
Cobalt (Co)-Dissolved			100.5		%		80-120	15-JUN-20
Copper (Cu)-Dissolved			97.7		%		80-120	15-JUN-20
Iron (Fe)-Dissolved			99.4		%		80-120	15-JUN-20
Lead (Pb)-Dissolved			100.3		%		80-120	15-JUN-20
Lithium (Li)-Dissolved			96.2		%		80-120	15-JUN-20
Magnesium (Mg)-Dissolved			95.2		%		80-120	15-JUN-20
Manganese (Mn)-Dissolved			102.0		%		80-120	15-JUN-20
Molybdenum (Mo)-Dissolved			98.3		%		80-120	15-JUN-20
Nickel (Ni)-Dissolved			98.7		%		80-120	15-JUN-20
Potassium (K)-Dissolved			96.3		%		80-120	15-JUN-20
Selenium (Se)-Dissolved			90.5		%		80-120	15-JUN-20
Silicon (Si)-Dissolved			96.7		%		60-140	15-JUN-20
Silver (Ag)-Dissolved			99.5		%		80-120	15-JUN-20
Sodium (Na)-Dissolved			99.3		%		80-120	15-JUN-20
Strontium (Sr)-Dissolved			101.4		%		80-120	15-JUN-20
Thallium (Tl)-Dissolved			94.7		%		80-120	15-JUN-20
Tin (Sn)-Dissolved			96.8		%		80-120	15-JUN-20
Titanium (Ti)-Dissolved			95.7		%		80-120	15-JUN-20
Uranium (U)-Dissolved			101.2		%		80-120	15-JUN-20
Vanadium (V)-Dissolved			102.0		%		80-120	15-JUN-20
Zinc (Zn)-Dissolved			97.3		%		80-120	15-JUN-20
WG3341704-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5117815							
WG3341704-1	MB	NP						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5123276							
WG3344327-54	LCS							
Ammonia as N			96.9		%		85-115	17-JUN-20
WG3344327-58	LCS							
Ammonia as N			97.4		%		85-115	17-JUN-20
WG3344327-53	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-20
WG3344327-57	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5122937							
WG3344258-2	LCS							
Nitrite (as N)			103.3		%		90-110	13-JUN-20
WG3344258-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-JUN-20
NO3-L-IC-N-CL	Water							
Batch	R5122937							
WG3344258-2	LCS							
Nitrate (as N)			102.2		%		90-110	13-JUN-20
WG3344258-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-JUN-20
ORP-CL	Water							
Batch	R5123677							
WG3344093-3	CRM	CL-ORP						
ORP			225		mV		210-230	17-JUN-20
WG3344093-5	CRM	CL-ORP						
ORP			221		mV		210-230	17-JUN-20
P-T-L-COL-CL	Water							
Batch	R5119159							
WG3342956-26	LCS							
Phosphorus (P)-Total			99.5		%		80-120	16-JUN-20
WG3342956-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-JUN-20
P-TD-L-COL-CL	Water							
Batch	R5119159							
WG3342956-26	LCS							
Phosphorus (P)-Total Dissolved			99.5		%		80-120	16-JUN-20
WG3342956-25	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-JUN-20
PH-CL	Water							
Batch	R5121059							
WG3343776-14	LCS							
pH			6.98		pH		6.9-7.1	16-JUN-20
PO4-DO-L-COL-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5116756							
WG3340334-18 LCS								
Orthophosphate-Dissolved (as P)			101.0		%		80-120	11-JUN-20
WG3340334-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUN-20
SO4-IC-N-CL	Water							
Batch	R5122937							
WG3344258-2 LCS								
Sulfate (SO4)			103.8		%		90-110	13-JUN-20
WG3344258-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	13-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5125576							
WG3343762-5 LCS								
Total Dissolved Solids			98.2		%		85-115	17-JUN-20
WG3343762-4 MB								
Total Dissolved Solids			<10		mg/L		10	17-JUN-20
TKN-L-F-CL	Water							
Batch	R5123699							
WG3344505-11 LCS								
Total Kjeldahl Nitrogen			103.6		%		75-125	17-JUN-20
WG3344505-15 LCS								
Total Kjeldahl Nitrogen			101.0		%		75-125	17-JUN-20
WG3344505-2 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	17-JUN-20
WG3344505-7 LCS								
Total Kjeldahl Nitrogen			105.6		%		75-125	17-JUN-20
WG3344505-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
WG3344505-6 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL								
	Water							
Batch	R5125460							
WG3343611-8	LCS							
Total Suspended Solids			93.5		%		85-115	17-JUN-20
WG3343611-7	MB							
Total Suspended Solids			<1.0		mg/L		1	17-JUN-20
TURBIDITY-CL								
	Water							
Batch	R5117062							
WG3341240-15	DUP	L2459497-1						
Turbidity		19.8	19.9		NTU	0.5	15	12-JUN-20
WG3341240-14	LCS							
Turbidity			101.0		%		85-115	12-JUN-20
WG3341240-20	LCS							
Turbidity			102.0		%		85-115	12-JUN-20
WG3341240-13	MB							
Turbidity			<0.10		NTU		0.1	12-JUN-20
WG3341240-19	MB							
Turbidity			<0.10		NTU		0.1	12-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	10-JUN-20 11:00	17-JUN-20 07:00	0.25	164	hours	EHTR-FM
	2	10-JUN-20 11:45	17-JUN-20 07:00	0.25	163	hours	EHTR-FM
	3	10-JUN-20 12:55	17-JUN-20 07:00	0.25	162	hours	EHTR-FM
	4	10-JUN-20 13:40	17-JUN-20 07:00	0.25	161	hours	EHTR-FM
pH							
	1	10-JUN-20 11:00	16-JUN-20 14:00	0.25	147	hours	EHTR-FM
	2	10-JUN-20 11:45	16-JUN-20 14:00	0.25	146	hours	EHTR-FM
	3	10-JUN-20 12:55	16-JUN-20 14:00	0.25	145	hours	EHTR-FM
	4	10-JUN-20 13:40	16-JUN-20 14:00	0.25	144	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2459497 were received on 11-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200610Q2GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allen@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_MC2A_WG_2020_Q2_NP	EV_MW_MC2A	WG	N	6/10/2020	11:00	G 5	1	1	1	1	1	1	1				
EV_MW_MC2B_WG_2020_Q2_NP	EV_MW_MC2B	WG	N	6/10/2020	11:45	G 5	1	1	1	1	1	1	1				
EV_MW_BC1A_WG_2020_Q2_NP	EV_MW_BC1A	WG	N	6/10/2020	12:55	G 5	1	1	1	1	1	1	1				
EV_MW_BC1B_WG_2020_Q2_NP	EV_MW_BC1B	WG	N	6/10/2020	13:40	G 5	1	1	1	1	1	1	1				
Total						20											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kennedy Allen	June 10, 2020		
			<i>Ken</i>	6/11 8:55

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	Kennedy Allen	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Kennedy Allen</i>	Mobile #
Emergency (1 Business Day) - 100% surcharge		Date/Time	June 10, 2020	
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

5



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 12-JUN-20
Report Date: 22-JUN-20 13:49 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2460112
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200611Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2460112-1 WG 11-JUN-20 14:20 EV_MW_MC1A_W G_2020_Q2_NP	L2460112-2 WG 11-JUN-20 14:55 EV_MW_MC1B_W G_2020_Q2_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	792	1080		
	Hardness (as CaCO3) (mg/L)	412	579		
	pH (pH)	8.25	8.20		
	ORP (mV)	257	279		
	Total Suspended Solids (mg/L)	1.8	29.7		
	Total Dissolved Solids (mg/L)	521 ^{DLHC}	741 ^{DLHC}		
	Turbidity (NTU)	7.84	178		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.8	8.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	316	324		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	316	324		
	Ammonia as N (mg/L)	1.82 ^{DLHC}	0.253		
	Bicarbonate (HCO3) (mg/L)	386	395		
	Bromide (Br) (mg/L)	0.529	1.04 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	81.5	113 ^{DLHC}		
	Fluoride (F) (mg/L)	0.278	0.12 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	108	114		
	Nitrate (as N) (mg/L)	<0.0050	0.029 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	1.44	0.310		
	Total Nitrogen (mg/L)	1.44	0.339		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0059	0.0193		
	Phosphorus (P)-Total (mg/L)	0.0059	0.0198		
	Sulfate (SO4) (mg/L)	<0.30	111 ^{DLHC}		
	Anion Sum (meq/L)	8.64	12.0		
	Cation Sum (meq/L)	9.36	13.7		
Cation - Anion Balance (%)	4.0	6.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.24	2.25		
	Total Organic Carbon (mg/L)	1.18	1.99		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2460112-1 WG 11-JUN-20 14:20 EV_MW_MC1A_W G_2020_Q2_NP	L2460112-2 WG 11-JUN-20 14:55 EV_MW_MC1B_W G_2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00065	0.00500		
	Barium (Ba)-Dissolved (mg/L)	10.9	0.900		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.074	0.041		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	108	152		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.815	14.3		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.150	0.125		
	Magnesium (Mg)-Dissolved (mg/L)	34.7	48.1		
	Manganese (Mn)-Dissolved (mg/L)	0.104	0.610		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000190	0.00202		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	4.85	3.39		
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.073		
	Silicon (Si)-Dissolved (mg/L)	3.63	5.41		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	22.1	27.9		
	Strontium (Sr)-Dissolved (mg/L)	1.96	0.799		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000284	0.000484		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0057	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2460112-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2460112-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2460112-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2460112-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2460112-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2460112-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200611Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5121262							
WG3343782-14	LCS							
Acidity (as CaCO3)			103.0		%		85-115	16-JUN-20
WG3343782-13	MB							
Acidity (as CaCO3)			1.3		mg/L		2	16-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5124140							
WG3344687-11	LCS							
Alkalinity, Total (as CaCO3)			102.0		%		85-115	17-JUN-20
WG3344687-14	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	17-JUN-20
WG3344687-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUN-20
WG3344687-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5122217							
WG3343496-2	LCS							
Beryllium (Be)-Dissolved			94.4		%		80-120	17-JUN-20
WG3343496-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-10	LCS							
Bromide (Br)			103.2		%		85-115	13-JUN-20
WG3344258-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5125883							
WG3345812-6	LCS							
Dissolved Organic Carbon			110.9		%		80-120	18-JUN-20
WG3345812-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JUN-20
CL-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-10	LCS							
Chloride (Cl)			101.9		%		90-110	13-JUN-20
WG3344258-9	MB							



Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5122937							
WG3344258-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	13-JUN-20
EC-L-PCT-CL	Water							
Batch	R5124140							
WG3344687-11 LCS								
Conductivity (@ 25C)			100.1		%		90-110	17-JUN-20
WG3344687-14 LCS								
Conductivity (@ 25C)			100.2		%		90-110	17-JUN-20
WG3344687-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUN-20
WG3344687-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUN-20
F-IC-N-CL	Water							
Batch	R5122937							
WG3344258-10 LCS								
Fluoride (F)			92.7		%		90-110	13-JUN-20
WG3344258-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-JUN-20
HG-D-CVAA-VA	Water							
Batch	R5125791							
WG3345562-2 LCS								
Mercury (Hg)-Dissolved			99.9		%		80-120	19-JUN-20
WG3345562-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-JUN-20
MET-D-CCMS-VA	Water							
Batch	R5122217							
WG3343496-2 LCS								
Aluminum (Al)-Dissolved			100.5		%		80-120	17-JUN-20
Antimony (Sb)-Dissolved			94.0		%		80-120	17-JUN-20
Arsenic (As)-Dissolved			95.0		%		80-120	17-JUN-20
Barium (Ba)-Dissolved			102.1		%		80-120	17-JUN-20
Bismuth (Bi)-Dissolved			96.6		%		80-120	17-JUN-20
Boron (B)-Dissolved			95.3		%		80-120	17-JUN-20
Cadmium (Cd)-Dissolved			95.5		%		80-120	17-JUN-20
Calcium (Ca)-Dissolved			97.3		%		80-120	17-JUN-20
Chromium (Cr)-Dissolved			95.8		%		80-120	17-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5122217							
WG3343496-2	LCS							
Cobalt (Co)-Dissolved			99.4		%		80-120	17-JUN-20
Copper (Cu)-Dissolved			95.2		%		80-120	17-JUN-20
Iron (Fe)-Dissolved			91.6		%		80-120	17-JUN-20
Lead (Pb)-Dissolved			95.0		%		80-120	17-JUN-20
Lithium (Li)-Dissolved			98.5		%		80-120	17-JUN-20
Magnesium (Mg)-Dissolved			99.6		%		80-120	17-JUN-20
Manganese (Mn)-Dissolved			99.8		%		80-120	17-JUN-20
Molybdenum (Mo)-Dissolved			96.2		%		80-120	17-JUN-20
Nickel (Ni)-Dissolved			95.2		%		80-120	17-JUN-20
Potassium (K)-Dissolved			102.0		%		80-120	17-JUN-20
Selenium (Se)-Dissolved			104.0		%		80-120	17-JUN-20
Silicon (Si)-Dissolved			100.5		%		60-140	17-JUN-20
Silver (Ag)-Dissolved			98.7		%		80-120	17-JUN-20
Sodium (Na)-Dissolved			103.7		%		80-120	17-JUN-20
Strontium (Sr)-Dissolved			94.9		%		80-120	17-JUN-20
Thallium (Tl)-Dissolved			95.7		%		80-120	17-JUN-20
Tin (Sn)-Dissolved			95.5		%		80-120	17-JUN-20
Titanium (Ti)-Dissolved			93.4		%		80-120	17-JUN-20
Uranium (U)-Dissolved			94.5		%		80-120	17-JUN-20
Vanadium (V)-Dissolved			98.7		%		80-120	17-JUN-20
Zinc (Zn)-Dissolved			99.0		%		80-120	17-JUN-20
WG3343496-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5122217							
WG3343496-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5125467							
WG3345254-22	LCS							
Ammonia as N			101.3		%		85-115	18-JUN-20
WG3345254-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-JUN-20
NO2-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-10	LCS							
Nitrite (as N)			103.1		%		90-110	13-JUN-20
WG3344258-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-JUN-20
NO3-L-IC-N-CL								
	Water							
Batch	R5122937							
WG3344258-10	LCS							
Nitrate (as N)			102.5		%		90-110	13-JUN-20
WG3344258-9	MB							



Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch R5122937								
WG3344258-9 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	13-JUN-20
SOLIDS-TDS-CL								
Water								
Batch R5126309								
WG3344725-5 LCS								
Total Dissolved Solids								
			100.7		%		85-115	18-JUN-20
WG3344725-4 MB								
Total Dissolved Solids								
			<10		mg/L		10	18-JUN-20
TKN-L-F-CL								
Water								
Batch R5126301								
WG3346223-12 LCS								
Total Kjeldahl Nitrogen								
			101.3		%		75-125	19-JUN-20
WG3346223-2 LCS								
Total Kjeldahl Nitrogen								
			106.5		%		75-125	19-JUN-20
WG3346223-4 LCS								
Total Kjeldahl Nitrogen								
			102.9		%		75-125	19-JUN-20
WG3346223-8 LCS								
Total Kjeldahl Nitrogen								
			101.6		%		75-125	19-JUN-20
WG3346223-1 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	19-JUN-20
WG3346223-11 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	19-JUN-20
WG3346223-3 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	19-JUN-20
WG3346223-7 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	19-JUN-20
TSS-L-CL								
Water								
Batch R5126273								
WG3344734-4 LCS								
Total Suspended Solids								
			89.2		%		85-115	18-JUN-20
WG3344734-3 MB								
Total Suspended Solids								
			<1.0		mg/L		1	18-JUN-20
TURBIDITY-CL								
Water								
Batch R5117247								
WG3341737-12 DUP								
Turbidity								
		L2460112-2	178		NTU	0.0	15	13-JUN-20
WG3341737-11 LCS								



Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5117247							
WG3341737-11	LCS							
Turbidity			99.96		%		85-115	13-JUN-20
WG3341737-10	MB							
Turbidity			<0.10		NTU		0.1	13-JUN-20

Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2460112

Report Date: 22-JUN-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-JUN-20 14:20	19-JUN-20 13:00	0.25	191	hours	EHTR-FM
	2	11-JUN-20 14:55	19-JUN-20 13:00	0.25	190	hours	EHTR-FM
pH	1	11-JUN-20 14:20	17-JUN-20 09:00	0.25	139	hours	EHTR-FM
	2	11-JUN-20 14:55	17-JUN-20 09:00	0.25	138	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2460112 were received on 12-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200611Q2GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered = F; Field = L; Lab = PL; Field & Lab = None



L2460112-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERVE FOR	ANALYSIS REQUESTED											
									No	Yes	Yes	No	No	No	No	Yes	Yes			
									TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_MC1A_WG_2020_Q2_NP	EV_MW_MC1A	WG	N	6/11/2020	14:20	G	5		1	1	1		1					1		
EV_MW_MC1B_WG_2020_Q2_NP	EV_MW_MC1B	WG	N	6/11/2020	14:55	G	5		1	1	1		1					1		
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	Kennedy Allen	June 11, 2020	<i>JA</i>	06/12 8:50
--	---------------	---------------	-----------	------------

SERVICE REQUEST (rush - subject to availability)

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Kennedy Allen	Mobile #	
				Sampler's Signature	<i>Kennedy Allen</i>	Date/Time	June 11, 2020

60



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 19-JUN-20
Report Date: 30-JUN-20 18:09 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2463523
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200618Q2GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2463523-1 WG 18-JUN-20 12:50 EV_WF_SW_WG_ 2020_Q2_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	384			
	Hardness (as CaCO3) (mg/L)	202			
	pH (pH)	8.53			
	ORP (mV)	254			
	Total Suspended Solids (mg/L)	15.1			
	Total Dissolved Solids (mg/L)	290	DLHC		
	Turbidity (NTU)	16.9			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	46.4			
	Alkalinity, Total (as CaCO3) (mg/L)	46.4			
	Ammonia as N (mg/L)	0.183			
	Bicarbonate (HCO3) (mg/L)	50.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	2.72			
	Fluoride (F) (mg/L)	0.051			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	102			
	Nitrate (as N) (mg/L)	0.0105			
	Nitrite (as N) (mg/L)	0.0011			
	Total Kjeldahl Nitrogen (mg/L)	0.343			
	Total Nitrogen (mg/L)	0.355			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0048			
	Phosphorus (P)-Total (mg/L)	0.0471			
	Sulfate (SO4) (mg/L)	155			
	Anion Sum (meq/L)	4.24			
	Cation Sum (meq/L)	4.31			
	Cation - Anion Balance (%)	0.8			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.68			
	Total Organic Carbon (mg/L)	9.47			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2463523-1 WG 18-JUN-20 12:50 EV_WF_SW_WG_ 2020_Q2_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00032			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.00355			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	11.7			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00053			
	Iron (Fe)-Dissolved (mg/L)	0.020			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0103			
	Magnesium (Mg)-Dissolved (mg/L)	42.0			
	Manganese (Mn)-Dissolved (mg/L)	0.131			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000584			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.96			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.25			
	Strontium (Sr)-Dissolved (mg/L)	0.00802			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00034			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000011			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2463523-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2463523-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2463523-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2463523-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200618Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2463523

Report Date: 30-JUN-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5128580							
WG3347790-11	LCS							
Acidity (as CaCO3)			105.9		%		85-115	21-JUN-20
WG3347790-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	21-JUN-20
ALK-MAN-CL								
	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
Alkalinity, Total (as CaCO3)		46.4	45.7		mg/L	1.5	20	21-JUN-20
WG3347484-17	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	21-JUN-20
WG3347484-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JUN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5133746							
WG3347290-2	LCS							
Beryllium (Be)-Dissolved			92.3		%		80-120	26-JUN-20
WG3347290-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-JUN-20
BIC-CL								
	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
Bicarbonate (HCO3)		50.0	49.9		mg/L	0.2	20	21-JUN-20
WG3347484-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-JUN-20
BR-L-IC-N-CL								
	Water							
Batch	R5129763							
WG3348142-2	LCS							
Bromide (Br)			105.7		%		85-115	20-JUN-20
WG3348142-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-JUN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5138756							
WG3353094-2	LCS							
Dissolved Organic Carbon			89.0		%		80-120	29-JUN-20
WG3353094-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-JUN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2463523

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5138756							
WG3353094-2	LCS							
Total Organic Carbon			91.1		%		80-120	29-JUN-20
WG3353094-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	29-JUN-20
CL-IC-N-CL	Water							
Batch	R5129763							
WG3348142-2	LCS							
Chloride (Cl)			103.7		%		90-110	20-JUN-20
WG3348142-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	20-JUN-20
CO3-CL	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	21-JUN-20
WG3347484-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-JUN-20
EC-L-PCT-CL	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
Conductivity (@ 25C)		384	383		uS/cm	0.3	10	21-JUN-20
WG3347484-17	LCS							
Conductivity (@ 25C)			98.6		%		90-110	21-JUN-20
WG3347484-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JUN-20
F-IC-N-CL	Water							
Batch	R5129763							
WG3348142-2	LCS							
Fluoride (F)			96.6		%		90-110	20-JUN-20
WG3348142-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-JUN-20
HG-D-CVAA-VA	Water							
Batch	R5131746							
WG3349555-6	LCS							
Mercury (Hg)-Dissolved			100.3		%		80-120	25-JUN-20
WG3349555-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-JUN-20
MET-D-CCMS-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5133746							
WG3347290-2	LCS							
Aluminum (Al)-Dissolved			100.1		%		80-120	26-JUN-20
Antimony (Sb)-Dissolved			98.6		%		80-120	26-JUN-20
Arsenic (As)-Dissolved			98.7		%		80-120	26-JUN-20
Barium (Ba)-Dissolved			104.7		%		80-120	26-JUN-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	26-JUN-20
Boron (B)-Dissolved			96.4		%		80-120	26-JUN-20
Cadmium (Cd)-Dissolved			100.4		%		80-120	26-JUN-20
Calcium (Ca)-Dissolved			99.9		%		80-120	26-JUN-20
Chromium (Cr)-Dissolved			97.1		%		80-120	26-JUN-20
Cobalt (Co)-Dissolved			98.8		%		80-120	26-JUN-20
Copper (Cu)-Dissolved			100.2		%		80-120	26-JUN-20
Iron (Fe)-Dissolved			99.2		%		80-120	26-JUN-20
Lead (Pb)-Dissolved			99.9		%		80-120	26-JUN-20
Lithium (Li)-Dissolved			98.7		%		80-120	26-JUN-20
Magnesium (Mg)-Dissolved			99.9		%		80-120	26-JUN-20
Manganese (Mn)-Dissolved			97.7		%		80-120	26-JUN-20
Molybdenum (Mo)-Dissolved			99.6		%		80-120	26-JUN-20
Nickel (Ni)-Dissolved			99.6		%		80-120	26-JUN-20
Potassium (K)-Dissolved			107.0		%		80-120	26-JUN-20
Selenium (Se)-Dissolved			96.2		%		80-120	26-JUN-20
Silicon (Si)-Dissolved			101.7		%		60-140	26-JUN-20
Silver (Ag)-Dissolved			100.5		%		80-120	26-JUN-20
Sodium (Na)-Dissolved			101.9		%		80-120	26-JUN-20
Strontium (Sr)-Dissolved			103.3		%		80-120	26-JUN-20
Thallium (Tl)-Dissolved			101.9		%		80-120	26-JUN-20
Tin (Sn)-Dissolved			97.9		%		80-120	26-JUN-20
Titanium (Ti)-Dissolved			99.6		%		80-120	26-JUN-20
Uranium (U)-Dissolved			95.9		%		80-120	26-JUN-20
Vanadium (V)-Dissolved			101.6		%		80-120	26-JUN-20
Zinc (Zn)-Dissolved			100.1		%		80-120	26-JUN-20
WG3347290-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JUN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5133746							
WG3347290-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JUN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JUN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JUN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JUN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JUN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JUN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JUN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JUN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JUN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JUN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JUN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JUN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JUN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JUN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JUN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JUN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JUN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JUN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JUN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JUN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JUN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JUN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JUN-20
NH3-L-F-CL								
	Water							
Batch	R5134606							
WG3350831-14	LCS							
Ammonia as N			109.1		%		85-115	26-JUN-20
WG3350831-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-JUN-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5129763							
WG3348142-2	LCS							
Nitrite (as N)			106.0		%		90-110	20-JUN-20
WG3348142-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-JUN-20
NO3-L-IC-N-CL	Water							
Batch	R5129763							
WG3348142-2	LCS							
Nitrate (as N)			104.2		%		90-110	20-JUN-20
WG3348142-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-JUN-20
OH-CL	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	21-JUN-20
WG3347484-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-JUN-20
ORP-CL	Water							
Batch	R5135891							
WG3352319-16	CRM	CL-ORP						
ORP			226		mV		210-230	29-JUN-20
P-T-L-COL-CL	Water							
Batch	R5133396							
WG3350660-2	LCS							
Phosphorus (P)-Total			88.2		%		80-120	26-JUN-20
WG3350660-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-JUN-20
P-TD-L-COL-CL	Water							
Batch	R5133396							
WG3350660-2	LCS							
Phosphorus (P)-Total Dissolved			88.2		%		80-120	26-JUN-20
WG3350660-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	26-JUN-20
PH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5127876							
WG3347484-18	DUP	L2463523-1						
pH		8.53	8.49	J	pH	0.04	0.2	21-JUN-20
WG3347484-17	LCS							
pH			6.99		pH		6.9-7.1	21-JUN-20
PO4-DO-L-COL-CL	Water							
Batch	R5126394							
WG3346133-31	LCS							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	19-JUN-20
WG3346133-8	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-JUN-20
SO4-IC-N-CL	Water							
Batch	R5129763							
WG3348142-2	LCS							
Sulfate (SO4)			104.2		%		90-110	20-JUN-20
WG3348142-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-JUN-20
SOLIDS-TDS-CL	Water							
Batch	R5134916							
WG3349649-8	LCS							
Total Dissolved Solids			98.2		%		85-115	25-JUN-20
WG3349649-7	MB							
Total Dissolved Solids			<10		mg/L		10	25-JUN-20
TKN-L-F-CL	Water							
Batch	R5136101							
WG3352453-2	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	29-JUN-20
WG3352453-4	LCS							
Total Kjeldahl Nitrogen			84.8		%		75-125	29-JUN-20
WG3352453-8	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	29-JUN-20
WG3352453-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JUN-20
WG3352453-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JUN-20
WG3352453-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JUN-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5134840							
WG3349651-6	LCS							
Total Suspended Solids			109.1		%		85-115	25-JUN-20
WG3349651-5	MB							
Total Suspended Solids			<1.0		mg/L		1	25-JUN-20
TURBIDITY-CL	Water							
Batch	R5126643							
WG3346594-20	LCS							
Turbidity			97.0		%		85-115	20-JUN-20
WG3346594-19	MB							
Turbidity			<0.10		NTU		0.1	20-JUN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	18-JUN-20 12:50	29-JUN-20 06:00	0.25	257	hours	EHTR-FM
pH	1	18-JUN-20 12:50	21-JUN-20 14:00	0.25	73	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2463523 were received on 19-JUN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200618Q2GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filter	No	Yes	Yes	No	No	No	No	Yes	Yes			
								PRESERVE		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH			
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI
EV_WF_SW_WG_2020_Q2_NP	EV_WF_SW	WG	N	6/18/2020	12:50	G	5		1	1	1	1	1							
Total							5													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	June 18, 2020	<i>Jason Gravelle</i>	6/18/2020

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jason Gravelle
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Jason Gravelle</i>
Emergency (1 Business Day) - 100% surcharge		Mobile #	
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	June 18, 2020



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 06-MAY-20
Report Date: 14-MAY-20 11:39 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2444591
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200505Q2GW
Legal Site Desc:

Comments:

14-MAY-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2444591-1 WG 05-MAY-20 11:15 EV_GV3GW_WG_ 2020_Q2_NP	L2444591-2 WG 05-MAY-20 11:20 EV_EC5GW_WG_ 2020_Q2_NP	L2444591-3 WG 05-MAY-20 11:25 EV_EC6GW_WG_ 2020_Q2_NP	L2444591-4 WG 05-MAY-20 11:30 EV_EC7GW_WG_ 2020_Q2_NP	L2444591-5 WG 05-MAY-20 13:20 EV_LSGW_WG_20 20_Q2_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	560	558	<2.0	<2.0	840
	Hardness (as CaCO3) (mg/L)	362	364	<0.50	<0.50	596
	pH (pH)	8.22	8.23	5.48	5.34	8.16
	ORP (mV)	346	321	461	420	315
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	409 ^{DLHC}	481 ^{DLHC}	<10	<10	571 ^{DLHC}
	Turbidity (NTU)	0.22	0.21	<0.10	0.10	27.1
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.8	1.9	1.1	1.3	8.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	209	207	<1.0	<1.0	520
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	209	207	<1.0	<1.0	520
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	0.0086 ^{RRV}	0.109
	Bicarbonate (HCO3) (mg/L)	254	252	<5.0	<5.0	634
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.058
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.19	1.65	<0.50	<0.50	7.83
	Fluoride (F) (mg/L)	0.652	0.520	<0.020	<0.020	0.288
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	104	105	0.0	0.0	107
	Nitrate (as N) (mg/L)	0.141	0.128	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	0.104
	Total Nitrogen (mg/L)	0.141	0.128	<0.050	<0.050	0.104
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	0.0018	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0126
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0115
	Sulfate (SO4) (mg/L)	137	137	<0.30	<0.30	55.0
	Anion Sum (meq/L)	7.14	7.07	<0.10	<0.10	11.8
	Cation Sum (meq/L)	7.42	7.45	<0.10	<0.10	12.6
	Cation - Anion Balance (%)	1.9	2.6	0.0	0.0	3.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.62
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.38
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2444591-6 WG 05-MAY-20 14:15 EV_RCSGW_WG_ 2020_Q2_NP	L2444591-7 WG 05-MAY-20 14:35 EV_HW1_WG_202 0_Q2_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2060	1010		
	Hardness (as CaCO3) (mg/L)	1770	683		
	pH (pH)	8.02	8.26		
	ORP (mV)	385	426		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	2150 ^{DLHC}	853 ^{DLHC}		
	Turbidity (NTU)	0.35	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.4	3.8		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	263	242		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	263	242		
	Ammonia as N (mg/L)	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)	321 ^{DLHC}	295		
	Bromide (Br) (mg/L)	<0.25	0.644		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	20.7 ^{DLHC}	33.2		
	Fluoride (F) (mg/L)	0.18 ^{DLHC}	0.141		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	109	109		
	Nitrate (as N) (mg/L)	33.3 ^{DLHC}	6.37		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0012 ^{TKNI}		
	Total Kjeldahl Nitrogen (mg/L)	<0.25 ^{TKNI}	<0.25 ^{TKNI}		
	Total Nitrogen (mg/L)	33.3 ^{RRV}	6.38 ^{RRV}		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037 ^{RRV}	0.0039 ^{RRV}		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	<0.0020 ^{RRV}		
	Phosphorus (P)-Total (mg/L)	0.0033 ^{DLHC}	<0.0020 ^{RRV}		
	Sulfate (SO4) (mg/L)	1190	330		
	Anion Sum (meq/L)	32.9	13.1		
	Cation Sum (meq/L)	35.8	14.3		
	Cation - Anion Balance (%)	4.3	4.4		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.16	<0.50		
	Total Organic Carbon (mg/L)	1.02	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2444591-1	L2444591-2	L2444591-3	L2444591-4	L2444591-5
					WG	WG	WG	WG	WG
		05-MAY-20	11:15		05-MAY-20	05-MAY-20	05-MAY-20	05-MAY-20	05-MAY-20
					11:15	11:20	11:25	11:30	13:20
					EV_GV3GW_WG_2020_Q2_NP	EV_EC5GW_WG_2020_Q2_NP	EV_EC6GW_WG_2020_Q2_NP	EV_EC7GW_WG_2020_Q2_NP	EV_LSGW_WG_2020_Q2_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00139
	Barium (Ba)-Dissolved (mg/L)	0.0177	0.0173	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.230
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	0.038
	Cadmium (Cd)-Dissolved (ug/L)	0.0077	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	86.9	87.5	<0.050	<0.050	<0.050	<0.050	<0.050	112
	Chromium (Cr)-Dissolved (mg/L)	0.00023	0.00021	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.10
	Copper (Cu)-Dissolved (mg/L)	0.00035	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	2.04
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0156	0.0155	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0666
	Magnesium (Mg)-Dissolved (mg/L)	35.2	35.3	<0.10	<0.10	<0.10	<0.10	<0.10	76.7
	Manganese (Mn)-Dissolved (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.941
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000938	0.000924	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00193
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00368
	Potassium (K)-Dissolved (mg/L)	0.983	0.971	<0.050	<0.050	<0.050	<0.050	<0.050	3.59
	Selenium (Se)-Dissolved (ug/L)	4.65	4.54	<0.050	<0.050	<0.050	<0.050	<0.050	0.083
	Silicon (Si)-Dissolved (mg/L)	3.24	3.28	<0.050	<0.050	<0.050	<0.050	<0.050	4.17
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.69	3.61	<0.050	<0.050	<0.050	<0.050	<0.050	10.1
	Strontium (Sr)-Dissolved (mg/L)	0.608	0.598	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.464
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000036
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00179	0.00181	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00209
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0024	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2444591-6	L2444591-7		
	Description	WG	WG		
	Sampled Date	05-MAY-20	05-MAY-20		
	Sampled Time	14:15	14:35		
	Client ID	EV_RCSGW_WG_2020_Q2_NP	EV_HW1_WG_2020_Q2_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00021	0.00012		
	Arsenic (As)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00011		
	Barium (Ba)-Dissolved (mg/L)	0.0423	0.0483		
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.020 ^{DLA}	0.022		
	Cadmium (Cd)-Dissolved (ug/L)	0.283	0.0859		
	Calcium (Ca)-Dissolved (mg/L)	371	160		
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00011		
	Cobalt (Co)-Dissolved (ug/L)	<0.20 ^{DLA}	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.108	0.0306		
	Iron (Fe)-Dissolved (mg/L)	<0.020 ^{DLA}	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.00077	0.000229		
	Lithium (Li)-Dissolved (mg/L)	0.0694	0.0600		
	Magnesium (Mg)-Dissolved (mg/L)	204	69.1		
	Manganese (Mn)-Dissolved (mg/L)	0.00156	0.00015		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00139	0.000615		
	Nickel (Ni)-Dissolved (mg/L)	0.0027	0.00077		
	Potassium (K)-Dissolved (mg/L)	3.54	2.16		
	Selenium (Se)-Dissolved (ug/L)	242	47.7		
	Silicon (Si)-Dissolved (mg/L)	4.19	3.37		
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	10.3	13.8		
	Strontium (Sr)-Dissolved (mg/L)	0.461	0.347		
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 ^{DLA}	0.000018		
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00789	0.00164		
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.479	0.0392		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2444591-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200505Q2GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5080586							
WG3320490-2	LCS							
Acidity (as CaCO3)			104.2		%		85-115	08-MAY-20
WG3320490-1	MB							
Acidity (as CaCO3)			1.2		mg/L		2	08-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5080598							
WG3320496-5	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	08-MAY-20
WG3320496-8	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	08-MAY-20
WG3320496-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAY-20
WG3320496-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-2	LCS							
Beryllium (Be)-Dissolved			96.9		%		80-120	12-MAY-20
WG3321624-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-MAY-20
BIC-CL								
	Water							
Batch	R5080598							
WG3320496-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAY-20
WG3320496-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5081652							
WG3321711-2	LCS							
Bromide (Br)			99.2		%		85-115	08-MAY-20
WG3321711-6	LCS							
Bromide (Br)			100.6		%		85-115	08-MAY-20
WG3321711-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-MAY-20
WG3321711-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-MAY-20
CL-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL		Water						
Batch	R5081652							
WG3321711-2	LCS							
Chloride (Cl)			103.1		%		90-110	08-MAY-20
WG3321711-6	LCS							
Chloride (Cl)			101.8		%		90-110	08-MAY-20
WG3321711-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-20
WG3321711-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-20
CO3-CL		Water						
Batch	R5080598							
WG3320496-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	08-MAY-20
WG3320496-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	08-MAY-20
EC-L-PCT-CL		Water						
Batch	R5080598							
WG3320496-5	LCS							
Conductivity (@ 25C)			100.2		%		90-110	08-MAY-20
WG3320496-8	LCS							
Conductivity (@ 25C)			98.2		%		90-110	08-MAY-20
WG3320496-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAY-20
WG3320496-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAY-20
F-IC-N-CL		Water						
Batch	R5081652							
WG3321711-2	LCS							
Fluoride (F)			94.9		%		90-110	08-MAY-20
WG3321711-6	LCS							
Fluoride (F)			104.3		%		90-110	08-MAY-20
WG3321711-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-MAY-20
WG3321711-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-MAY-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5082193							
WG3322325-11	DUP	L2444591-5						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-MAY-20
WG3322325-10	LCS							
Mercury (Hg)-Dissolved			102.3		%		80-120	13-MAY-20
WG3322325-6	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	13-MAY-20
WG3322325-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
WG3322325-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
WG3322325-12	MS	L2444591-6						
Mercury (Hg)-Dissolved			102.3		%		70-130	13-MAY-20
MET-D-CCMS-VA								
Water								
Batch	R5081919							
WG3321624-2	LCS							
Aluminum (Al)-Dissolved			102.5		%		80-120	12-MAY-20
Antimony (Sb)-Dissolved			95.9		%		80-120	12-MAY-20
Arsenic (As)-Dissolved			99.6		%		80-120	12-MAY-20
Barium (Ba)-Dissolved			101.3		%		80-120	12-MAY-20
Bismuth (Bi)-Dissolved			116.5		%		80-120	12-MAY-20
Boron (B)-Dissolved			88.4		%		80-120	12-MAY-20
Cadmium (Cd)-Dissolved			97.8		%		80-120	12-MAY-20
Calcium (Ca)-Dissolved			94.1		%		80-120	12-MAY-20
Chromium (Cr)-Dissolved			100.2		%		80-120	12-MAY-20
Cobalt (Co)-Dissolved			101.8		%		80-120	12-MAY-20
Copper (Cu)-Dissolved			100.4		%		80-120	12-MAY-20
Iron (Fe)-Dissolved			85.0		%		80-120	12-MAY-20
Lead (Pb)-Dissolved			99.6		%		80-120	12-MAY-20
Lithium (Li)-Dissolved			99.2		%		80-120	12-MAY-20
Magnesium (Mg)-Dissolved			99.6		%		80-120	12-MAY-20
Manganese (Mn)-Dissolved			105.9		%		80-120	12-MAY-20
Molybdenum (Mo)-Dissolved			97.2		%		80-120	12-MAY-20
Nickel (Ni)-Dissolved			99.7		%		80-120	12-MAY-20
Potassium (K)-Dissolved			101.5		%		80-120	12-MAY-20
Selenium (Se)-Dissolved			99.99		%		80-120	12-MAY-20
Silicon (Si)-Dissolved			100.8		%		60-140	12-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-2	LCS							
Silver (Ag)-Dissolved			97.3		%		80-120	12-MAY-20
Sodium (Na)-Dissolved			109.9		%		80-120	12-MAY-20
Strontium (Sr)-Dissolved			97.6		%		80-120	12-MAY-20
Thallium (Tl)-Dissolved			117.3		%		80-120	12-MAY-20
Tin (Sn)-Dissolved			97.4		%		80-120	12-MAY-20
Titanium (Ti)-Dissolved			91.9		%		80-120	12-MAY-20
Uranium (U)-Dissolved			107.9		%		80-120	12-MAY-20
Vanadium (V)-Dissolved			102.2		%		80-120	12-MAY-20
Zinc (Zn)-Dissolved			95.0		%		80-120	12-MAY-20
WG3321624-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081919							
WG3321624-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Batch	R5082419							
WG3322558-2	LCS							
Aluminum (Al)-Dissolved			89.9		%		80-120	13-MAY-20
Antimony (Sb)-Dissolved			105.3		%		80-120	13-MAY-20
Arsenic (As)-Dissolved			98.8		%		80-120	13-MAY-20
Barium (Ba)-Dissolved			103.9		%		80-120	13-MAY-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	13-MAY-20
Boron (B)-Dissolved			93.3		%		80-120	13-MAY-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	13-MAY-20
Calcium (Ca)-Dissolved			104.0		%		80-120	13-MAY-20
Chromium (Cr)-Dissolved			96.7		%		80-120	13-MAY-20
Cobalt (Co)-Dissolved			99.0		%		80-120	13-MAY-20
Copper (Cu)-Dissolved			99.2		%		80-120	13-MAY-20
Iron (Fe)-Dissolved			101.7		%		80-120	13-MAY-20
Lead (Pb)-Dissolved			104.0		%		80-120	13-MAY-20
Lithium (Li)-Dissolved			99.0		%		80-120	13-MAY-20
Magnesium (Mg)-Dissolved			97.9		%		80-120	13-MAY-20
Manganese (Mn)-Dissolved			100.0		%		80-120	13-MAY-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	13-MAY-20
Nickel (Ni)-Dissolved			98.2		%		80-120	13-MAY-20
Potassium (K)-Dissolved			104.4		%		80-120	13-MAY-20
Selenium (Se)-Dissolved			102.8		%		80-120	13-MAY-20
Silicon (Si)-Dissolved			102.1		%		60-140	13-MAY-20
Silver (Ag)-Dissolved			103.5		%		80-120	13-MAY-20
Sodium (Na)-Dissolved			99.4		%		80-120	13-MAY-20
Strontium (Sr)-Dissolved			108.3		%		80-120	13-MAY-20
Thallium (Tl)-Dissolved			106.6		%		80-120	13-MAY-20
Tin (Sn)-Dissolved			98.3		%		80-120	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5082419							
WG3322558-2	LCS							
Titanium (Ti)-Dissolved			88.3		%		80-120	13-MAY-20
Uranium (U)-Dissolved			104.4		%		80-120	13-MAY-20
Vanadium (V)-Dissolved			99.9		%		80-120	13-MAY-20
Zinc (Zn)-Dissolved			102.8		%		80-120	13-MAY-20
WG3322558-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch R5082419								
WG3322558-1	MB	NP	<0.0010		mg/L		0.001	13-MAY-20
Zinc (Zn)-Dissolved								
NH3-L-F-CL								
Water								
Batch R5081870								
WG3321989-31	DUP	L2444591-7	<0.0050	RPD-NA	mg/L	N/A	20	12-MAY-20
Ammonia as N								
WG3321989-30	LCS		102.4		%		85-115	12-MAY-20
Ammonia as N								
WG3321989-34	LCS		101.9		%		85-115	12-MAY-20
Ammonia as N								
WG3321989-29	MB		<0.0050		mg/L		0.005	12-MAY-20
Ammonia as N								
WG3321989-33	MB		<0.0050		mg/L		0.005	12-MAY-20
Ammonia as N								
WG3321989-32	MS	L2444591-7	94.2		%		75-125	12-MAY-20
Ammonia as N								
NO2-L-IC-N-CL								
Water								
Batch R5081652								
WG3321711-2	LCS		97.8		%		90-110	08-MAY-20
Nitrite (as N)								
WG3321711-6	LCS		99.4		%		90-110	08-MAY-20
Nitrite (as N)								
WG3321711-1	MB		<0.0010		mg/L		0.001	08-MAY-20
Nitrite (as N)								
WG3321711-5	MB		<0.0010		mg/L		0.001	08-MAY-20
Nitrite (as N)								
NO3-L-IC-N-CL								
Water								
Batch R5081652								
WG3321711-2	LCS		104.4		%		90-110	08-MAY-20
Nitrate (as N)								
WG3321711-6	LCS		103.1		%		90-110	08-MAY-20
Nitrate (as N)								
WG3321711-1	MB		<0.0050		mg/L		0.005	08-MAY-20
Nitrate (as N)								
WG3321711-5	MB		<0.0050		mg/L		0.005	08-MAY-20
Nitrate (as N)								
OH-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5080598							
WG3320496-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	08-MAY-20
WG3320496-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	08-MAY-20
ORP-CL	Water							
Batch	R5082421							
WG3322688-1 CRM		CL-ORP						
ORP			225		mV		210-230	13-MAY-20
P-T-L-COL-CL	Water							
Batch	R5081272							
WG3321157-34 LCS								
Phosphorus (P)-Total			106.6		%		80-120	11-MAY-20
WG3321157-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-MAY-20
P-TD-L-COL-CL	Water							
Batch	R5081272							
WG3321157-34 LCS								
Phosphorus (P)-Total Dissolved			106.6		%		80-120	11-MAY-20
WG3321157-33 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	11-MAY-20
PH-CL	Water							
Batch	R5080598							
WG3320496-5 LCS								
pH			6.99		pH		6.9-7.1	08-MAY-20
WG3320496-8 LCS								
pH			6.97		pH		6.9-7.1	08-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5080230							
WG3319597-12 LCS								
Orthophosphate-Dissolved (as P)			102.5		%		80-120	07-MAY-20
WG3319597-15 LCS								
Orthophosphate-Dissolved (as P)			102.7		%		80-120	07-MAY-20
WG3319597-2 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAY-20
WG3319597-3 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R5081652							
WG3321711-2	LCS							
Sulfate (SO4)			102.5		%		90-110	08-MAY-20
WG3321711-6	LCS							
Sulfate (SO4)			95.5		%		90-110	08-MAY-20
WG3321711-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-MAY-20
WG3321711-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-MAY-20
SOLIDS-TDS-CL								
Water								
Batch	R5082692							
WG3321444-2	LCS							
Total Dissolved Solids			99.4		%		85-115	12-MAY-20
WG3321444-5	LCS							
Total Dissolved Solids			101.1		%		85-115	12-MAY-20
WG3321444-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-MAY-20
WG3321444-4	MB							
Total Dissolved Solids			<10		mg/L		10	12-MAY-20
TKN-L-F-CL								
Water								
Batch	R5082618							
WG3322870-11	DUP	L2444591-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-MAY-20
WG3322870-10	LCS							
Total Kjeldahl Nitrogen			107.0		%		75-125	13-MAY-20
WG3322870-2	LCS							
Total Kjeldahl Nitrogen			96.5		%		75-125	13-MAY-20
WG3322870-6	LCS							
Total Kjeldahl Nitrogen			117.0		%		75-125	13-MAY-20
WG3322870-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-20
WG3322870-12	MS	L2444591-4						
Total Kjeldahl Nitrogen			92.3		%		70-130	13-MAY-20
TSS-L-CL								
Water								



Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5082018							
WG3321381-6	LCS							
Total Suspended Solids			98.0		%		85-115	11-MAY-20
WG3321381-5	MB							
Total Suspended Solids			<1.0		mg/L		1	11-MAY-20
TURBIDITY-CL	Water							
Batch	R5080000							
WG3319762-23	LCS							
Turbidity			105.0		%		85-115	07-MAY-20
WG3319762-22	MB							
Turbidity			<0.10		NTU		0.1	07-MAY-20

Quality Control Report

Workorder: L2444591

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2444591

Report Date: 14-MAY-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	05-MAY-20 11:15	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	2	05-MAY-20 11:20	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	3	05-MAY-20 11:25	13-MAY-20 08:00	0.25	189	hours	EHTR-FM
	4	05-MAY-20 11:30	13-MAY-20 08:00	0.25	188	hours	EHTR-FM
	5	05-MAY-20 13:20	13-MAY-20 08:00	0.25	187	hours	EHTR-FM
	6	05-MAY-20 14:15	13-MAY-20 08:00	0.25	186	hours	EHTR-FM
	7	05-MAY-20 14:35	13-MAY-20 08:00	0.25	186	hours	EHTR-FM
pH							
	1	05-MAY-20 11:15	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	2	05-MAY-20 11:20	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	3	05-MAY-20 11:25	08-MAY-20 13:00	0.25	74	hours	EHTR-FM
	4	05-MAY-20 11:30	08-MAY-20 13:00	0.25	73	hours	EHTR-FM
	5	05-MAY-20 13:20	08-MAY-20 13:00	0.25	72	hours	EHTR-FM
	6	05-MAY-20 14:15	08-MAY-20 13:00	0.25	71	hours	EHTR-FM
	7	05-MAY-20 14:35	08-MAY-20 13:00	0.25	70	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2444591 were received on 06-MAY-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200505Q2GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcool@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678&77			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2444591-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED														
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury				
EV_GV3GW_WG_2020_Q2_NP	EV_GW3GW	WG	N	5/5/2020	11:15	G	5	1	1	1	1											
EV_EC5GW_WG_2020_Q2_NP	EV_EC5GW	WG	N	5/5/2020	11:20	G	5	1	1	1	1											
EV_EC6GW_WG_2020_Q2_NP	EV_EC6GW	WG	N	5/5/2020	11:25	G	5	1	1	1	1											
EV_EC7GW_WG_2020_Q2_NP	EV_EC7GW	WG	N	5/5/2020	11:30	G	5	1	1	1	1											
EV_LSGW_WG_2020_Q2_NP	EV_LSGW	WG	N	5/5/2020	13:20	G	5	1	1	1	1											
EV_RCSGW_WG_2020_Q2_NP	EV_RCSGW	WG	N	5/5/2020	14:15	G	5	1	1	1	1											
EV_HW1_WG_2020_Q2_NP	EV_HW1	WG	N	5/5/2020	14:35	G	5	1	1	1	1											
							Total	30														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	Kennedy Allen	May 5, 2020		
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SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Kennedy Allen	Mobile #	
				Sampler's Signature		Date/Time	May 5, 2020



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 29-JUL-20
Report Date: 07-AUG-20 12:57 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2481275
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2481275-1	L2481275-2			
Description	WG	WG			
Sampled Date	28-JUL-20	28-JUL-20			
Sampled Time	12:55	10:30			
Client ID	EV_BALGW_WG_2020_Q3_NP	EV_GV3GW_WG_2020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	745	602		
	Hardness (as CaCO3) (mg/L)	365	328		
	pH (pH)	7.57	7.81		
	ORP (mV)	469	428		
	Total Suspended Solids (mg/L)	13.2	<1.0		
	Total Dissolved Solids (mg/L)	482 ^{DLHC}	426 ^{DLHC}		
	Turbidity (NTU)	3.38	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	14.0	4.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	339	202		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	339	202		
	Ammonia as N (mg/L)	0.0483	0.0341		
	Bicarbonate (HCO3) (mg/L)	414	246		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.52	1.40		
	Fluoride (F) (mg/L)	0.196	0.427		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	103	96.8		
	Nitrate (as N) (mg/L)	0.0322	0.128		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.119	<0.050		
	Total Nitrogen (mg/L)	0.151	0.128		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0028	0.0017		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0048 ^{DLM}	0.0026		
	Phosphorus (P)-Total (mg/L)	0.061 ^{DLM}	0.0029		
	Sulfate (SO4) (mg/L)	92.8	136		
	Anion Sum (meq/L)	8.76	6.94		
	Cation Sum (meq/L)	8.99	6.72		
	Cation - Anion Balance (%)	1.3	-1.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.56 ^{DTC}	0.74 ^{DTC}		
	Total Organic Carbon (mg/L)	1.42 ^{DTC}	<0.50 ^{DTC}		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2481275-1 WG 28-JUL-20 12:55 EV_BALGW_WG_ 2020_Q3_NP	L2481275-2 WG 28-JUL-20 10:30 EV_GV3GW_WG_ 2020_Q3_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00014	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0415	0.0199		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.161	0.014		
	Cadmium (Cd)-Dissolved (ug/L)	0.0116	0.0106		
	Calcium (Ca)-Dissolved (mg/L)	95.5	81.4		
	Chromium (Cr)-Dissolved (mg/L)	0.00018	0.00023		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00420	0.00040		
	Iron (Fe)-Dissolved (mg/L)	0.026	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.126	0.0156		
	Magnesium (Mg)-Dissolved (mg/L)	30.7	30.2		
	Manganese (Mn)-Dissolved (mg/L)	0.00978	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000327	0.00100		
	Nickel (Ni)-Dissolved (mg/L)	0.00411	<0.00050		
	Potassium (K)-Dissolved (mg/L)	2.82	1.02		
	Selenium (Se)-Dissolved (ug/L)	0.069	4.27		
	Silicon (Si)-Dissolved (mg/L)	4.42	3.28		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	37.3	3.35		
	Strontium (Sr)-Dissolved (mg/L)	2.56	0.569		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000154	0.00174		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0232	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2481275-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2481275-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2481275

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5172272							
WG3373921-8	LCS							
Acidity (as CaCO3)			97.3		%		85-115	30-JUL-20
WG3373921-7	MB							
Acidity (as CaCO3)			1.3		mg/L		2	30-JUL-20
ALK-MAN-CL								
	Water							
Batch	R5172188							
WG3373793-14	LCS							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	30-JUL-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5173371							
WG3374916-2	LCS							
Beryllium (Be)-Dissolved			103.6		%		80-120	01-AUG-20
WG3374916-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-AUG-20
BIC-CL								
	Water							
Batch	R5172188							
WG3373793-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	30-JUL-20
BR-L-IC-N-CL								
	Water							
Batch	R5172672							
WG3374410-6	LCS							
Bromide (Br)			100.6		%		85-115	30-JUL-20
WG3374410-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-JUL-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5173879							
WG3375659-3	DUP	L2481275-1						
Dissolved Organic Carbon		3.56	3.68		mg/L	3.2	20	31-JUL-20
WG3375659-2	LCS							
Dissolved Organic Carbon			104.7		%		80-120	31-JUL-20
WG3375659-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
WG3375659-4	MS	L2481275-1						
Dissolved Organic Carbon			105.2		%		70-130	31-JUL-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5173879							
WG3375659-3	DUP	L2481275-1						
Total Organic Carbon		1.42	1.28		mg/L	10	20	31-JUL-20
WG3375659-2	LCS							
Total Organic Carbon			105.1		%		80-120	31-JUL-20
WG3375659-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-JUL-20
WG3375659-4	MS	L2481275-1						
Total Organic Carbon			108.2		%		70-130	31-JUL-20
CL-IC-N-CL								
Water								
Batch	R5172672							
WG3374410-6	LCS							
Chloride (Cl)			102.0		%		90-110	30-JUL-20
WG3374410-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-JUL-20
CO3-CL								
Water								
Batch	R5172188							
WG3373793-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	30-JUL-20
EC-L-PCT-CL								
Water								
Batch	R5172188							
WG3373793-14	LCS							
Conductivity (@ 25C)			100.0		%		90-110	30-JUL-20
WG3373793-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JUL-20
F-IC-N-CL								
Water								
Batch	R5172672							
WG3374410-6	LCS							
Fluoride (F)			99.7		%		90-110	30-JUL-20
WG3374410-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-JUL-20
HG-D-CVAA-VA								
Water								
Batch	R5172627							
WG3374913-2	LCS							
Mercury (Hg)-Dissolved			101.1		%		80-120	31-JUL-20
WG3374913-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173371							
WG3374916-2	LCS							
Aluminum (Al)-Dissolved			96.6		%		80-120	01-AUG-20
Antimony (Sb)-Dissolved			101.5		%		80-120	01-AUG-20
Arsenic (As)-Dissolved			99.7		%		80-120	01-AUG-20
Barium (Ba)-Dissolved			105.1		%		80-120	01-AUG-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	01-AUG-20
Boron (B)-Dissolved			91.7		%		80-120	01-AUG-20
Cadmium (Cd)-Dissolved			103.9		%		80-120	01-AUG-20
Calcium (Ca)-Dissolved			97.9		%		80-120	01-AUG-20
Chromium (Cr)-Dissolved			100.1		%		80-120	01-AUG-20
Cobalt (Co)-Dissolved			99.0		%		80-120	01-AUG-20
Copper (Cu)-Dissolved			96.3		%		80-120	01-AUG-20
Iron (Fe)-Dissolved			94.7		%		80-120	01-AUG-20
Lead (Pb)-Dissolved			99.7		%		80-120	01-AUG-20
Lithium (Li)-Dissolved			100.3		%		80-120	01-AUG-20
Magnesium (Mg)-Dissolved			95.8		%		80-120	01-AUG-20
Manganese (Mn)-Dissolved			99.2		%		80-120	01-AUG-20
Molybdenum (Mo)-Dissolved			102.3		%		80-120	01-AUG-20
Nickel (Ni)-Dissolved			95.3		%		80-120	01-AUG-20
Potassium (K)-Dissolved			99.0		%		80-120	01-AUG-20
Selenium (Se)-Dissolved			100.6		%		80-120	01-AUG-20
Silicon (Si)-Dissolved			99.4		%		60-140	01-AUG-20
Silver (Ag)-Dissolved			105.2		%		80-120	01-AUG-20
Sodium (Na)-Dissolved			97.6		%		80-120	01-AUG-20
Strontium (Sr)-Dissolved			101.5		%		80-120	01-AUG-20
Thallium (Tl)-Dissolved			102.7		%		80-120	01-AUG-20
Tin (Sn)-Dissolved			101.7		%		80-120	01-AUG-20
Titanium (Ti)-Dissolved			95.2		%		80-120	01-AUG-20
Uranium (U)-Dissolved			104.9		%		80-120	01-AUG-20
Vanadium (V)-Dissolved			99.5		%		80-120	01-AUG-20
Zinc (Zn)-Dissolved			103.5		%		80-120	01-AUG-20
WG3374916-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5173371							
WG3374916-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5175839							
WG3377951-14	LCS							
Ammonia as N			96.9		%		85-115	06-AUG-20
WG3377951-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-AUG-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5172672							
WG3374410-6	LCS							
Nitrite (as N)			101.5		%		90-110	30-JUL-20
WG3374410-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JUL-20
NO3-L-IC-N-CL	Water							
Batch	R5172672							
WG3374410-6	LCS							
Nitrate (as N)			103.2		%		90-110	30-JUL-20
WG3374410-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-JUL-20
OH-CL	Water							
Batch	R5172188							
WG3373793-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	30-JUL-20
ORP-CL	Water							
Batch	R5173219							
WG3374884-3	CRM	CL-ORP						
ORP			226		mV		210-230	31-JUL-20
P-T-L-COL-CL	Water							
Batch	R5172911							
WG3374649-6	LCS							
Phosphorus (P)-Total			107.6		%		80-120	31-JUL-20
WG3374649-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-JUL-20
P-TD-L-COL-CL	Water							
Batch	R5172911							
WG3374649-6	LCS							
Phosphorus (P)-Total Dissolved			107.6		%		80-120	31-JUL-20
WG3374649-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	31-JUL-20
PH-CL	Water							
Batch	R5172188							
WG3373793-14	LCS							
pH			6.98		pH		6.9-7.1	30-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5171748							
WG3373045-14 LCS								
Orthophosphate-Dissolved (as P)			106.5		%		80-120	29-JUL-20
WG3373045-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-JUL-20
SO4-IC-N-CL	Water							
Batch	R5172672							
WG3374410-6 LCS								
Sulfate (SO4)			102.5		%		90-110	30-JUL-20
WG3374410-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-JUL-20
SOLIDS-TDS-CL	Water							
Batch	R5173798							
WG3374415-5 LCS								
Total Dissolved Solids			106.5		%		85-115	31-JUL-20
WG3374415-4 MB								
Total Dissolved Solids			<10		mg/L		10	31-JUL-20
TKN-L-F-CL	Water							
Batch	R5172478							
WG3374122-10 LCS								
Total Kjeldahl Nitrogen			99.9		%		75-125	30-JUL-20
WG3374122-2 LCS								
Total Kjeldahl Nitrogen			105.4		%		75-125	30-JUL-20
WG3374122-27 LCS								
Total Kjeldahl Nitrogen			95.7		%		75-125	30-JUL-20
WG3374122-29 LCS								
Total Kjeldahl Nitrogen			96.1		%		75-125	30-JUL-20
WG3374122-6 LCS								
Total Kjeldahl Nitrogen			105.3		%		75-125	30-JUL-20
WG3374122-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-26 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-28 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20
WG3374122-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-JUL-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5173801							
WG3374382-2	LCS							
Total Suspended Solids			95.9		%		85-115	31-JUL-20
WG3374382-1	MB							
Total Suspended Solids			<1.0		mg/L		1	31-JUL-20
TURBIDITY-CL	Water							
Batch	R5171845							
WG3373050-8	LCS							
Turbidity			97.5		%		85-115	29-JUL-20
WG3373050-7	MB							
Turbidity			<0.10		NTU		0.1	29-JUL-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	28-JUL-20 12:55	31-JUL-20 08:00	0.25	67	hours	EHTR-FM
	2	28-JUL-20 10:30	31-JUL-20 08:00	0.25	70	hours	EHTR-FM
pH	1	28-JUL-20 12:55	30-JUL-20 13:00	0.25	48	hours	EHTR-FM
	2	28-JUL-20 10:30	30-JUL-20 13:00	0.25	50	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2481275 were received on 29-JUL-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200728Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	NO	YES	YES	NO	NO	NO	YES	YES		
EV_BALGW_WG_2020_Q3_NP	EV_BALGW	WG	N	7/28/2020	12:55	G	5	TECKCOAL-ROUTINE-VA (E305.1) Bicarbonate, Bi-CL, Carbonate, CO3-CL Hydroxide, OH-CL										
EV_GV3GW_WG_2020_Q3_NP	EV_GV3gw	WG	N	7/28/2020	10:30	G	5	TECKCOAL-MET-D-VA (SW6020) DOC (APHA 5310) Dissolved Phosphorus TKN/TOC (APHA 4500-NORG) Total Nitrogen for BC (NO2 and NO3) T-ULTRA MERCURY (SW6020) D-ULTRA MERCURY (SW6020) EPH (C10-C32) D-Mercury D-C-VI										
Total							10											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Colby Bracken	July 28, 2020	<i>[Signature]</i>	29/07 9:00

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	Colby Bracken	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge				July 28, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



L2481275-COFC

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 12-AUG-20
Report Date: 20-AUG-20 15:34 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2487499
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200811Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2487499-1	L2487499-2	L2487499-3	L2487499-4	L2487499-5
					WG	WG	WG	WG	WG
					11-AUG-20	11-AUG-20	11-AUG-20	11-AUG-20	11-AUG-20
					14:25	15:15	14:30	14:35	14:40
					EV_MCGWD_WG_2020_Q3_NP	EV_MCGWS_WG_2020_Q3_NP	EV_EC5GW_WG_2020_Q3_NP	EV_EC6GW_WG_2020_Q3_NP	EV_EC7GW_WG_2020_Q3_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	512	728	506	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	227	354	231	<0.50	<0.50			
	pH (pH)	8.49	8.08	8.49	5.48	5.41			
	ORP (mV)	299	413	419	394	433			
	Total Suspended Solids (mg/L)	13.9	7.7	16.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	331 ^{DLHC}	497 ^{DLHC}	314 ^{DLHC}	<10	<10			
	Turbidity (NTU)	11.6	34.2	12.1	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	3.5	<1.0	1.5	1.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	230	229	<1.0	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	12.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	241	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	241	230	241	<1.0	<1.0			
	Ammonia as N (mg/L)	0.409	0.279	0.367	0.0236 ^{RRV}	0.0875 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	279	280	280	<5.0	<5.0			
	Bromide (Br) (mg/L)	<0.050	0.196	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	7.4	<5.0	7.2	<5.0	<5.0			
	Chloride (Cl) (mg/L)	3.91	37.4	3.49	<0.50	<0.50			
	Fluoride (F) (mg/L)	1.00	0.417	0.996	<0.020	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	94.3	104	95.3	0.0	0.0			
	Nitrate (as N) (mg/L)	0.0068	<0.0050	<0.0050	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0012	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.520	0.265	0.420	<0.050	<0.050			
	Total Nitrogen (mg/L)	0.527	0.265	0.421	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0049	<0.0010	0.0059 ^{RRV}	<0.0010	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0082	<0.0020	0.0126	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0278	0.0072	0.0233	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	52.4	124	53.4	<0.30	<0.30			
	Anion Sum (meq/L)	6.07	8.25	6.09	<0.10	<0.10			
Cation Sum (meq/L)	5.72	8.60	5.80	<0.10	<0.10				
Cation - Anion Balance (%)	-2.9	2.1	-2.4	0.0	0.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.17	0.82	1.27	<0.50	<0.50			
	Total Organic Carbon (mg/L)	1.22	0.88	1.13	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2487499-1	L2487499-2	L2487499-3	L2487499-4	L2487499-5
					WG	WG	WG	WG	WG
		11-AUG-20	14:25	EV_MCGWD_WG_2020_Q3_NP	11-AUG-20	11-AUG-20	11-AUG-20	11-AUG-20	11-AUG-20
					15:15	15:15	14:30	14:35	14:40
					EV_MCGWS_WG_2020_Q3_NP	EV_MCGWS_WG_2020_Q3_NP	EV_EC5GW_WG_2020_Q3_NP	EV_EC6GW_WG_2020_Q3_NP	EV_EC7GW_WG_2020_Q3_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00017	<0.00010	0.00017	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00042	0.00131	0.00044	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0661	0.0233	0.0654	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.068	0.024	0.069	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	49.3	89.2	49.0	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.43	<0.10	0.40	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.195	1.94	0.195	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0083	0.0210	0.0083	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	25.3	32.0	26.3	<0.10	<0.10	<0.10	<0.10	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.471	0.128	0.471	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00962	0.00321	0.00915	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00166	<0.00050	0.00162	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	1.43	1.53	1.46	<0.050	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)	0.313	<0.050	0.412	<0.050	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	5.14	5.17	5.14	<0.050	<0.050	<0.050	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	25.7	31.5	25.8	<0.050	<0.050	<0.050	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.483	0.302	0.456	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00253	0.00204	0.00243	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2487499-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2487499-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2487499-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2487499-1, -2, -3, -4, -5
Matrix Spike	Ammonia as N	MS-B	L2487499-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200811Q3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2487499

Report Date: 20-AUG-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
ACIDITY-PCT-CL		Water							
Batch	R5187436								
WG3383362-2	LCS								
Acidity (as CaCO3)			103.1		%		85-115	13-AUG-20	
WG3383362-5	LCS								
Acidity (as CaCO3)			93.8		%		85-115	13-AUG-20	
WG3383362-1	MB								
Acidity (as CaCO3)			1.0		mg/L		2	13-AUG-20	
WG3383362-4	MB								
Acidity (as CaCO3)			1.3		mg/L		2	13-AUG-20	
ALK-MAN-CL		Water							
Batch	R5189622								
WG3384293-8	LCS								
Alkalinity, Total (as CaCO3)			100.9		%		85-115	14-AUG-20	
WG3384293-7	MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-AUG-20	
BE-D-L-CCMS-VA		Water							
Batch	R5190481								
WG3384518-2	LCS								
Beryllium (Be)-Dissolved			98.6		%		80-120	17-AUG-20	
WG3384518-1	MB	NP							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20	
BIC-CL		Water							
Batch	R5189622								
WG3384293-7	MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	14-AUG-20	
BR-L-IC-N-CL		Water							
Batch	R5189702								
WG3384396-3	DUP	L2487499-5							
Bromide (Br)			<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2	LCS								
Bromide (Br)			103.7		%		85-115	13-AUG-20	
WG3384396-1	MB								
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20	
WG3384396-4	MS	L2487499-5							
Bromide (Br)			108.7		%		75-125	13-AUG-20	
C-DIS-ORG-LOW-CL		Water							



Quality Control Report

Workorder: L2487499

Report Date: 20-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5189801							
WG3384489-7	DUP	L2487499-5						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-AUG-20
WG3384489-6	LCS							
Dissolved Organic Carbon			90.1		%		80-120	15-AUG-20
WG3384489-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-AUG-20
WG3384489-8	MS	L2487499-5						
Dissolved Organic Carbon			92.5		%		70-130	15-AUG-20
Batch	R5189819							
WG3384512-6	LCS							
Dissolved Organic Carbon			101.9		%		80-120	15-AUG-20
WG3384512-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-AUG-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5189801							
WG3384489-7	DUP	L2487499-5						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-AUG-20
WG3384489-6	LCS							
Total Organic Carbon			94.9		%		80-120	15-AUG-20
WG3384489-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	15-AUG-20
WG3384489-8	MS	L2487499-5						
Total Organic Carbon			98.0		%		70-130	15-AUG-20
Batch	R5189819							
WG3384512-6	LCS							
Total Organic Carbon			99.8		%		80-120	15-AUG-20
WG3384512-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	15-AUG-20
CL-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-3	DUP	L2487499-5						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2	LCS							
Chloride (Cl)			102.4		%		90-110	13-AUG-20
WG3384396-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
WG3384396-4	MS	L2487499-5						
Chloride (Cl)			105.6		%		75-125	13-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5189622							
WG3384293-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	14-AUG-20
EC-L-PCT-CL	Water							
Batch	R5189622							
WG3384293-8 LCS								
Conductivity (@ 25C)			97.6		%		90-110	14-AUG-20
WG3384293-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-AUG-20
F-IC-N-CL	Water							
Batch	R5189702							
WG3384396-3 DUP		L2487499-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2 LCS								
Fluoride (F)			101.0		%		90-110	13-AUG-20
WG3384396-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20
WG3384396-4 MS		L2487499-5						
Fluoride (F)			104.9		%		75-125	13-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5187338							
WG3383235-2 LCS								
Mercury (Hg)-Dissolved			97.3		%		80-120	14-AUG-20
WG3383235-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-AUG-20
WG3383235-4 MS		L2487499-5						
Mercury (Hg)-Dissolved			91.4		%		70-130	14-AUG-20
MET-D-CCMS-VA	Water							
Batch	R5190481							
WG3384518-2 LCS								
Aluminum (Al)-Dissolved			105.5		%		80-120	17-AUG-20
Antimony (Sb)-Dissolved			105.1		%		80-120	17-AUG-20
Arsenic (As)-Dissolved			102.6		%		80-120	17-AUG-20
Barium (Ba)-Dissolved			105.4		%		80-120	17-AUG-20
Bismuth (Bi)-Dissolved			104.9		%		80-120	17-AUG-20
Boron (B)-Dissolved			92.4		%		80-120	17-AUG-20
Cadmium (Cd)-Dissolved			102.2		%		80-120	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384518-2	LCS							
Calcium (Ca)-Dissolved			101.8		%		80-120	17-AUG-20
Chromium (Cr)-Dissolved			103.5		%		80-120	17-AUG-20
Cobalt (Co)-Dissolved			104.7		%		80-120	17-AUG-20
Copper (Cu)-Dissolved			104.5		%		80-120	17-AUG-20
Iron (Fe)-Dissolved			108.4		%		80-120	17-AUG-20
Lead (Pb)-Dissolved			104.7		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			98.3		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			103.1		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			106.3		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			99.7		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			106.5		%		80-120	17-AUG-20
Potassium (K)-Dissolved			105.8		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			108.0		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			106.1		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			103.3		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			108.0		%		80-120	17-AUG-20
Strontium (Sr)-Dissolved			102.6		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			106.5		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			101.8		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			102.7		%		80-120	17-AUG-20
Uranium (U)-Dissolved			109.9		%		80-120	17-AUG-20
Vanadium (V)-Dissolved			104.2		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			101.5		%		80-120	17-AUG-20
WG3384518-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384518-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5190500							
WG3384081-10	LCS							
Ammonia as N			101.7		%		85-115	14-AUG-20
WG3384081-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-3	DUP	L2487499-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2	LCS							
Nitrite (as N)			100.2		%		90-110	13-AUG-20
WG3384396-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
WG3384396-4	MS	L2487499-5						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-4 MS		L2487499-5						
Nitrite (as N)			106.1		%		75-125	13-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-3 DUP		L2487499-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2 LCS								
Nitrate (as N)			103.2		%		90-110	13-AUG-20
WG3384396-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
WG3384396-4 MS		L2487499-5						
Nitrate (as N)			106.7		%		75-125	13-AUG-20
OH-CL	Water							
Batch	R5189622							
WG3384293-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	14-AUG-20
ORP-CL	Water							
Batch	R5186980							
WG3383064-3 CRM		CL-ORP						
ORP			227		mV		210-230	13-AUG-20
WG3383064-4 DUP		L2487499-5						
ORP		433	429	J	mV	4.0	15	13-AUG-20
P-T-L-COL-CL	Water							
Batch	R5189342							
WG3383701-18 LCS								
Phosphorus (P)-Total			103.9		%		80-120	14-AUG-20
WG3383701-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-AUG-20
P-TD-L-COL-CL	Water							
Batch	R5189342							
WG3383701-18 LCS								
Phosphorus (P)-Total Dissolved			103.9		%		80-120	14-AUG-20
WG3383701-17 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	14-AUG-20
PH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch	R5189622							
WG3384293-8	LCS							
pH			7.00		pH		6.9-7.1	14-AUG-20
PO4-DO-L-COL-CL								
Water								
Batch	R5184087							
WG3382006-6	LCS							
Orthophosphate-Dissolved (as P)			103.7		%		80-120	12-AUG-20
WG3382006-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-AUG-20
WG3382006-8	MS	L2487499-5						
Orthophosphate-Dissolved (as P)			97.1		%		70-130	12-AUG-20
SO4-IC-N-CL								
Water								
Batch	R5189702							
WG3384396-3	DUP	L2487499-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	13-AUG-20
WG3384396-2	LCS							
Sulfate (SO4)			101.1		%		90-110	13-AUG-20
WG3384396-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
WG3384396-4	MS	L2487499-5						
Sulfate (SO4)			104.4		%		75-125	13-AUG-20
SOLIDS-TDS-CL								
Water								
Batch	R5191157							
WG3384691-5	LCS							
Total Dissolved Solids			103.6		%		85-115	17-AUG-20
WG3384691-4	MB							
Total Dissolved Solids			<10		mg/L		10	17-AUG-20
TKN-L-F-CL								
Water								
Batch	R5186978							
WG3383168-12	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	13-AUG-20
WG3383168-15	LCS							
Total Kjeldahl Nitrogen			93.4		%		75-125	13-AUG-20
WG3383168-19	LCS							
Total Kjeldahl Nitrogen			91.9		%		75-125	13-AUG-20
WG3383168-2	LCS							
Total Kjeldahl Nitrogen			94.0		%		75-125	13-AUG-20
WG3383168-26	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5186978							
WG3383168-26	LCS							
Total Kjeldahl Nitrogen			90.2		%		75-125	13-AUG-20
WG3383168-8	LCS							
Total Kjeldahl Nitrogen			94.1		%		75-125	13-AUG-20
WG3383168-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-25	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3383168-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
TSS-L-CL								
	Water							
Batch	R5191091							
WG3384690-2	LCS							
Total Suspended Solids			95.1		%		85-115	17-AUG-20
WG3384690-1	MB							
Total Suspended Solids			<1.0		mg/L		1	17-AUG-20
TURBIDITY-CL								
	Water							
Batch	R5184202							
WG3382222-6	DUP	L2487499-2						
Turbidity		34.2	32.7		NTU	4.5	15	12-AUG-20
WG3382222-2	LCS							
Turbidity			97.5		%		85-115	12-AUG-20
WG3382222-5	LCS							
Turbidity			97.5		%		85-115	12-AUG-20
WG3382222-1	MB							
Turbidity			<0.10		NTU		0.1	12-AUG-20
WG3382222-4	MB							
Turbidity			<0.10		NTU		0.1	12-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	11-AUG-20 14:25	13-AUG-20 08:45	0.25	42	hours	EHTR-FM
	2	11-AUG-20 15:15	13-AUG-20 08:45	0.25	42	hours	EHTR-FM
	3	11-AUG-20 14:30	13-AUG-20 08:45	0.25	42	hours	EHTR-FM
	4	11-AUG-20 14:35	13-AUG-20 08:45	0.25	42	hours	EHTR-FM
	5	11-AUG-20 14:40	13-AUG-20 08:45	0.25	42	hours	EHTR-FM
pH							
	1	11-AUG-20 14:25	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	2	11-AUG-20 15:15	14-AUG-20 13:00	0.25	70	hours	EHTR-FM
	3	11-AUG-20 14:30	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	4	11-AUG-20 14:35	14-AUG-20 13:00	0.25	70	hours	EHTR-FM
	5	11-AUG-20 14:40	14-AUG-20 13:00	0.25	70	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2487499 were received on 12-AUG-20 08:30.

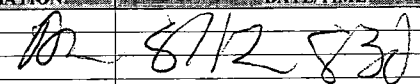
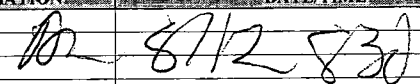
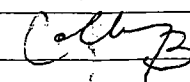
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200811Q3GW		TURNAROUND TIME:		RUSH:							
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3						Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
							Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB				
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-250-865-5289			Phone Number	403-407-1800		PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MCGWD_WG_2020_Q3_NP	EV_MCGWD	WG	N	8/11/2020	14:25	G	5		1	1	1	1	1	1	1						
EV_MCGWS_WS_2020_Q3_NP	EV_MCGWS	WG	N	8/11/2020	15:15	G	5		1	1	1	1	1	1	1						
EV_EC5GW_WS_2020_Q3_NP	EV_EC5GW	WG	N	8/11/2020	14:30	G	5		1	1	1	1	1	1	1						
EV_EC6GW_WS_2020_Q3_NP	EV_EC6GW	WG	N	8/11/2020	14:35	G	5		1	1	1	1	1	1	1						
EV_EC7GW_WS_2020_Q3_NP	EV_EC7GW	WG	N	8/11/2020	14:40	G	5		1	1	1	1	1	1	1						
Total							25														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		REINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
		Colby Bracken		August 11, 2020					
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #		Date/Time			
Regular (default) <input checked="" type="checkbox"/>		Colby Bracken/ Hannah Morris							
Priority (2-3 business days) - 50% surcharge		Sampler's Signature							
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS								August 11, 2020	



L2487499-COFC



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 12-AUG-20
Report Date: 19-AUG-20 16:30 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2487604
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-10-Q3-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2487604-1 WP 11-AUG-20 14:57 RG_DW-03-10_WP_Q3-2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	440			
	Hardness (as CaCO3) (mg/L)	258			
	pH (pH)	8.35			
	ORP (mV)	466			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	283	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	221			
	Alkalinity, Total (as CaCO3) (mg/L)	221			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	9.72			
	Fluoride (F) (mg/L)	0.198			
	Ion Balance (%)	104			
	Nitrate (as N) (mg/L)	0.458	HTD		
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.179			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	21.6			
	Anion Sum (meq/L)	5.19			
	Cation Sum (meq/L)	5.39			
	Cation - Anion Balance (%)	1.9			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.139			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2487604-1 WP 11-AUG-20 14:57 RG_DW-03- 10_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	62.3			
	Chromium (Cr)-Total (mg/L)	0.00048			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00225			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000053			
	Lithium (Li)-Total (mg/L)	0.0062			
	Magnesium (Mg)-Total (mg/L)	19.0			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00127			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.686			
	Selenium (Se)-Total (ug/L)	0.923			
	Silicon (Si)-Total (mg/L)	3.29			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	4.93			
	Strontium (Sr)-Total (mg/L)	0.172			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00126			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0051			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.143			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	69.7			
	Chromium (Cr)-Dissolved (mg/L)	0.00058			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2487604-1	WP	11-AUG-20	14:57	RG_DW-03-10_WP_Q3-2020_NP
WATER						
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)			0.00267		
	Iron (Fe)-Dissolved (mg/L)			<0.010		
	Lead (Pb)-Dissolved (mg/L)			0.000059		
	Lithium (Li)-Dissolved (mg/L)			0.0076		
	Magnesium (Mg)-Dissolved (mg/L)			20.2		
	Manganese (Mn)-Dissolved (mg/L)			<0.00010		
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)			0.00152		
	Nickel (Ni)-Dissolved (mg/L)			<0.00050		
	Potassium (K)-Dissolved (mg/L)			0.814		
	Selenium (Se)-Dissolved (ug/L)			1.14		
	Silicon (Si)-Dissolved (mg/L)			3.86		
	Silver (Ag)-Dissolved (mg/L)			<0.000010		
	Sodium (Na)-Dissolved (mg/L)			5.19		
	Strontium (Sr)-Dissolved (mg/L)			0.200		
	Thallium (Tl)-Dissolved (mg/L)			<0.000010		
	Tin (Sn)-Dissolved (mg/L)			<0.00010		
	Titanium (Ti)-Dissolved (mg/L)			<0.010		
	Uranium (U)-Dissolved (mg/L)			0.00138		
	Vanadium (V)-Dissolved (mg/L)			<0.00050		
	Zinc (Zn)-Dissolved (mg/L)			0.0065		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2487604-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2487604-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2487604-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2487604-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2487604-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2487604-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2487604-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2487604-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2487604-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2487604-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2487604-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2487604-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2487604-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-10-Q3-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2487604

Report Date: 19-AUG-20

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5189582							
WG3384248-5	LCS							
Acidity (as CaCO3)			100.7		%		85-115	14-AUG-20
WG3384248-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	14-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5189622							
WG3384293-11	LCS							
Alkalinity, Total (as CaCO3)			99.5		%		85-115	14-AUG-20
WG3384293-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5191171							
WG3385290-3	DUP	L2487604-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-AUG-20
WG3385290-2	LCS							
Beryllium (Be)-Dissolved			99.8		%		80-120	18-AUG-20
WG3385290-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5189456							
WG3383921-2	LCS							
Beryllium (Be)-Total			108.0		%		80-120	15-AUG-20
WG3383921-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5188018							
WG3383527-2	LCS							
Bromide (Br)			102.7		%		85-115	13-AUG-20
WG3383527-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5189971							
WG3384773-2	LCS							
Dissolved Organic Carbon			99.5		%		80-120	16-AUG-20
WG3384773-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2487604

Report Date: 19-AUG-20

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R5189971							
WG3384773-2	LCS							
Total Organic Carbon			102.0		%		80-120	16-AUG-20
WG3384773-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
CL-IC-N-CL Water								
Batch	R5188018							
WG3383527-2	LCS							
Chloride (Cl)			102.6		%		90-110	13-AUG-20
WG3383527-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
EC-L-PCT-CL Water								
Batch	R5189622							
WG3384293-11	LCS							
Conductivity (@ 25C)			97.3		%		90-110	14-AUG-20
WG3384293-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-AUG-20
F-IC-N-CL Water								
Batch	R5188018							
WG3383527-2	LCS							
Fluoride (F)			108.0		%		90-110	13-AUG-20
WG3383527-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20
HG-D-CVAA-VA Water								
Batch	R5187338							
WG3383235-7	DUP	L2487604-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3383235-6	LCS							
Mercury (Hg)-Dissolved			98.6		%		80-120	14-AUG-20
WG3383235-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	14-AUG-20
HG-T-CVAA-VA Water								
Batch	R5187338							
WG3383331-2	LCS							
Mercury (Hg)-Total			97.4		%		80-120	14-AUG-20
WG3383331-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	14-AUG-20
MET-D-CCMS-VA Water								



Quality Control Report

Workorder: L2487604

Report Date: 19-AUG-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385290-3	DUP	L2487604-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-AUG-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-AUG-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-AUG-20
Barium (Ba)-Dissolved		0.143	0.144		mg/L	0.6	20	18-AUG-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-AUG-20
Boron (B)-Dissolved		<0.010	0.010	RPD-NA	mg/L	N/A	20	18-AUG-20
Cadmium (Cd)-Dissolved		<0.0000050	0.0000058	RPD-NA	mg/L	N/A	20	18-AUG-20
Calcium (Ca)-Dissolved		69.7	69.5		mg/L	0.4	20	18-AUG-20
Chromium (Cr)-Dissolved		0.00058	0.00058		mg/L	0.5	20	18-AUG-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-AUG-20
Copper (Cu)-Dissolved		0.00267	0.00266		mg/L	0.6	20	18-AUG-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-AUG-20
Lead (Pb)-Dissolved		0.000059	0.000058		mg/L	1.7	20	18-AUG-20
Lithium (Li)-Dissolved		0.0076	0.0074		mg/L	2.6	20	18-AUG-20
Magnesium (Mg)-Dissolved		20.2	20.6		mg/L	1.9	20	18-AUG-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-AUG-20
Molybdenum (Mo)-Dissolved		0.00152	0.00147		mg/L	3.4	20	18-AUG-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-AUG-20
Potassium (K)-Dissolved		0.814	0.796		mg/L	2.2	20	18-AUG-20
Selenium (Se)-Dissolved		0.00114	0.00111		mg/L	2.7	20	18-AUG-20
Silicon (Si)-Dissolved		3.86	3.85		mg/L	0.2	20	18-AUG-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-AUG-20
Sodium (Na)-Dissolved		5.19	5.14		mg/L	0.9	20	18-AUG-20
Strontium (Sr)-Dissolved		0.200	0.195		mg/L	2.2	20	18-AUG-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-AUG-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-AUG-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-AUG-20
Uranium (U)-Dissolved		0.00138	0.00139		mg/L	1.1	20	18-AUG-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-AUG-20
Zinc (Zn)-Dissolved		0.0065	0.0067		mg/L	3.1	20	18-AUG-20
WG3385290-2	LCS							
Aluminum (Al)-Dissolved			97.9		%		80-120	18-AUG-20
Antimony (Sb)-Dissolved			96.2		%		80-120	18-AUG-20
Arsenic (As)-Dissolved			96.3		%		80-120	18-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385290-2	LCS							
Barium (Ba)-Dissolved			103.0		%		80-120	18-AUG-20
Bismuth (Bi)-Dissolved			99.5		%		80-120	18-AUG-20
Boron (B)-Dissolved			96.8		%		80-120	18-AUG-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	18-AUG-20
Calcium (Ca)-Dissolved			103.7		%		80-120	18-AUG-20
Chromium (Cr)-Dissolved			97.8		%		80-120	18-AUG-20
Cobalt (Co)-Dissolved			97.1		%		80-120	18-AUG-20
Copper (Cu)-Dissolved			95.1		%		80-120	18-AUG-20
Iron (Fe)-Dissolved			97.1		%		80-120	18-AUG-20
Lead (Pb)-Dissolved			99.1		%		80-120	18-AUG-20
Lithium (Li)-Dissolved			96.6		%		80-120	18-AUG-20
Magnesium (Mg)-Dissolved			96.0		%		80-120	18-AUG-20
Manganese (Mn)-Dissolved			99.5		%		80-120	18-AUG-20
Molybdenum (Mo)-Dissolved			99.2		%		80-120	18-AUG-20
Nickel (Ni)-Dissolved			96.4		%		80-120	18-AUG-20
Potassium (K)-Dissolved			100.5		%		80-120	18-AUG-20
Selenium (Se)-Dissolved			100.4		%		80-120	18-AUG-20
Silicon (Si)-Dissolved			105.8		%		60-140	18-AUG-20
Silver (Ag)-Dissolved			99.99		%		80-120	18-AUG-20
Sodium (Na)-Dissolved			99.2		%		80-120	18-AUG-20
Strontium (Sr)-Dissolved			102.6		%		80-120	18-AUG-20
Thallium (Tl)-Dissolved			98.5		%		80-120	18-AUG-20
Tin (Sn)-Dissolved			100.3		%		80-120	18-AUG-20
Titanium (Ti)-Dissolved			95.3		%		80-120	18-AUG-20
Uranium (U)-Dissolved			95.2		%		80-120	18-AUG-20
Vanadium (V)-Dissolved			96.9		%		80-120	18-AUG-20
Zinc (Zn)-Dissolved			95.1		%		80-120	18-AUG-20
WG3385290-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5191171							
WG3385290-1	MB	NP						
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	18-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5189456							
WG3383921-2	LCS							
Aluminum (Al)-Total			95.5		%		80-120	15-AUG-20
Antimony (Sb)-Total			99.1		%		80-120	15-AUG-20
Arsenic (As)-Total			95.8		%		80-120	15-AUG-20
Barium (Ba)-Total			99.4		%		80-120	15-AUG-20
Bismuth (Bi)-Total			117.0		%		80-120	15-AUG-20
Boron (B)-Total			99.8		%		80-120	15-AUG-20
Cadmium (Cd)-Total			98.5		%		80-120	15-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5189456							
WG3383921-2	LCS							
Calcium (Ca)-Total			104.7		%		80-120	15-AUG-20
Chromium (Cr)-Total			99.5		%		80-120	15-AUG-20
Cobalt (Co)-Total			96.2		%		80-120	15-AUG-20
Copper (Cu)-Total			96.5		%		80-120	15-AUG-20
Iron (Fe)-Total			92.9		%		80-120	15-AUG-20
Lead (Pb)-Total			98.3		%		80-120	15-AUG-20
Lithium (Li)-Total			103.2		%		80-120	15-AUG-20
Magnesium (Mg)-Total			95.9		%		80-120	15-AUG-20
Manganese (Mn)-Total			97.5		%		80-120	15-AUG-20
Molybdenum (Mo)-Total			104.4		%		80-120	15-AUG-20
Nickel (Ni)-Total			96.4		%		80-120	15-AUG-20
Potassium (K)-Total			99.6		%		80-120	15-AUG-20
Selenium (Se)-Total			100.4		%		80-120	15-AUG-20
Silicon (Si)-Total			99.9		%		80-120	15-AUG-20
Silver (Ag)-Total			102.1		%		80-120	15-AUG-20
Sodium (Na)-Total			109.9		%		80-120	15-AUG-20
Strontium (Sr)-Total			94.2		%		80-120	15-AUG-20
Thallium (Tl)-Total			101.8		%		80-120	15-AUG-20
Tin (Sn)-Total			97.9		%		80-120	15-AUG-20
Titanium (Ti)-Total			94.4		%		80-120	15-AUG-20
Uranium (U)-Total			97.6		%		80-120	15-AUG-20
Vanadium (V)-Total			96.9		%		80-120	15-AUG-20
Zinc (Zn)-Total			98.7		%		80-120	15-AUG-20
WG3383921-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	15-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	15-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5189456							
WG3383921-1	MB							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	15-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	15-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	15-AUG-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	15-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	15-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-AUG-20
NH3-L-F-CL		Water						
Batch	R5190500							
WG3384081-14	LCS							
Ammonia as N			106.7		%		85-115	14-AUG-20
WG3384081-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
NO2-L-IC-N-CL		Water						
Batch	R5188018							
WG3383527-2	LCS							
Nitrite (as N)			101.4		%		90-110	13-AUG-20
WG3383527-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5188018							
WG3383527-2	LCS							
Nitrate (as N)			103.6		%		90-110	13-AUG-20
WG3383527-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
ORP-CL	Water							
Batch	R5189407							
WG3383539-1	CRM	CL-ORP						
ORP			229		mV		210-230	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5189342							
WG3383701-22	LCS							
Phosphorus (P)-Total			104.3		%		80-120	14-AUG-20
WG3383701-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-AUG-20
PH-CL	Water							
Batch	R5189622							
WG3384293-11	LCS							
pH			7.00		pH		6.9-7.1	14-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5184087							
WG3382006-14	LCS							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	12-AUG-20
WG3382006-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-AUG-20
SO4-IC-N-CL	Water							
Batch	R5188018							
WG3383527-2	LCS							
Sulfate (SO4)			103.9		%		90-110	13-AUG-20
WG3383527-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191157							
WG3384691-8	LCS							
Total Dissolved Solids			103.6		%		85-115	17-AUG-20
WG3384691-7	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5191157							
WG3384691-7	MB							
Total Dissolved Solids			<10		mg/L		10	17-AUG-20
TKN-L-F-CL		Water						
Batch	R5185601							
WG3382826-13	LCS							
Total Kjeldahl Nitrogen			96.0		%		75-125	13-AUG-20
WG3382826-2	LCS							
Total Kjeldahl Nitrogen			98.5		%		75-125	13-AUG-20
WG3382826-6	LCS							
Total Kjeldahl Nitrogen			97.4		%		75-125	13-AUG-20
WG3382826-9	LCS							
Total Kjeldahl Nitrogen			95.6		%		75-125	13-AUG-20
WG3382826-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
TSS-L-CL		Water						
Batch	R5191091							
WG3384690-6	LCS							
Total Suspended Solids			102.5		%		85-115	17-AUG-20
WG3384690-5	MB							
Total Suspended Solids			<1.0		mg/L		1	17-AUG-20
TURBIDITY-CL		Water						
Batch	R5184202							
WG3382222-8	LCS							
Turbidity			99.0		%		85-115	12-AUG-20
WG3382222-7	MB							
Turbidity			<0.10		NTU		0.1	12-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	11-AUG-20 14:57	14-AUG-20 08:30	0.25	66	hours	EHTR-FM
pH	1	11-AUG-20 14:57	14-AUG-20 13:00	0.25	70	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	11-AUG-20 14:57	18-AUG-20 16:00	3	7	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


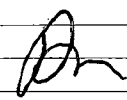
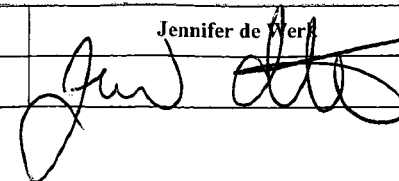
Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2487604 were received on 12-AUG-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 03-10-Q3-2020		TURNAROUND TIME:			RUSH:																												
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO																										
Facility Name / Job# Regional Effects Program		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD																									
Project Manager Cam Jaeger		Lab Contact Lyudmyla Shvets		Email 1: cam.jaeger@teck.com		X	X	X																									
Email cam.jaeger@teck.com		Email lyudmyla.shvets@alsglobal.com		Email 2: jennifer.dewerk@teck.com		X	X	X																									
Address 421 Pine Ave		Address 2559 29 st NE		Email 3: teckcoal@equisonline.com		X	X	X																									
City Sparwood Province BC		City Calgary Province AB		Email 4:				X																									
Postal Code V0B 2G0 Country Canada		Postal Code T1Y 7B5 Country Canada		Email 5:																													
Phone Number 250-425-8449		Phone Number 403-407-1800		PO number		690772																											
SAMPLE DETAILS				ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None																								
 L2487604-COFC		Hazardous Material (Yes/No)		Date		Time (24hr)		G=Grab C=Com p		# Of Cont.		FILE	F	N	F	N	F	N	N														
												PRESERV.	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3															
Sample ID		Sample Location (sys loc code)		Field Matrix		Date		Time (24hr)		G=Grab C=Com p		# Of Cont.		ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA												
RG_DW-03-10_WP_Q3-2020_NP		RG_DW-03-10		WP		N		Aug 11, 14:57		G		7			1	1	1	1	1	1	1												
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME		ACCEPTED BY/AFFILIATION				DATE/TIME																			
														8/12/2020 8:30																			
SERVICE REQUEST (rush - subject to availability)																																	
Regular (default) X		Priority (2-3 business days) - 50% surcharge		Emergency (1 Business Day) - 100% surcharge		For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name Jennifer de Werk		Mobile # 250-910-7287		Sampler's Signature 		Date/Time Aug 11, 2020																			



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 13-AUG-20
Report Date: 17-MAR-21 17:55 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2488395
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-20-Q3-2020
Legal Site Desc:

Comments: ADDITIONAL 04-MAR-21 14:20

5-JAN-2021 Alkalinity (Species)result revised.
17-MAR-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488395-1 WP 12-AUG-20 09:37 RG_DW-02- 20_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	439			
	Hardness (as CaCO3) (mg/L)	268			
	pH (pH)	8.44			
	ORP (mV)	446			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	286	DLHC		
	Turbidity (NTU)	0.83			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	161			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	7.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	168			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	197			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.77			
	Fluoride (F) (mg/L)	0.171			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	111			
	Nitrate (as N) (mg/L)	2.38			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.153	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	66.5			
	Anion Sum (meq/L)	4.98			
Cation Sum (meq/L)	5.52				
Cation - Anion Balance (%)	5.1				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.58			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.0909			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488395-1 WP 12-AUG-20 09:37 RG_DW-02- 20_WP_Q3- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0069			
	Calcium (Ca)-Total (mg/L)	67.3			
	Chromium (Cr)-Total (mg/L)	0.00017			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00296			
	Iron (Fe)-Total (mg/L)	0.051			
	Lead (Pb)-Total (mg/L)	0.000132			
	Lithium (Li)-Total (mg/L)	0.0076			
	Magnesium (Mg)-Total (mg/L)	20.7			
	Manganese (Mn)-Total (mg/L)	0.00188			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00111			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.619			
	Selenium (Se)-Total (ug/L)	10.8			
	Silicon (Si)-Total (mg/L)	2.30			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.76			
	Strontium (Sr)-Total (mg/L)	0.256			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00103			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0115			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0901			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0088			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2488395-1			
		Description	WP			
		Sampled Date	12-AUG-20			
		Sampled Time	09:37			
		Client ID	RG_DW-02-20_WP_Q3-2020_NP			
Grouping	Analyte					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)		70.8			
	Chromium (Cr)-Dissolved (mg/L)		0.00016			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00322			
	Iron (Fe)-Dissolved (mg/L)		<0.010			
	Lead (Pb)-Dissolved (mg/L)		0.000106			
	Lithium (Li)-Dissolved (mg/L)		0.0071			
	Magnesium (Mg)-Dissolved (mg/L)		22.2			
	Manganese (Mn)-Dissolved (mg/L)		0.00153			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00113			
	Nickel (Ni)-Dissolved (mg/L)		<0.00050			
	Potassium (K)-Dissolved (mg/L)		0.653			
	Selenium (Se)-Dissolved (ug/L)		11.9			
	Silicon (Si)-Dissolved (mg/L)		2.46			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		3.10			
	Strontium (Sr)-Dissolved (mg/L)		0.263			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00106			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0132			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Silver (Ag)-Total	B	L2488395-1
Laboratory Control Sample	Bismuth (Bi)-Dissolved	MES	L2488395-1
Laboratory Control Sample	Sodium (Na)-Dissolved	MES	L2488395-1
Laboratory Control Sample	Barium (Ba)-Total	MES	L2488395-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2488395-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2488395-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2488395-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2488395-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2488395-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-20-Q3-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2488395

Report Date: 17-MAR-21

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5189582							
WG3384248-14	LCS							
Acidity (as CaCO3)			96.6		%		85-115	14-AUG-20
WG3384248-13	MB							
Acidity (as CaCO3)			1.6		mg/L		2	14-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5189931							
WG3384681-8	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	15-AUG-20
WG3384681-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5190436							
WG3385230-2	LCS							
Beryllium (Be)-Dissolved			99.5		%		80-120	17-AUG-20
WG3385230-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5189456							
WG3384064-2	LCS							
Beryllium (Be)-Total			101.9		%		80-120	15-AUG-20
WG3384064-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	15-AUG-20
BIC-CL								
	Water							
Batch	R5189931							
WG3384681-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189644							
WG3384297-2	LCS							
Bromide (Br)			105.0		%		85-115	14-AUG-20
WG3384297-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2488395

Report Date: 17-MAR-21

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5191792							
WG3386640-2	LCS							
Dissolved Organic Carbon			110.3		%		80-120	18-AUG-20
WG3386640-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5191792							
WG3386640-2	LCS							
Total Organic Carbon			108.3		%		80-120	18-AUG-20
WG3386640-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-AUG-20
CL-IC-N-CL	Water							
Batch	R5189644							
WG3384297-2	LCS							
Chloride (Cl)			102.4		%		90-110	14-AUG-20
WG3384297-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-AUG-20
CO3-CL	Water							
Batch	R5189931							
WG3384681-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	15-AUG-20
EC-L-PCT-CL	Water							
Batch	R5189931							
WG3384681-8	LCS							
Conductivity (@ 25C)			98.9		%		90-110	15-AUG-20
WG3384681-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-AUG-20
F-IC-N-CL	Water							
Batch	R5189644							
WG3384297-2	LCS							
Fluoride (F)			102.1		%		90-110	14-AUG-20
WG3384297-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-AUG-20
HG-D-CVAA-VA	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5190571							
WG3386023-6	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	18-AUG-20
WG3386023-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-AUG-20
HG-T-CVAA-VA								
Water								
Batch	R5189770							
WG3384406-2	LCS							
Mercury (Hg)-Total			100.8		%		80-120	15-AUG-20
WG3384406-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-AUG-20
MET-D-CCMS-VA								
Water								
Batch	R5190436							
WG3385230-2	LCS							
Aluminum (Al)-Dissolved			112.4		%		80-120	17-AUG-20
Antimony (Sb)-Dissolved			102.6		%		80-120	17-AUG-20
Arsenic (As)-Dissolved			107.8		%		80-120	17-AUG-20
Barium (Ba)-Dissolved			108.4		%		80-120	17-AUG-20
Bismuth (Bi)-Dissolved			123.7	MES	%		80-120	17-AUG-20
Boron (B)-Dissolved			102.7		%		80-120	17-AUG-20
Cadmium (Cd)-Dissolved			109.2		%		80-120	17-AUG-20
Calcium (Ca)-Dissolved			103.0		%		80-120	17-AUG-20
Chromium (Cr)-Dissolved			104.9		%		80-120	17-AUG-20
Cobalt (Co)-Dissolved			108.3		%		80-120	17-AUG-20
Copper (Cu)-Dissolved			105.3		%		80-120	17-AUG-20
Iron (Fe)-Dissolved			91.5		%		80-120	17-AUG-20
Lead (Pb)-Dissolved			105.7		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			101.2		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			107.2		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			110.9		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			106.7		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			107.2		%		80-120	17-AUG-20
Potassium (K)-Dissolved			113.0		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			101.3		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			105.0		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			109.4		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			124.9	MES	%		80-120	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190436							
WG3385230-2	LCS							
Strontium (Sr)-Dissolved			113.2		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			106.2		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			105.9		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			108.4		%		80-120	17-AUG-20
Uranium (U)-Dissolved			107.3		%		80-120	17-AUG-20
Vanadium (V)-Dissolved			110.6		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			106.6		%		80-120	17-AUG-20
WG3385230-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190436							
WG3385230-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
MET-T-CCMS-VA								
	Water							
Batch	R5189456							
WG3384064-2	LCS							
Aluminum (Al)-Total			104.3		%		80-120	15-AUG-20
Antimony (Sb)-Total			98.2		%		80-120	15-AUG-20
Arsenic (As)-Total			99.1		%		80-120	15-AUG-20
Barium (Ba)-Total			122.3	MES	%		80-120	15-AUG-20
Bismuth (Bi)-Total			115.6		%		80-120	15-AUG-20
Boron (B)-Total			93.3		%		80-120	15-AUG-20
Cadmium (Cd)-Total			100.1		%		80-120	15-AUG-20
Calcium (Ca)-Total			101.2		%		80-120	15-AUG-20
Chromium (Cr)-Total			101.9		%		80-120	15-AUG-20
Cobalt (Co)-Total			101.3		%		80-120	15-AUG-20
Copper (Cu)-Total			101.0		%		80-120	15-AUG-20
Iron (Fe)-Total			94.7		%		80-120	15-AUG-20
Lead (Pb)-Total			100.8		%		80-120	15-AUG-20
Lithium (Li)-Total			102.5		%		80-120	15-AUG-20
Magnesium (Mg)-Total			101.6		%		80-120	15-AUG-20
Manganese (Mn)-Total			100.5		%		80-120	15-AUG-20
Molybdenum (Mo)-Total			101.9		%		80-120	15-AUG-20
Nickel (Ni)-Total			100.8		%		80-120	15-AUG-20
Potassium (K)-Total			101.3		%		80-120	15-AUG-20
Selenium (Se)-Total			99.1		%		80-120	15-AUG-20
Silicon (Si)-Total			98.1		%		80-120	15-AUG-20
Silver (Ag)-Total			100.2		%		80-120	15-AUG-20
Sodium (Na)-Total			111.6		%		80-120	15-AUG-20
Strontium (Sr)-Total			103.9		%		80-120	15-AUG-20
Thallium (Tl)-Total			96.6		%		80-120	15-AUG-20
Tin (Sn)-Total			101.4		%		80-120	15-AUG-20
Titanium (Ti)-Total			100.5		%		80-120	15-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5189456							
WG3384064-2	LCS							
Uranium (U)-Total			98.5		%		80-120	15-AUG-20
Vanadium (V)-Total			102.6		%		80-120	15-AUG-20
Zinc (Zn)-Total			99.98		%		80-120	15-AUG-20
WG3384064-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	15-AUG-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Boron (B)-Total			<0.010		mg/L		0.01	15-AUG-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	15-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	15-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	15-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	15-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	15-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	15-AUG-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	15-AUG-20
Silicon (Si)-Total			<0.10		mg/L		0.1	15-AUG-20
Silver (Ag)-Total			0.000012	B	mg/L		0.00001	15-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	15-AUG-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	15-AUG-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	15-AUG-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	15-AUG-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	15-AUG-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	15-AUG-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	15-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5191746							
WG3386206-10	LCS							
Ammonia as N			102.7		%		85-115	18-AUG-20
WG3386206-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	18-AUG-20
NO2-L-IC-N-CL								
Water								
Batch	R5189644							
WG3384297-2	LCS							
Nitrite (as N)			103.0		%		90-110	14-AUG-20
WG3384297-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-AUG-20
NO3-L-IC-N-CL								
Water								
Batch	R5189644							
WG3384297-2	LCS							
Nitrate (as N)			103.4		%		90-110	14-AUG-20
WG3384297-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-AUG-20
OH-CL								
Water								
Batch	R5189931							
WG3384681-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	15-AUG-20
ORP-CL								
Water								
Batch	R5189407							
WG3383539-9	CRM	CL-ORP						
ORP			229		mV		210-230	14-AUG-20
P-T-L-COL-CL								
Water								
Batch	R5190317							
WG3385016-26	LCS							
Phosphorus (P)-Total			110.2		%		80-120	17-AUG-20
WG3385016-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-AUG-20
PH-CL								
Water								
Batch	R5189931							
WG3384681-8	LCS							
pH			7.00		pH		6.9-7.1	15-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-14 LCS								
Orthophosphate-Dissolved (as P)			101.3		%		80-120	13-AUG-20
WG3382949-13 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20
SO4-IC-N-CL	Water							
Batch	R5189644							
WG3384297-2 LCS								
Sulfate (SO4)			103.5		%		90-110	14-AUG-20
WG3384297-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	14-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191924							
WG3385511-8 LCS								
Total Dissolved Solids			96.4		%		85-115	18-AUG-20
WG3385511-7 MB								
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
TKN-L-F-CL	Water							
Batch	R5188598							
WG3383662-10 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	14-AUG-20
WG3383662-12 LCS								
Total Kjeldahl Nitrogen			92.6		%		75-125	14-AUG-20
WG3383662-2 LCS								
Total Kjeldahl Nitrogen			96.3		%		75-125	14-AUG-20
WG3383662-6 LCS								
Total Kjeldahl Nitrogen			95.9		%		75-125	14-AUG-20
WG3383662-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5191850							
WG3385510-6	LCS							
Total Suspended Solids			103.3		%		85-115	18-AUG-20
WG3385510-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-AUG-20
TURBIDITY-CL	Water							
Batch	R5187018							
WG3383089-5	LCS							
Turbidity			98.5		%		85-115	13-AUG-20
WG3383089-4	MB							
Turbidity			<0.10		NTU		0.1	13-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-AUG-20 09:37	14-AUG-20 09:30	0.25	48	hours	EHTR-FM
pH	1	12-AUG-20 09:37	15-AUG-20 13:00	0.25	75	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2488395 were received on 13-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 02-20-Q3-2020		TURNAROUND TIME:			RUSH:							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							Filtered - F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIG.	F	N	F	N	F	N	N						
							PRESERV.	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3								
							ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA							
RG_DW-02-20_WP_Q3-2020_NP	RG_DW-02-20	WP	N	Aug 12 20	9:37	G	7		1	1	1	1	1	1	1						



L2488395-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>JW</i>	08/13 2:41P

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge	<i>Jennifer de Werk</i>	Aug 12, 20
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 13-AUG-20
Report Date: 20-AUG-20 15:50 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2488445
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2488445-1 WG 12-AUG-20 11:15 EV_MW_MC3_WG _2020_Q3_NP	L2488445-2 WG 12-AUG-20 14:15 EV_MW_MC4_WG _2020_Q3_NP	L2488445-3 WG 12-AUG-20 09:35 EV_MW_AQ1_WG _2020_Q3_NP	L2488445-4 WG 12-AUG-20 13:00 EV_MW_AQ2_WG _2020_Q3_NP	L2488445-5 WG 12-AUG-20 15:25 EV_HW1_WG_202 0_Q3_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	641	777	766	971	1120
	Hardness (as CaCO3) (mg/L)	45.2	474	478	600	665
	pH (pH)	8.84	7.72	7.54	7.61	8.33
	ORP (mV)	480	446	460	450	458
	Total Suspended Solids (mg/L)	2.6	<1.0	2.5	3.3	<1.0
	Total Dissolved Solids (mg/L)	391 ^{DLHC}	557 ^{DLHC}	533 ^{DLHC}	714 ^{HTD}	881 ^{DLHC}
	Turbidity (NTU)	3.13	1.92	3.26	4.74	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	5.6	9.8	11.9	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	315	354	373	474	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	34.6	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	213
	Alkalinity, Total (as CaCO3) (mg/L)	350	354	373	474	213
	Ammonia as N (mg/L)	0.251	0.0101	<0.0050	0.222	<0.0050
	Bicarbonate (HCO3) (mg/L)	385	282	290	371	256
	Bromide (Br) (mg/L)	<0.050	0.140	0.160	<0.25 ^{DLHC}	0.61 ^{DLHC}
	Carbonate (CO3) (mg/L)	20.8	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	3.35	30.8	35.8	14.7 ^{DLHC}	31.5 ^{DLHC}
	Fluoride (F) (mg/L)	1.87	0.204	0.196	0.17 ^{DLHC}	0.14 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	100	97.1	97.1	97.7	102
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.158	<0.025 ^{DLHC}	7.88 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	0.218	<0.050	<0.050	0.180	<0.25 ^{TKNI}
	Total Nitrogen (mg/L)	0.218	<0.050	0.158	0.180	7.88
	Orthophosphate-Dissolved (as P) (mg/L)	0.0309	<0.0010	0.0147	<0.0010	0.0039
	Phosphorus (P)-Total Dissolved (mg/L)	0.0292	<0.0020	0.0135	<0.0020	0.0040
	Phosphorus (P)-Total (mg/L)	0.0314	<0.0020	0.0147	0.0020	0.0058
	Sulfate (SO4) (mg/L)	6.87	107	77.3	160 ^{DLHC}	383 ^{DLHC}
	Anion Sum (meq/L)	7.33	10.2	10.1	13.2	13.7
	Cation Sum (meq/L)	7.36	9.89	9.80	12.9	13.9
	Cation - Anion Balance (%)	0.2	-1.4	-1.5	-1.2	0.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.89 ^{DTC}	1.17	1.53 ^{DTC}	1.41	<0.50
	Total Organic Carbon (mg/L)	0.85 ^{DTC}	1.27	1.02 ^{DTC}	1.70	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0045	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488445-6 WG 12-AUG-20 15:00 EV_RCSGW_WG_ 2020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2240			
	Hardness (as CaCO3) (mg/L)	1550			
	pH (pH)	8.15			
	ORP (mV)	438			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	2090	DLHC		
	Turbidity (NTU)	0.34			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	224			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	224			
	Ammonia as N (mg/L)	0.0117			
	Bicarbonate (HCO3) (mg/L)	273	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0	DLHC		
	Chloride (Cl) (mg/L)	9.7	DLHC		
	Fluoride (F) (mg/L)	0.18	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	99.7	DLHC		
	Nitrate (as N) (mg/L)	30.7	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	TKNI		
	Total Nitrogen (mg/L)	30.7			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0068			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0073			
	Phosphorus (P)-Total (mg/L)	0.0067	DLHC		
	Sulfate (SO4) (mg/L)	1180			
	Anion Sum (meq/L)	31.5			
	Cation Sum (meq/L)	31.4			
	Cation - Anion Balance (%)	-0.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.61			
	Total Organic Carbon (mg/L)	1.46			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2488445-1	L2488445-2	L2488445-3	L2488445-4	L2488445-5
					WG	WG	WG	WG	WG
		12-AUG-20	11:15		12-AUG-20	12-AUG-20	12-AUG-20	12-AUG-20	12-AUG-20
					11:15	14:15	09:35	13:00	15:25
					EV_MW_MC3_WG	EV_MW_MC4_WG	EV_MW_AQ1_WG	EV_MW_AQ2_WG	EV_HW1_WG_202
					_2020_Q3_NP	_2020_Q3_NP	_2020_Q3_NP	_2020_Q3_NP	0_Q3_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00184	0.00044	0.00013	0.00015	0.00013	0.00015	0.00015	0.00013
	Barium (Ba)-Dissolved (mg/L)	0.415	0.121	0.191	0.0195	0.0584	0.0195	0.0195	0.0584
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.102	0.041	0.024	0.093	0.026	0.093	0.093	0.026
	Cadmium (Cd)-Dissolved (ug/L)	<0.030 ^{DLM}	0.0189	0.0531	0.0119	0.108	0.0119	0.0119	0.108
	Calcium (Ca)-Dissolved (mg/L)	9.37	127	113	144	156	144	144	156
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.53	<0.10	0.10	<0.10	0.10	0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00131	0.00039	0.00050	0.0387	0.00050	0.00050	0.0387
	Iron (Fe)-Dissolved (mg/L)	0.046	0.281	<0.010	0.541	<0.010	0.541	0.541	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000281	<0.000050	<0.000050	0.000281
	Lithium (Li)-Dissolved (mg/L)	0.141	0.0211	0.0212	0.0555	0.0594	0.0555	0.0555	0.0594
	Magnesium (Mg)-Dissolved (mg/L)	5.29	37.8	47.6	58.3	66.6	58.3	58.3	66.6
	Manganese (Mn)-Dissolved (mg/L)	0.0552	0.0718	0.00029	0.0780	0.00020	0.0780	0.0780	0.00020
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0302	0.00353	0.000296	0.000376	0.000647	0.000376	0.000376	0.000647
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00304	<0.00050	0.00076	0.00110	0.00076	0.00076	0.00110
	Potassium (K)-Dissolved (mg/L)	0.631	2.46	1.66	2.07	2.30	2.07	2.07	2.30
	Selenium (Se)-Dissolved (ug/L)	<0.25 ^{DLB}	<0.15 ^{DLB}	2.46	<0.20 ^{DLB}	51.5	<0.20 ^{DLB}	<0.20 ^{DLB}	51.5
	Silicon (Si)-Dissolved (mg/L)	2.74	5.35	4.06	6.82	3.52	6.82	6.82	3.52
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	148	8.05	5.04	19.1	12.3	19.1	19.1	12.3
	Strontium (Sr)-Dissolved (mg/L)	0.145	0.560	0.364	1.10	0.354	1.10	1.10	0.354
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000020	<0.000010	<0.000010	0.000021	<0.000010	<0.000010	0.000021
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000528	0.00125	0.000464	0.000127	0.00168	0.000127	0.000127	0.00168
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0051	0.0023	0.0014	0.0381	0.0014	0.0014	0.0381

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2488445-6 WG 12-AUG-20 15:00 EV_RCSGW_WG_ 2020_Q3_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00019			
	Arsenic (As)-Dissolved (mg/L)	0.00021			
	Barium (Ba)-Dissolved (mg/L)	0.0376			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.018			
	Cadmium (Cd)-Dissolved (ug/L)	0.253			
	Calcium (Ca)-Dissolved (mg/L)	330			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.109			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000990			
	Lithium (Li)-Dissolved (mg/L)	0.0735			
	Magnesium (Mg)-Dissolved (mg/L)	178			
	Manganese (Mn)-Dissolved (mg/L)	0.00218			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00141			
	Nickel (Ni)-Dissolved (mg/L)	0.00192			
	Potassium (K)-Dissolved (mg/L)	3.46			
	Selenium (Se)-Dissolved (ug/L)	233			
	Silicon (Si)-Dissolved (mg/L)	4.45			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.90			
	Strontium (Sr)-Dissolved (mg/L)	0.405			
	Thallium (Tl)-Dissolved (mg/L)	0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00758			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.123			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Selenium (Se)-Dissolved	MB-LOR	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Fluoride (F)	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2488445-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2488445

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5189582							
WG3384248-15	DUP	L2488445-1						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384248-14	LCS							
Acidity (as CaCO3)			96.6		%		85-115	14-AUG-20
WG3384248-13	MB							
Acidity (as CaCO3)			1.6		mg/L		2	14-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5190218							
WG3385041-17	LCS							
Alkalinity, Total (as CaCO3)			97.6		%		85-115	17-AUG-20
WG3385041-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5190481							
WG3384531-2	LCS							
Beryllium (Be)-Dissolved			102.2		%		80-120	17-AUG-20
WG3384531-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20
BIC-CL								
	Water							
Batch	R5190218							
WG3385041-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189812							
WG3384499-7	DUP	L2488445-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384499-6	LCS							
Bromide (Br)			99.1		%		85-115	14-AUG-20
WG3384499-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-AUG-20
WG3384499-8	MS	L2488445-1						
Bromide (Br)			100.6		%		75-125	14-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5190895							
WG3385657-6	LCS							
Dissolved Organic Carbon			91.6		%		80-120	17-AUG-20
WG3385657-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
Batch	R5190916							
WG3385660-6	LCS							
Dissolved Organic Carbon			93.5		%		80-120	17-AUG-20
WG3385660-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
C-TOT-ORG-LOW-CL Water								
Batch	R5190895							
WG3385657-6	LCS							
Total Organic Carbon			95.2		%		80-120	17-AUG-20
WG3385657-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
Batch	R5190916							
WG3385660-6	LCS							
Total Organic Carbon			92.4		%		80-120	17-AUG-20
WG3385660-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
CL-IC-N-CL Water								
Batch	R5189812							
WG3384499-7	DUP	L2488445-1						
Chloride (Cl)		3.35	3.32		mg/L	0.9	20	14-AUG-20
WG3384499-6	LCS							
Chloride (Cl)			102.1		%		90-110	14-AUG-20
WG3384499-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-AUG-20
WG3384499-8	MS	L2488445-1						
Chloride (Cl)			109.4		%		75-125	14-AUG-20
CO3-CL Water								
Batch	R5190218							
WG3385041-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	17-AUG-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
EC-L-PCT-CL		Water							
Batch	R5190218								
WG3385041-17	LCS								
Conductivity (@ 25C)			98.9		%		90-110	17-AUG-20	
WG3385041-16	MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	17-AUG-20	
F-IC-N-CL		Water							
Batch	R5189812								
WG3384499-7	DUP	L2488445-1							
Fluoride (F)			1.87	1.78	mg/L	5.2	20	14-AUG-20	
WG3384499-6	LCS								
Fluoride (F)			98.7		%		90-110	14-AUG-20	
WG3384499-5	MB								
Fluoride (F)			<0.020		mg/L		0.02	14-AUG-20	
WG3384499-8	MS	L2488445-1							
Fluoride (F)			N/A	MS-B	%		-	14-AUG-20	
HG-D-CVAA-VA		Water							
Batch	R5190571								
WG3386023-11	DUP	L2488445-2							
Mercury (Hg)-Dissolved			<0.0000050	<0.0000050	mg/L	RPD-NA	N/A	20	18-AUG-20
WG3386023-10	LCS								
Mercury (Hg)-Dissolved			99.7		%		80-120	18-AUG-20	
WG3386023-9	MB	NP							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	18-AUG-20	
MET-D-CCMS-VA		Water							
Batch	R5190481								
WG3384531-2	LCS								
Aluminum (Al)-Dissolved			107.2		%		80-120	17-AUG-20	
Antimony (Sb)-Dissolved			107.7		%		80-120	17-AUG-20	
Arsenic (As)-Dissolved			105.6		%		80-120	17-AUG-20	
Barium (Ba)-Dissolved			102.9		%		80-120	17-AUG-20	
Bismuth (Bi)-Dissolved			103.3		%		80-120	17-AUG-20	
Boron (B)-Dissolved			92.1		%		80-120	17-AUG-20	
Cadmium (Cd)-Dissolved			104.5		%		80-120	17-AUG-20	
Calcium (Ca)-Dissolved			102.9		%		80-120	17-AUG-20	
Chromium (Cr)-Dissolved			109.9		%		80-120	17-AUG-20	
Cobalt (Co)-Dissolved			108.2		%		80-120	17-AUG-20	
Copper (Cu)-Dissolved			106.2		%		80-120	17-AUG-20	
Iron (Fe)-Dissolved			106.1		%		80-120	17-AUG-20	



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384531-2	LCS							
Lead (Pb)-Dissolved			102.2		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			105.7		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			101.6		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			110.3		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			109.1		%		80-120	17-AUG-20
Potassium (K)-Dissolved			107.7		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			108.1		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			112.8		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			102.6		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			110.5		%		80-120	17-AUG-20
Strontium (Sr)-Dissolved			102.0		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			103.8		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			103.3		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			107.2		%		80-120	17-AUG-20
Uranium (U)-Dissolved			106.9		%		80-120	17-AUG-20
Vanadium (V)-Dissolved			106.6		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			103.1		%		80-120	17-AUG-20
WG3384531-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190481							
WG3384531-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			0.000093	MB-LOR	mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5191182							
WG3386102-11	DUP	L2488445-6						
Ammonia as N		0.0117	0.0122		mg/L	4.2	20	17-AUG-20
WG3386102-10	LCS							
Ammonia as N			98.2		%		85-115	17-AUG-20
WG3386102-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-AUG-20
WG3386102-12	MS	L2488445-6						
Ammonia as N			101.7		%		75-125	17-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5189812							
WG3384499-7	DUP	L2488445-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384499-6	LCS							
Nitrite (as N)			96.3		%		90-110	14-AUG-20
WG3384499-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-AUG-20
WG3384499-8	MS	L2488445-1						
Nitrite (as N)			107.0		%		75-125	14-AUG-20
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Water								
Batch	R5189812							
WG3384499-7	DUP	L2488445-1						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384499-6	LCS							
Nitrate (as N)			103.2		%		90-110	14-AUG-20
WG3384499-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-AUG-20
WG3384499-8	MS	L2488445-1						
Nitrate (as N)			109.1		%		75-125	14-AUG-20
OH-CL								
Water								
Batch	R5190218							
WG3385041-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-AUG-20
ORP-CL								
Water								
Batch	R5189407							
WG3383539-5	CRM	CL-ORP						
ORP			226		mV		210-230	14-AUG-20
WG3383539-9	CRM	CL-ORP						
ORP			229		mV		210-230	14-AUG-20
WG3383539-6	DUP	L2488445-6						
ORP		438	433	J	mV	5.3	15	14-AUG-20
P-T-L-COL-CL								
Water								
Batch	R5190317							
WG3385016-22	LCS							
Phosphorus (P)-Total			106.4		%		80-120	17-AUG-20
WG3385016-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-AUG-20
P-TD-L-COL-CL								
Water								
Batch	R5190915							
WG3385875-3	DUP	L2488445-6						
Phosphorus (P)-Total Dissolved		0.0073	0.0072		mg/L	1.1	20	18-AUG-20
WG3385875-2	LCS							
Phosphorus (P)-Total Dissolved			102.5		%		80-120	18-AUG-20
WG3385875-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	18-AUG-20
WG3385875-4	MS	L2488445-6						
Phosphorus (P)-Total Dissolved			90.9		%		70-130	18-AUG-20
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5190218							
WG3385041-17	LCS							
pH			7.00		pH		6.9-7.1	17-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-14	LCS							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	13-AUG-20
WG3382949-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20
SO4-IC-N-CL	Water							
Batch	R5189812							
WG3384499-7	DUP	L2488445-1						
Sulfate (SO4)		6.87	6.71		mg/L	2.3	20	14-AUG-20
WG3384499-6	LCS							
Sulfate (SO4)			100.2		%		90-110	14-AUG-20
WG3384499-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-AUG-20
WG3384499-8	MS	L2488445-1						
Sulfate (SO4)			106.8		%		75-125	14-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191924							
WG3385511-12	DUP	L2488445-6						
Total Dissolved Solids		2090	2040		mg/L	2.5	20	18-AUG-20
WG3385511-11	LCS							
Total Dissolved Solids			98.2		%		85-115	18-AUG-20
WG3385511-8	LCS							
Total Dissolved Solids			96.4		%		85-115	18-AUG-20
WG3385511-10	MB							
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
WG3385511-7	MB							
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
TKN-L-F-CL	Water							
Batch	R5188598							
WG3383662-10	LCS							
Total Kjeldahl Nitrogen			93.9		%		75-125	14-AUG-20
WG3383662-12	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	14-AUG-20
WG3383662-2	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5188598							
WG3383662-2	LCS							
Total Kjeldahl Nitrogen			96.3		%		75-125	14-AUG-20
WG3383662-6	LCS							
Total Kjeldahl Nitrogen			95.9		%		75-125	14-AUG-20
WG3383662-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
TSS-L-CL		Water						
Batch	R5191850							
WG3385510-6	LCS							
Total Suspended Solids			103.3		%		85-115	18-AUG-20
WG3385510-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-AUG-20
TURBIDITY-CL		Water						
Batch	R5187018							
WG3383089-8	LCS							
Turbidity			96.5		%		85-115	13-AUG-20
WG3383089-7	MB							
Turbidity			<0.10		NTU		0.1	13-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	12-AUG-20 11:15	14-AUG-20 09:30	0.25	46	hours	EHTR-FM
	2	12-AUG-20 14:15	14-AUG-20 09:30	0.25	43	hours	EHTR-FM
	3	12-AUG-20 09:35	14-AUG-20 09:30	0.25	48	hours	EHTR-FM
	4	12-AUG-20 13:00	14-AUG-20 09:30	0.25	44	hours	EHTR-FM
	5	12-AUG-20 15:25	14-AUG-20 09:30	0.25	42	hours	EHTR-FM
	6	12-AUG-20 15:00	14-AUG-20 09:30	0.25	42	hours	EHTR-FM
pH							
	1	12-AUG-20 11:15	17-AUG-20 13:00	0.25	122	hours	EHTR-FM
	2	12-AUG-20 14:15	17-AUG-20 13:00	0.25	119	hours	EHTR-FM
	3	12-AUG-20 09:35	17-AUG-20 13:00	0.25	123	hours	EHTR-FM
	4	12-AUG-20 13:00	17-AUG-20 13:00	0.25	120	hours	EHTR-FM
	5	12-AUG-20 15:25	17-AUG-20 13:00	0.25	118	hours	EHTR-FM
	6	12-AUG-20 15:00	17-AUG-20 13:00	0.25	118	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2488445 were received on 13-AUG-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200812Q3GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI+CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CVI	
EV_MW_MC3_WG_2020_Q3_NP	EV_MW_MC3	WG	N	8/12/2020	11:15	G	5	1	1	1	1	1	1	1	1					
EV_MW_MC4_WG_2020_Q3_NP	EV_MW_MC4	WG	N	8/12/2020	14:15	G	5	1	1	1	1	1	1	1	1					
EV_MW_AQ1_WG_2020_Q3_NP	EV_MW_AQ1	WG	N	8/12/2020	9:35	G	5	1	1	1	1	1	1	1	1					
EV_MW_AQ2_WG_2020_Q3_NP	EV_MW_AQ2	WG	N	8/12/2020	13:00	G	5	1	1	1	1	1	1	1	1					
EV_HW1_WG_2020_Q3_NP	EV_HW1	WG	N	8/12/2020	15:25	G	5	1	1	1	1	1	1	1	1					
EV_RCSGW_WG_2020_Q3_NP	EV_RCSgw	WG	N	8/12/2020	15:00	G	5	1	1	1	1	1	1	1	1					
							Total	30												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Colby Bracken	August 12, 2020	<i>[Signature]</i>	8/13/20
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Colby Bracken/ Hannah Morris	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	August 12, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



L2488445-COFC

[Handwritten signature]



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 20-AUG-20
Report Date: 27-AUG-20 14:58 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2491747
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2491747-1 WG 19-AUG-20 10:25 EV_MW_MC4_WG _2020-08-19_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	778			
	Hardness (as CaCO3) (mg/L)	464			
	pH (pH)	8.18			
	ORP (mV)	413			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	581	DLHC		
	Turbidity (NTU)	2.21			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	303			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	303			
	Ammonia as N (mg/L)	0.0076			
	Bicarbonate (HCO3) (mg/L)	369			
	Bromide (Br) (mg/L)	0.179			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	29.9			
	Fluoride (F) (mg/L)	0.199			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	106			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.330			
	Total Nitrogen (mg/L)	0.330			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020	RRV		
	Sulfate (SO4) (mg/L)	107			
	Anion Sum (meq/L)	9.13			
	Cation Sum (meq/L)	9.69			
	Cation - Anion Balance (%)	3.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.06			
	Total Organic Carbon (mg/L)	1.08			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2491747-1 WG 19-AUG-20 10:25 EV_MW_MC4_WG _2020-08-19_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00055			
	Barium (Ba)-Dissolved (mg/L)	0.113			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.039			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	124			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.49			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.403			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0214			
	Magnesium (Mg)-Dissolved (mg/L)	37.3			
	Manganese (Mn)-Dissolved (mg/L)	0.0648			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00343			
	Nickel (Ni)-Dissolved (mg/L)	0.00258			
	Potassium (K)-Dissolved (mg/L)	2.45			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	5.43			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.67			
	Strontium (Sr)-Dissolved (mg/L)	0.603			
	Thallium (Tl)-Dissolved (mg/L)	0.000020			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00116			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0041			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2491747-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2491747-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2491747-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2491747-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2491747

Report Date: 27-AUG-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5197957							
WG3389516-8	LCS							
Acidity (as CaCO3)			101.2		%		85-115	21-AUG-20
WG3389516-7	MB							
Acidity (as CaCO3)			1.4		mg/L		2	21-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5198982							
WG3389872-15	DUP	L2491747-1						
Alkalinity, Total (as CaCO3)		303	295		mg/L	2.7	20	24-AUG-20
WG3389872-14	LCS							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	24-AUG-20
WG3389872-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5199449							
WG3388959-2	LCS							
Beryllium (Be)-Dissolved			102.5		%		80-120	24-AUG-20
WG3388959-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-AUG-20
BIC-CL								
	Water							
Batch	R5198982							
WG3389872-15	DUP	L2491747-1						
Bicarbonate (HCO3)		369	359		mg/L	2.7	20	24-AUG-20
WG3389872-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	24-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-2	LCS							
Bromide (Br)			97.3		%		85-115	21-AUG-20
WG3389325-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5198165							
WG3389619-2	LCS							
Dissolved Organic Carbon			101.9		%		80-120	23-AUG-20
WG3389619-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-AUG-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2491747

Report Date: 27-AUG-20

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5198165							
WG3389619-2 LCS								
Total Organic Carbon			102.6		%		80-120	23-AUG-20
WG3389619-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	23-AUG-20
CL-IC-N-CL	Water							
Batch	R5197601							
WG3389325-2 LCS								
Chloride (Cl)			100.0		%		90-110	21-AUG-20
WG3389325-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-20
CO3-CL	Water							
Batch	R5198982							
WG3389872-15 DUP		L2491747-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	24-AUG-20
WG3389872-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	24-AUG-20
EC-L-PCT-CL	Water							
Batch	R5198982							
WG3389872-15 DUP		L2491747-1						
Conductivity (@ 25C)		778	778		uS/cm	0.0	10	24-AUG-20
WG3389872-14 LCS								
Conductivity (@ 25C)			97.3		%		90-110	24-AUG-20
WG3389872-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-AUG-20
F-IC-N-CL	Water							
Batch	R5197601							
WG3389325-2 LCS								
Fluoride (F)			106.0		%		90-110	21-AUG-20
WG3389325-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5200454							
WG3391237-6 LCS								
Mercury (Hg)-Dissolved			92.1		%		80-120	26-AUG-20
WG3391237-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-AUG-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2491747

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3388959-2	LCS							
Aluminum (Al)-Dissolved			102.3		%		80-120	24-AUG-20
Antimony (Sb)-Dissolved			99.7		%		80-120	24-AUG-20
Arsenic (As)-Dissolved			102.3		%		80-120	24-AUG-20
Barium (Ba)-Dissolved			102.9		%		80-120	24-AUG-20
Bismuth (Bi)-Dissolved			104.0		%		80-120	24-AUG-20
Boron (B)-Dissolved			97.5		%		80-120	24-AUG-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	24-AUG-20
Calcium (Ca)-Dissolved			100.3		%		80-120	24-AUG-20
Chromium (Cr)-Dissolved			99.9		%		80-120	24-AUG-20
Cobalt (Co)-Dissolved			100.7		%		80-120	24-AUG-20
Copper (Cu)-Dissolved			101.1		%		80-120	24-AUG-20
Iron (Fe)-Dissolved			104.3		%		80-120	24-AUG-20
Lead (Pb)-Dissolved			101.9		%		80-120	24-AUG-20
Lithium (Li)-Dissolved			100.1		%		80-120	24-AUG-20
Magnesium (Mg)-Dissolved			100.9		%		80-120	24-AUG-20
Manganese (Mn)-Dissolved			101.8		%		80-120	24-AUG-20
Molybdenum (Mo)-Dissolved			100.6		%		80-120	24-AUG-20
Nickel (Ni)-Dissolved			99.99		%		80-120	24-AUG-20
Potassium (K)-Dissolved			107.5		%		80-120	24-AUG-20
Selenium (Se)-Dissolved			103.4		%		80-120	24-AUG-20
Silicon (Si)-Dissolved			111.7		%		60-140	24-AUG-20
Silver (Ag)-Dissolved			102.5		%		80-120	24-AUG-20
Sodium (Na)-Dissolved			104.5		%		80-120	24-AUG-20
Strontium (Sr)-Dissolved			105.5		%		80-120	24-AUG-20
Thallium (Tl)-Dissolved			104.4		%		80-120	24-AUG-20
Tin (Sn)-Dissolved			100.4		%		80-120	24-AUG-20
Titanium (Ti)-Dissolved			100.8		%		80-120	24-AUG-20
Uranium (U)-Dissolved			103.9		%		80-120	24-AUG-20
Vanadium (V)-Dissolved			101.2		%		80-120	24-AUG-20
Zinc (Zn)-Dissolved			101.0		%		80-120	24-AUG-20
WG3388959-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3388959-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5196697							
WG3388669-14	LCS							
Ammonia as N			100.4		%		85-115	21-AUG-20
WG3388669-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R5197601								
WG3389325-2	LCS							
Nitrite (as N)			97.9		%		90-110	21-AUG-20
WG3389325-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
NO3-L-IC-N-CL								
Batch R5197601								
WG3389325-2	LCS							
Nitrate (as N)			103.4		%		90-110	21-AUG-20
WG3389325-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
OH-CL								
Batch R5198982								
WG3389872-15	DUP	L2491747-1						
Hydroxide (OH)			<5.0	RPD-NA	mg/L	N/A	25	24-AUG-20
WG3389872-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-AUG-20
ORP-CL								
Batch R5194198								
WG3388065-6	CRM	CL-ORP						
ORP			223		mV		210-230	20-AUG-20
WG3388065-5	DUP	L2491747-1						
ORP			413	J	mV	8.0	15	20-AUG-20
P-T-L-COL-CL								
Batch R5199212								
WG3389864-14	LCS							
Phosphorus (P)-Total			107.7		%		80-120	24-AUG-20
WG3389864-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-20
P-TD-L-COL-CL								
Batch R5199828								
WG3390762-3	DUP	L2491747-1						
Phosphorus (P)-Total Dissolved			<0.0020	RPD-NA	mg/L	N/A	20	25-AUG-20
WG3390762-2	LCS							
Phosphorus (P)-Total Dissolved			103.8		%		80-120	25-AUG-20
WG3390762-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	25-AUG-20
WG3390762-4	MS	L2491747-1						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-TD-L-COL-CL Water								
Batch	R5199828							
WG3390762-4	MS	L2491747-1						
Phosphorus (P)-Total	Dissolved		70.1		%		70-130	25-AUG-20
PH-CL Water								
Batch	R5198982							
WG3389872-15	DUP	L2491747-1						
pH		8.18	8.20	J	pH	0.02	0.2	24-AUG-20
WG3389872-14	LCS							
pH			6.98		pH		6.9-7.1	24-AUG-20
PO4-DO-L-COL-CL Water								
Batch	R5194040							
WG3387794-14	LCS							
Orthophosphate-Dissolved (as P)			103.7		%		80-120	20-AUG-20
WG3387794-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-20
SO4-IC-N-CL Water								
Batch	R5197601							
WG3389325-2	LCS							
Sulfate (SO4)			102.1		%		90-110	21-AUG-20
WG3389325-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
SOLIDS-TDS-CL Water								
Batch	R5202201							
WG3390367-5	LCS							
Total Dissolved Solids			100.9		%		85-115	25-AUG-20
WG3390367-4	MB							
Total Dissolved Solids			<10		mg/L		10	25-AUG-20
TKN-L-F-CL Water								
Batch	R5195197							
WG3388365-10	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	21-AUG-20
WG3388365-2	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	20-AUG-20
WG3388365-4	LCS							
Total Kjeldahl Nitrogen			89.7		%		75-125	20-AUG-20
WG3388365-6	LCS							
Total Kjeldahl Nitrogen			102.6		%		75-125	20-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5195197							
WG3388365-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-AUG-20
TSS-L-CL		Water						
Batch	R5202097							
WG3390199-4	LCS							
Total Suspended Solids			95.0		%		85-115	25-AUG-20
WG3390199-3	MB							
Total Suspended Solids			<1.0		mg/L		1	25-AUG-20
TURBIDITY-CL		Water						
Batch	R5194236							
WG3387916-8	LCS							
Turbidity			96.5		%		85-115	20-AUG-20
WG3387916-7	MB							
Turbidity			<0.10		NTU		0.1	20-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	19-AUG-20 10:25	20-AUG-20 19:20	0.25	33	hours	EHTR-FM
pH	1	19-AUG-20 10:25	24-AUG-20 12:00	0.25	122	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2491747 were received on 20-AUG-20 08:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200819Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com			X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com			X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com			X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com			X	X	X
								Email 5:	teckcoal@equisonline.com					X
City	Sparwood	Province	BC	City	Calgary	Province	AB							
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada							
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	YPO00678877					

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
EV_MW_MC4_WG_2020-08-19_NP	EV_MW_MC4	WG	N	8/19/2020	10:25	G	5	1		1	1		1						1		
							Total	5													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	August 19, 2020	<i>[Signature]</i>	8/20 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	August 19, 2020





Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 28-AUG-20
Report Date: 08-SEP-20 10:19 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2495914
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200827Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2495914-1 WG 27-AUG-20 08:55 EV_ER1GWS_WG_2020_Q3_NP	L2495914-2 WG 27-AUG-20 09:50 EV_ER1GWD_WG_2020_Q3_NP	L2495914-3 WG 27-AUG-20 12:40 EV_OCGW_WG_2020_Q3_NP	L2495914-4 WG 27-AUG-20 12:45 EV_MC5GW_WG_2020_Q3_NP	L2495914-5 WG 27-AUG-20 12:50 EV_MC6GW_WG_2020_Q3_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	432	387	424	421	<2.0
	Hardness (as CaCO3) (mg/L)	235	215	146	145	<0.50
	pH (pH)	8.02	8.09	8.20	8.21	5.59
	ORP (mV)	439	390	400	430	453
	Total Suspended Solids (mg/L)	<1.0	10.5	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	312 ^{DLHC}	270 ^{DLHC}	289 ^{DLHC}	269 ^{DLHC}	<10
	Turbidity (NTU)	0.12	4.46	1.78	1.64	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	1.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	183	195	184	184	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	183	195	184	184	<1.0
	Ammonia as N (mg/L)	0.275	0.0726	0.358	0.180	<0.0050
	Bicarbonate (HCO3) (mg/L)	223	238	224	225	<5.0
	Bromide (Br) (mg/L)	<0.050	0.360	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	7.04	5.21	2.16	2.18	<0.10
	Fluoride (F) (mg/L)	0.187	0.242	1.22	1.19	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	94.7	93.8	95.0	96.3	0.0
	Nitrate (as N) (mg/L)	1.52	0.484	<0.0050	0.0147	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.843	0.564	0.890	0.190	<0.050
	Total Nitrogen (mg/L)	2.36	1.05	0.890	0.205	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0033	<0.0010	0.0085	0.0084	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	<0.0020	0.0086	0.0093	<0.0020
	Phosphorus (P)-Total (mg/L)	<0.0020 ^{RRV}	0.0116	0.0097	0.0093	<0.0020
	Sulfate (SO4) (mg/L)	62.2	33.4	66.7	65.4	<0.30
	Anion Sum (meq/L)	5.26	4.78	5.19	5.17	<0.10
	Cation Sum (meq/L)	4.98	4.49	4.93	4.98	<0.10
	Cation - Anion Balance (%)	-2.7	-3.2	-2.6	-1.9	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	1.22	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	1.23	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	LAB	LAB	LAB
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0060	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2495914-6 WG 27-AUG-20 12:55 EV_MC7GW_WG_ 2020_Q3_NP	L2495914-7 WG 27-AUG-20 15:15 EV_WH50GW_WG_ _2020_Q3_NP	L2495914-8 WG 27-AUG-20 14:50 EV_BRGW_WG_2 020_Q3_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0	441	1030		
	Hardness (as CaCO3) (mg/L)	<0.50	249	633		
	pH (pH)	5.49	8.17	7.86		
	ORP (mV)	438	444	429		
	Total Suspended Solids (mg/L)	<1.0	19.3	<1.0		
	Total Dissolved Solids (mg/L)	<10	318 ^{DLHC}	853 ^{DLHC}		
	Turbidity (NTU)	<0.10	36.8	0.25		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	<1.0	2.8		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	164	257		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	164	257		
	Ammonia as N (mg/L)	0.0066 ^{RRV}	0.307	0.0807		
	Bicarbonate (HCO3) (mg/L)	<5.0	200	313		
	Bromide (Br) (mg/L)	<0.050	<0.050	0.54		^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	<0.10	1.75	23.9		^{DLHC}
	Fluoride (F) (mg/L)	<0.020	0.149	0.15		^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	0.0	94.9	95.3		
	Nitrate (as N) (mg/L)	<0.0050	1.15	6.38		^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0050		^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	<0.050	1.38	<0.050		
	Total Nitrogen (mg/L)	<0.050	2.53	6.38		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0030	0.0023		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0042	<0.0020		
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0359	<0.0020		
	Sulfate (SO4) (mg/L)	<0.30	98.1	358		^{DLHC}
	Anion Sum (meq/L)	<0.10	5.46	13.7		
	Cation Sum (meq/L)	<0.10	5.19	13.1		
Cation - Anion Balance (%)	0.0	-2.6	-2.4			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.71	<0.50		
	Total Organic Carbon (mg/L)	<0.50	0.81	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2495914-1 WG 27-AUG-20 08:55 EV_ER1GWS_WG_2020_Q3_NP	L2495914-2 WG 27-AUG-20 09:50 EV_ER1GWD_WG_2020_Q3_NP	L2495914-3 WG 27-AUG-20 12:40 EV_OCGW_WG_2020_Q3_NP	L2495914-4 WG 27-AUG-20 12:45 EV_MC5GW_WG_2020_Q3_NP	L2495914-5 WG 27-AUG-20 12:50 EV_MC6GW_WG_2020_Q3_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00021	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00012	0.00028	0.00151	0.00142	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.116	0.0809	0.0553	0.0541	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.012	0.127	0.124	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	0.0125	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	64.7	57.0	29.1	27.9	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00025	0.00029	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00028	0.00037	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.054	0.222	0.235	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0077	0.0074	0.0267	0.0267	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	17.9	17.6	17.9	18.4	<0.10
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0202	0.0688	0.0711	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)			<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000999	0.00262	0.0149	0.0147	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00118	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.855	1.34	1.49	1.53	<0.050
	Selenium (Se)-Dissolved (ug/L)	8.19	1.95	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.59	3.96	4.36	4.55	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	5.38	3.50	44.2	46.2	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.184	0.185	0.408	0.403	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000864	0.000993	0.00113	0.00113	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0018	0.0026	<0.0010	0.0011	<0.0010
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)			<0.00050	<0.00050	<0.00050
Hydrocarbons	EPH10-19 (mg/L)			<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)			<0.50	<0.50	<0.50
	EPH19-32 (mg/L)			<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)			<0.25	<0.25	<0.25

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2495914-6 WG 27-AUG-20 12:55 EV_MC7GW_WG_ 2020_Q3_NP	L2495914-7 WG 27-AUG-20 15:15 EV_WH50GW_WG_ _2020_Q3_NP	L2495914-8 WG 27-AUG-20 14:50 EV_BRGW_WG_2 020_Q3_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00016	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00010	
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.0974	0.0635	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.014	0.037	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0158	0.0506	
	Calcium (Ca)-Dissolved (mg/L)	<0.050	65.1	165	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00064	0.00122	
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.023	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0117	0.0529	
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	21.1	53.5	
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00632	0.00067	
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	
	Mercury (Hg)-Dissolved (ug/L)	<0.00050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.00113	0.000632	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00175	
	Potassium (K)-Dissolved (mg/L)	<0.050	0.990	2.02	
	Selenium (Se)-Dissolved (ug/L)	<0.050	10.1	46.8	
	Silicon (Si)-Dissolved (mg/L)	<0.050	2.43	3.13	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	<0.050	3.60	8.35	
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.152	0.309	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00102	0.00148	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0022	
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)	0.00050			
Hydrocarbons	EPH10-19 (mg/L)	<0.25			
	EPH (C10-C32) (mg/L)	<0.50			
	EPH19-32 (mg/L)	<0.25			
	TEH (C10-C30) (mg/L)	<0.25			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2495914-1	L2495914-2	L2495914-3	L2495914-4	L2495914-5
					WG	WG	WG	WG	WG
					27-AUG-20	27-AUG-20	27-AUG-20	27-AUG-20	27-AUG-20
					08:55	09:50	12:40	12:45	12:50
					EV_ER1GWS_WG_2020_Q3_NP	EV_ER1GWD_WG_2020_Q3_NP	EV_OCGW_WG_2020_Q3_NP	EV_MC5GW_WG_2020_Q3_NP	EV_MC6GW_WG_2020_Q3_NP
Grouping	Analyte								
WATER									
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)						81.5	77.8	87.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2495914-6	L2495914-7	L2495914-8		
		Description	WG	WG	WG		
		Sampled Date	27-AUG-20	27-AUG-20	27-AUG-20		
		Sampled Time	12:55	15:15	14:50		
		Client ID	EV_MC7GW_WG_2020_Q3_NP	EV_WH50GW_WG_2020_Q3_NP	EV_BRGW_WG_2020_Q3_NP		
Grouping	Analyte						
WATER							
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)		74.4				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2495914-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2495914-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2495914-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
CR6-D-IC-ED	Water	Chromium, Dissolved Hexavalent (Cr +6)	APHA 3500-Cr C (Ion Chromatography)
<p>This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Results are based on a field-filtered, field-preserved sample.</p>			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated
 The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B
 Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)
 Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E
 This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.
 Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
 This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498
 This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

Reference Information

PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200827Q3GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5208544							
WG3396356-3	DUP	L2495914-7						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	01-SEP-20
WG3396356-2	LCS							
Acidity (as CaCO3)			95.9		%		85-115	01-SEP-20
WG3396356-1	MB							
Acidity (as CaCO3)			1.5		mg/L		2	01-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5208902							
WG3396784-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	02-SEP-20
WG3396784-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5208682							
WG3395210-2	LCS							
Beryllium (Be)-Dissolved			103.4		%		80-120	01-SEP-20
WG3395210-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
BIC-CL								
	Water							
Batch	R5208902							
WG3396784-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5209410							
WG3397348-10	LCS							
Bromide (Br)			103.8		%		85-115	29-AUG-20
WG3397348-14	LCS							
Bromide (Br)			101.4		%		85-115	29-AUG-20
WG3397348-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-AUG-20
WG3397348-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-AUG-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5204507							
WG3394459-2	LCS							
Dissolved Organic Carbon			94.2		%		80-120	30-AUG-20
WG3394459-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-AUG-20
Batch	R5204523							
WG3394458-3	DUP	L2495914-6						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-AUG-20
WG3394458-2	LCS							
Dissolved Organic Carbon			95.7		%		80-120	30-AUG-20
WG3394458-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-AUG-20
WG3394458-4	MS	L2495914-6						
Dissolved Organic Carbon			98.7		%		70-130	30-AUG-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5204507							
WG3394459-2	LCS							
Total Organic Carbon			96.8		%		80-120	30-AUG-20
WG3394459-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-AUG-20
Batch	R5204523							
WG3394458-3	DUP	L2495914-6						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-AUG-20
WG3394458-2	LCS							
Total Organic Carbon			100.7		%		80-120	30-AUG-20
WG3394458-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-AUG-20
WG3394458-4	MS	L2495914-6						
Total Organic Carbon			96.9		%		70-130	30-AUG-20
CL-L-IC-N-CL								
	Water							
Batch	R5209410							
WG3397348-10	LCS							
Chloride (Cl)			102.4		%		85-115	29-AUG-20
WG3397348-14	LCS							
Chloride (Cl)			102.1		%		85-115	29-AUG-20
WG3397348-13	MB							
Chloride (Cl)			<0.10		mg/L		0.1	29-AUG-20
WG3397348-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5208902							
WG3396784-4 MB	Carbonate (CO3)		<5.0		mg/L		5	02-SEP-20
CR6-D-IC-ED	Water							
Batch	R5205957							
WG3394447-5 DUP	Hexavalent Chromium-Dissolved	L2495914-3 <0.00050	<0.00050	RPD-NA	mg/L	N/A	25	30-AUG-20
WG3394447-2 LCS	Hexavalent Chromium-Dissolved		100.7		%		70-130	30-AUG-20
WG3394447-1 MB	Hexavalent Chromium-Dissolved		<0.00050		mg/L		0.0005	30-AUG-20
WG3394447-6 MS	Hexavalent Chromium-Dissolved	L2495914-3	99.8		%		70-130	30-AUG-20
EC-L-PCT-CL	Water							
Batch	R5208902							
WG3396784-5 LCS	Conductivity (@ 25C)		96.3		%		90-110	02-SEP-20
WG3396784-4 MB	Conductivity (@ 25C)		<2.0		uS/cm		2	02-SEP-20
F-IC-N-CL	Water							
Batch	R5209410							
WG3397348-10 LCS	Fluoride (F)		102.1		%		90-110	29-AUG-20
WG3397348-14 LCS	Fluoride (F)		103.7		%		90-110	29-AUG-20
WG3397348-13 MB	Fluoride (F)		<0.020		mg/L		0.02	29-AUG-20
WG3397348-9 MB	Fluoride (F)		<0.020		mg/L		0.02	29-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5210113							
WG3397897-2 LCS	Mercury (Hg)-Dissolved		95.3		%		80-120	04-SEP-20
WG3397897-1 MB	Mercury (Hg)-Dissolved	NP	<0.000005C		mg/L		0.000005	04-SEP-20
HG-D-U-CVAF-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-U-CVAF-VA								
	Water							
Batch	R5209131							
WG3396702-2	LCS							
Mercury (Hg)-Dissolved			98.0		%		80-120	02-SEP-20
WG3396702-1	MB	LF						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	02-SEP-20
WG3396702-4	MS	L2495914-5						
Mercury (Hg)-Dissolved			85.4		%		70-130	02-SEP-20
MET-D-CCMS-VA								
	Water							
Batch	R5208682							
WG3395210-2	LCS							
Aluminum (Al)-Dissolved			102.4		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			99.1		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			98.4		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			103.5		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			97.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			98.1		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			99.0		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			104.1		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			99.5		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			99.7		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			98.5		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			95.7		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			96.1		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			103.6		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			98.1		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			98.6		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			98.6		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.7		%		80-120	01-SEP-20
Potassium (K)-Dissolved			99.9		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			96.0		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			99.7		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			99.2		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			100.5		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			101.8		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			95.7		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			97.9		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			96.1		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5208682							
WG3395210-2	LCS							
Uranium (U)-Dissolved			94.9		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			99.1		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			103.1		%		80-120	01-SEP-20
WG3395210-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5207477							
WG3395045-2	LCS							
Ammonia as N			101.6		%		85-115	31-AUG-20
WG3395045-6	LCS							
Ammonia as N			107.2		%		85-115	31-AUG-20
WG3395045-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-AUG-20
WG3395045-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-AUG-20
NO2-L-IC-N-CL								
Water								
Batch	R5209410							
WG3397348-10	LCS							
Nitrite (as N)			97.8		%		90-110	29-AUG-20
WG3397348-14	LCS							
Nitrite (as N)			98.1		%		90-110	29-AUG-20
WG3397348-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-AUG-20
WG3397348-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-AUG-20
NO3-L-IC-N-CL								
Water								
Batch	R5209410							
WG3397348-10	LCS							
Nitrate (as N)			103.1		%		90-110	29-AUG-20
WG3397348-14	LCS							
Nitrate (as N)			102.8		%		90-110	29-AUG-20
WG3397348-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	29-AUG-20
WG3397348-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	29-AUG-20
OH-CL								
Water								
Batch	R5208902							
WG3396784-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-SEP-20
ORP-CL								
Water								
Batch	R5204271							
WG3394352-5	CRM	CL-ORP						
ORP			224		mV		210-230	29-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5208940							
WG3396834-17	DUP	L2495914-8						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3396834-4	LCS							
Phosphorus (P)-Total			105.8		%		80-120	02-SEP-20
WG3396834-6	LCS							
Phosphorus (P)-Total			106.4		%		80-120	02-SEP-20
WG3396834-3	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
WG3396834-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
WG3396834-18	MS	L2495914-8						
Phosphorus (P)-Total			110.5		%		70-130	02-SEP-20
P-TD-L-COL-CL								
Water								
Batch	R5208940							
WG3396834-17	DUP	L2495914-8						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3396834-4	LCS							
Phosphorus (P)-Total Dissolved			105.8		%		80-120	02-SEP-20
WG3396834-6	LCS							
Phosphorus (P)-Total Dissolved			106.4		%		80-120	02-SEP-20
WG3396834-3	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	02-SEP-20
WG3396834-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	02-SEP-20
WG3396834-18	MS	L2495914-8						
Phosphorus (P)-Total Dissolved			111.9		%		70-130	02-SEP-20
PH-CL								
Water								
Batch	R5208902							
WG3396784-5	LCS							
pH			7.00		pH		6.9-7.1	02-SEP-20
PO4-DO-L-COL-CL								
Water								
Batch	R5203926							
WG3393806-10	LCS							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	28-AUG-20
WG3393806-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-AUG-20
SO4-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL		Water						
Batch	R5209410							
WG3397348-10	LCS							
Sulfate (SO4)			104.0		%		90-110	29-AUG-20
WG3397348-14	LCS							
Sulfate (SO4)			103.3		%		90-110	29-AUG-20
WG3397348-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	29-AUG-20
WG3397348-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	29-AUG-20
SOLIDS-TDS-CL		Water						
Batch	R5208648							
WG3395436-2	LCS							
Total Dissolved Solids			98.1		%		85-115	01-SEP-20
WG3395436-5	LCS							
Total Dissolved Solids			106.6		%		85-115	01-SEP-20
WG3395436-1	MB							
Total Dissolved Solids			<10		mg/L		10	01-SEP-20
WG3395436-4	MB							
Total Dissolved Solids			<10		mg/L		10	01-SEP-20
TEH-BC-VA-CL		Water						
Batch	R5207882							
WG3394651-2	LCS							
EPH10-19			88.3		%		70-130	31-AUG-20
EPH19-32			71.2		%		70-130	31-AUG-20
WG3394651-1	MB							
EPH10-19			<0.25		mg/L		0.25	31-AUG-20
EPH19-32			<0.25		mg/L		0.25	31-AUG-20
Surrogate: 2-Bromobenzotrifluoride			61.2		%		60-140	31-AUG-20
TEH-WATER-VA-CL		Water						
Batch	R5207882							
WG3394651-2	LCS							
TEH (C10-C30)			83.7		%		70-130	31-AUG-20
WG3394651-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	31-AUG-20
Surrogate: 2-Bromobenzotrifluoride			61.2		%		60-140	31-AUG-20
TKN-L-F-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5204331							
WG3394408-10	LCS							
Total Kjeldahl Nitrogen			108.5		%		75-125	30-AUG-20
WG3394408-2	LCS							
Total Kjeldahl Nitrogen			108.7		%		75-125	30-AUG-20
WG3394408-4	LCS							
Total Kjeldahl Nitrogen			106.0		%		75-125	30-AUG-20
WG3394408-6	LCS							
Total Kjeldahl Nitrogen			105.9		%		75-125	30-AUG-20
WG3394408-8	LCS							
Total Kjeldahl Nitrogen			107.6		%		75-125	30-AUG-20
WG3394408-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-20
WG3394408-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-20
WG3394408-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-20
WG3394408-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-20
WG3394408-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-20
TSS-L-CL		Water						
Batch	R5208732							
WG3395435-6	LCS							
Total Suspended Solids			92.0		%		85-115	01-SEP-20
WG3395435-5	MB							
Total Suspended Solids			<1.0		mg/L		1	01-SEP-20
TURBIDITY-CL		Water						
Batch	R5203928							
WG3393907-11	LCS							
Turbidity			97.4		%		85-115	28-AUG-20
WG3393907-10	MB							
Turbidity			<0.10		NTU		0.1	28-AUG-20

Quality Control Report

Workorder: L2495914

Report Date: 08-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2495914

Report Date: 08-SEP-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	27-AUG-20 08:55	29-AUG-20 14:30	0.25	54	hours	EHTR-FM
	2	27-AUG-20 09:50	29-AUG-20 14:30	0.25	53	hours	EHTR-FM
	3	27-AUG-20 12:40	29-AUG-20 14:30	0.25	50	hours	EHTR-FM
	4	27-AUG-20 12:45	29-AUG-20 14:30	0.25	50	hours	EHTR-FM
	5	27-AUG-20 12:50	29-AUG-20 14:30	0.25	50	hours	EHTR-FM
	6	27-AUG-20 12:55	29-AUG-20 14:30	0.25	50	hours	EHTR-FM
	7	27-AUG-20 15:15	29-AUG-20 14:30	0.25	47	hours	EHTR-FM
	8	27-AUG-20 14:50	29-AUG-20 14:30	0.25	48	hours	EHTR-FM
pH	1	27-AUG-20 08:55	02-SEP-20 13:00	0.25	148	hours	EHTR-FM
	2	27-AUG-20 09:50	02-SEP-20 13:00	0.25	147	hours	EHTR-FM
	3	27-AUG-20 12:40	02-SEP-20 13:00	0.25	144	hours	EHTR-FM
	4	27-AUG-20 12:45	02-SEP-20 13:00	0.25	144	hours	EHTR-FM
	5	27-AUG-20 12:50	02-SEP-20 13:00	0.25	144	hours	EHTR-FM
	6	27-AUG-20 12:55	02-SEP-20 13:00	0.25	144	hours	EHTR-FM
	7	27-AUG-20 15:15	02-SEP-20 13:00	0.25	142	hours	EHTR-FM
	8	27-AUG-20 14:50	02-SEP-20 13:00	0.25	142	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2495914 were received on 28-AUG-20 09:00.

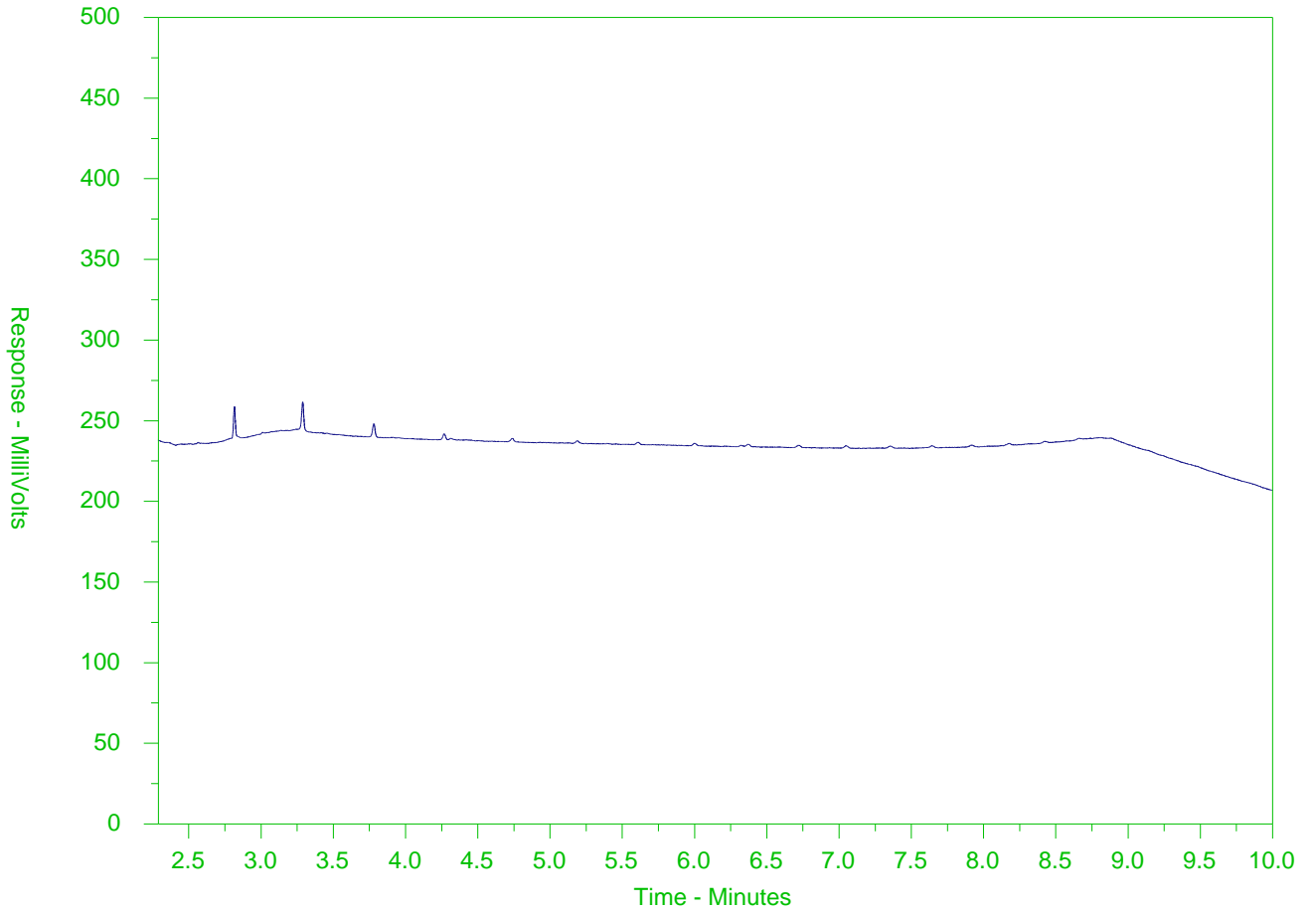
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2495914-3
 Client Sample ID: EV_OCGW_WG_2020_Q3_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

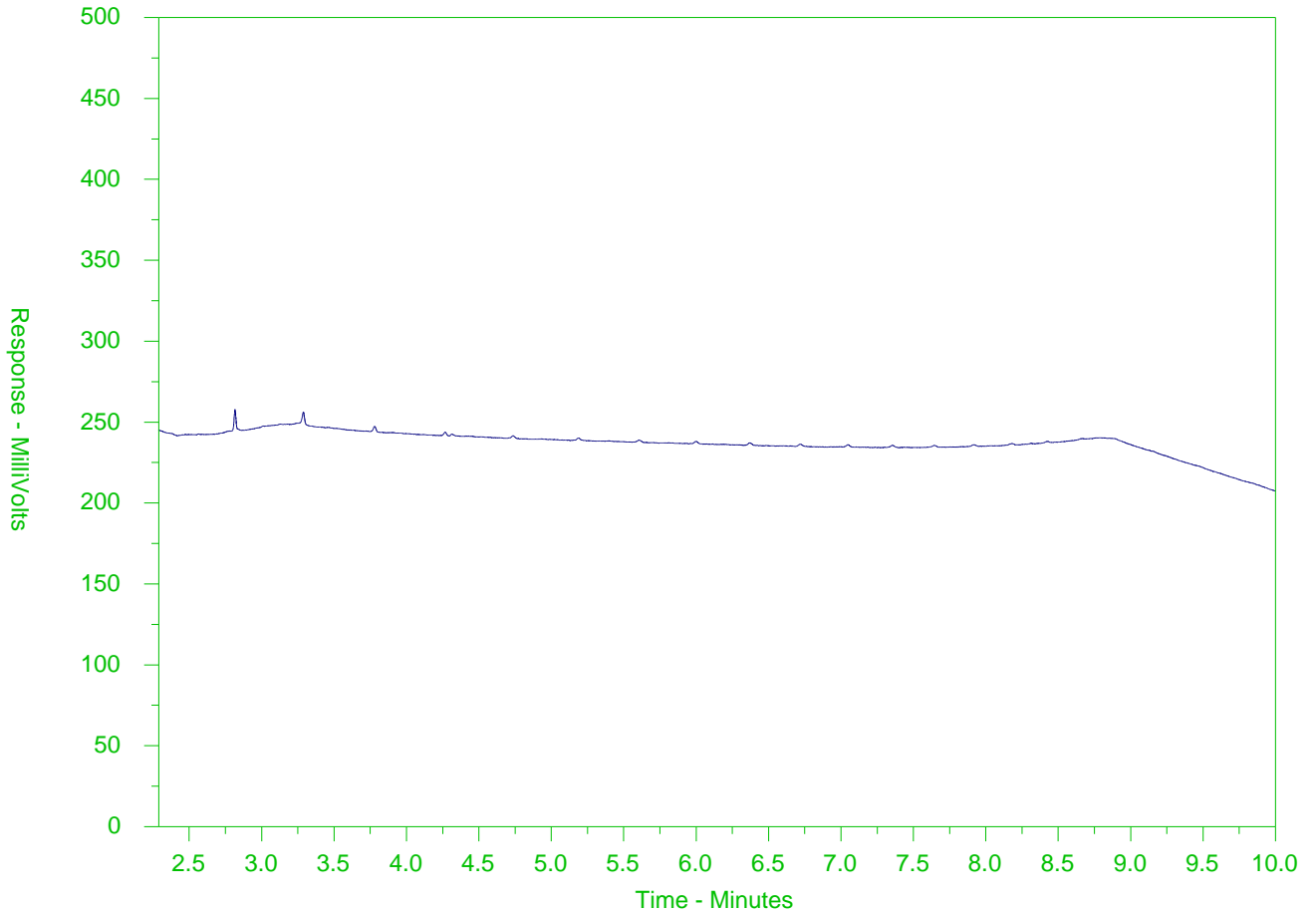
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2495914-4
 Client Sample ID: EV_MC5GW_WG_2020_Q3_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

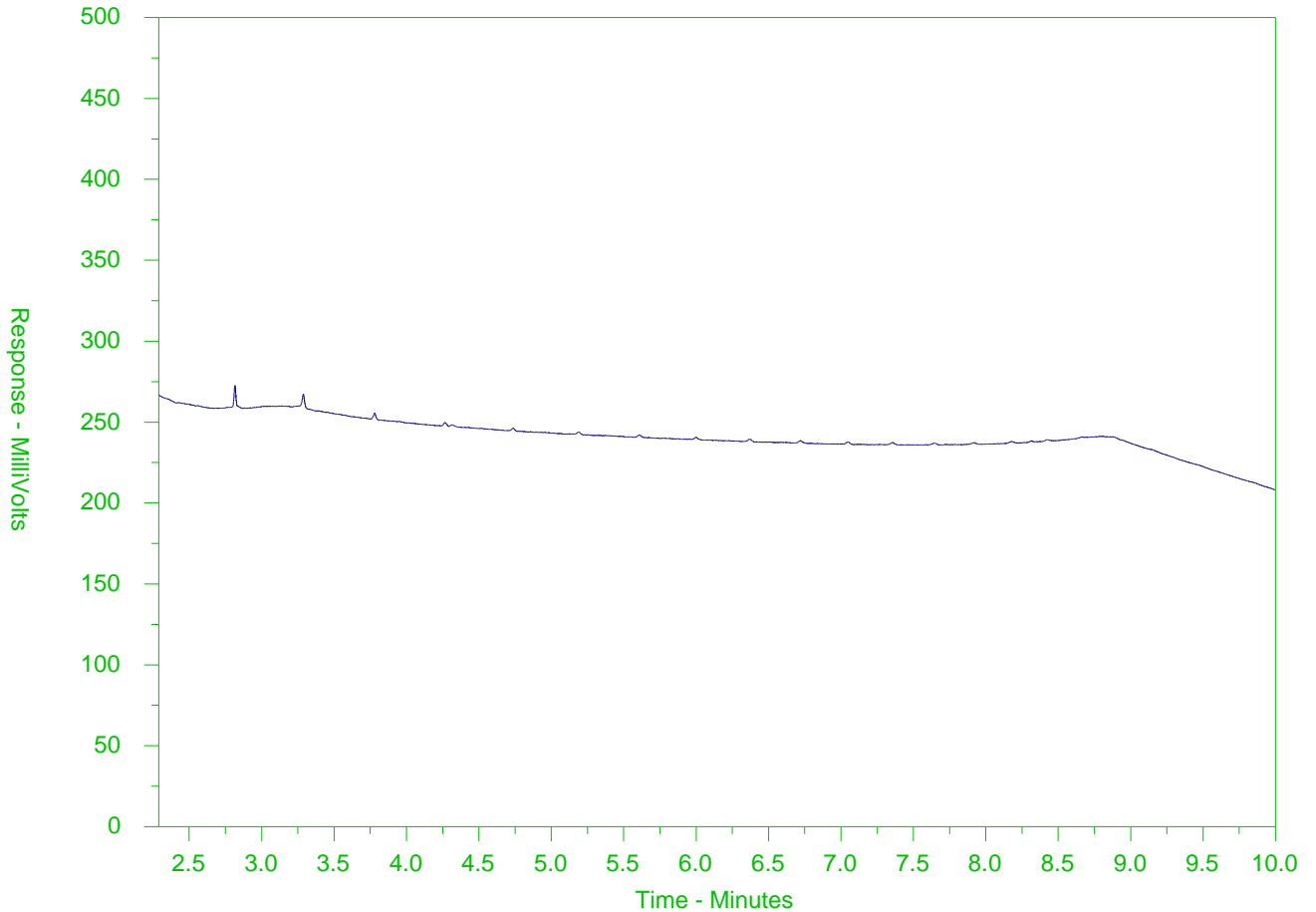
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2495914-5
 Client Sample ID: EV_MC6GW_WG_2020_Q3_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

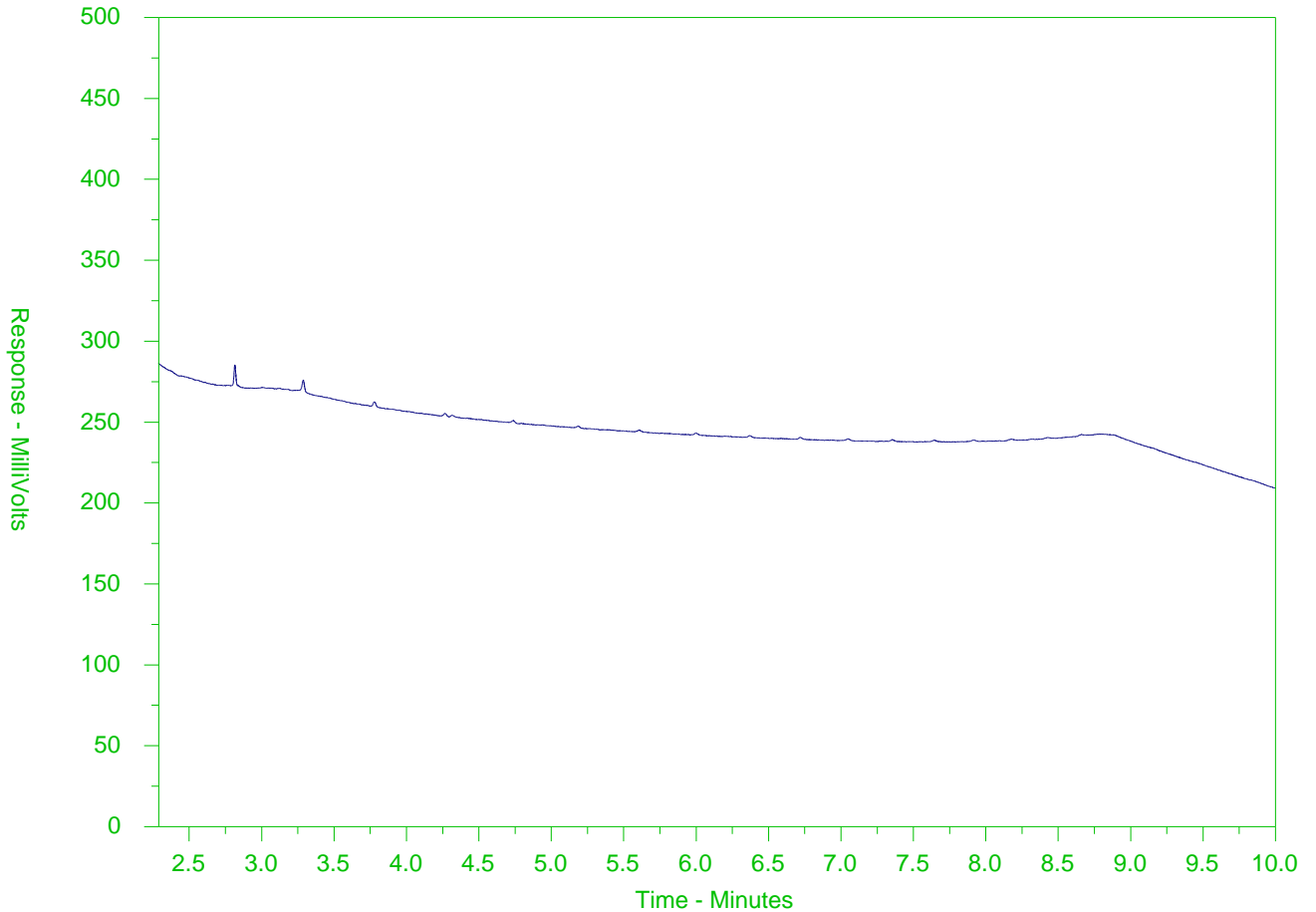
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2495914-6
 Client Sample ID: EV_MC7GW_WG_2020_Q3_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID: **20200827Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO0678877			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered? P: Field, L: Lab, PL: Field & Lab, N: None



L2495914-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED											
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_ER1GWS_WG_2020_Q3_NP	EV_ER1GWS	WG	N	8/27/2020	8:55	G	5	1	1	1	1					1			
EV_ER1GWD_WG_2020_Q3_NP	EV_ER1GWD	WG	N	8/27/2020	9:50	G	5	1	1	1	1					1			
EV_OCGW_WG_2020_Q3_NP	EV_OCGW	WG	N	8/27/2020	12:40	G	8	1	1	1	1			1	2		1		
EV_MC5GW_WG_2020_Q3_NP	EV_MC5GW	WG	N	8/27/2020	12:45	G	8	1	1	1	1			1	2		1		
EV_MC6GW_WG_2020_Q3_NP	EV_MC6GW	WG	N	8/27/2020	12:50	G	8	1	1	1	1			1	2		1		
EV_MC7GW_WG_2020_Q3_NP	EV_MC7GW	WG	N	8/27/2020	12:55	G	8	1	1	1	1			1	2		1		
EV_WH50GW_WG_2020_Q3_NP	EV_WH50GW	WG	N	8/27/2020	15:15	G	5	1	1	1	1						1		
EV_BRGW_WG_2020_Q3_NP	EV_BRGW	WG	N	8/27/2020	14:50	G	5	1	1	1	1						1		
Total							52												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	August 27, 2020	<i>[Signature]</i>	August 27, 2020

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jason Gravelle
Priority (2-3 business days) - 50% surcharge		Mobile #	
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	<i>[Signature]</i>
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	August 27, 2020



SNC-Lavalin
ATTN: Mark Newman
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 01-SEP-20
Report Date: 11-SEP-20 15:00 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2497010
Project P.O. #: 672225
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2497010-1 WG 31-AUG-20 10:20 RG_MW_WW_WG _2020_08_31_NP	L2497010-2 WG 31-AUG-20 16:00 RG_MW_MC10C_ WG_2020_08_31_ NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	442	<2.0		
	Hardness (as CaCO3) (mg/L)	246	<0.50		
	pH (pH)	7.99	5.65		
	ORP (mV)	460	490		
	Total Suspended Solids (mg/L)	3.5	<1.0		
	Total Dissolved Solids (mg/L)	314 ^{DLHC}	<10		
	Turbidity (NTU)	7.70	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.5	1.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	175	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	175	<1.0		
	Ammonia as N (mg/L)	0.0215	0.0257 ^{RRV}		
	Bicarbonate (HCO3) (mg/L)	214	<5.0		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	3.06	<0.10		
	Fluoride (F) (mg/L)	0.196	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	98.1	0.0		
	Nitrate and Nitrite (as N) (mg/L)	1.90	<0.0051		
	Nitrate (as N) (mg/L)	1.90	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.703	<0.050		
	Total Nitrogen (mg/L)	2.60	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0042	<0.0020		
	Sulfate (SO4) (mg/L)	73.7	<0.30		
	Anion Sum (meq/L)	5.27	<0.10		
	Cation Sum (meq/L)	5.17	<0.10		
Cation - Anion Balance (%)	-0.9	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0022	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497010-1 WG 31-AUG-20 10:20 RG_MW_WW_WG _2020_08_31_NP	L2497010-2 WG 31-AUG-20 16:00 RG_MW_MC10C_ WG_2020_08_31_ NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00011	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.134	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000173	<0.000050		
	Calcium (Ca)-Dissolved (mg/L)	65.8	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	0.00031	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	0.00054	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	0.022	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0049	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	19.9	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	0.00243	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00170	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.00119	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	0.65	<0.10		
	Selenium (Se)-Dissolved (mg/L)	0.0109	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	2.58	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	5.34	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	0.220	<0.00020		
	Sulfur (S)-Dissolved (mg/L)	24.1	<0.50		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.00126	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
RRV	Reported Result Verified By Repeat Analysis		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)

Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2497010

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Mark Newman

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5208912							
WG3396799-8	LCS							
Acidity (as CaCO3)			101.9		%		85-115	02-SEP-20
WG3396799-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	02-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5208902							
WG3396784-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	02-SEP-20
WG3396784-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-11	DUP	L2497010-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-SEP-20
WG3396202-10	LCS							
Beryllium (Be)-Dissolved			95.3		%		80-120	01-SEP-20
WG3396202-2	LCS							
Beryllium (Be)-Dissolved			100.5		%		80-120	01-SEP-20
WG3396202-6	LCS							
Beryllium (Be)-Dissolved			103.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
BIC-CL								
	Water							
Batch	R5208902							
WG3396784-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-2	LCS							
Bromide (Br)			106.4		%		85-115	02-SEP-20
WG3397675-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-SEP-20
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
Water								
Batch	R5208898							
WG3396424-11	DUP	L2497010-2						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	31-AUG-20
WG3396424-10	LCS							
Dissolved Organic Carbon			100.1		%		80-120	31-AUG-20
WG3396424-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
WG3396424-12	MS	L2497010-2						
Dissolved Organic Carbon			110.1		%		70-130	31-AUG-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5208898							
WG3396424-11	DUP	L2497010-2						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	31-AUG-20
WG3396424-10	LCS							
Total Organic Carbon			95.2		%		80-120	31-AUG-20
WG3396424-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
WG3396424-12	MS	L2497010-2						
Total Organic Carbon			96.3		%		70-130	31-AUG-20
CL-L-IC-N-CL								
Water								
Batch	R5209724							
WG3397675-2	LCS							
Chloride (Cl)			104.2		%		85-115	02-SEP-20
WG3397675-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	02-SEP-20
CO3-CL								
Water								
Batch	R5208902							
WG3396784-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-SEP-20
EC-L-PCT-CL								
Water								
Batch	R5208902							
WG3396784-5	LCS							
Conductivity (@ 25C)			96.3		%		90-110	02-SEP-20
WG3396784-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-SEP-20
F-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL		Water						
Batch	R5209724							
WG3397675-2	LCS							
Fluoride (F)			104.1		%		90-110	02-SEP-20
WG3397675-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	02-SEP-20
HG-D-CVAA-CL		Water						
Batch	R5218357							
WG3401040-2	LCS							
Mercury (Hg)-Dissolved			110.0		%		80-120	09-SEP-20
WG3401040-6	LCS							
Mercury (Hg)-Dissolved			114.0		%		80-120	09-SEP-20
WG3401040-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
WG3401040-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-11	DUP	L2497010-1						
Aluminum (Al)-Dissolved		0.0022	0.0024		mg/L	9.7	20	01-SEP-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Arsenic (As)-Dissolved		0.00011	0.00011		mg/L	3.4	20	01-SEP-20
Barium (Ba)-Dissolved		0.134	0.133		mg/L	0.6	20	01-SEP-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-SEP-20
Cadmium (Cd)-Dissolved		0.0000173	0.0000159		mg/L	8.7	20	01-SEP-20
Calcium (Ca)-Dissolved		65.8	64.7		mg/L	1.7	20	01-SEP-20
Chromium (Cr)-Dissolved		0.00031	0.00030		mg/L	5.7	20	01-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Copper (Cu)-Dissolved		0.00054	0.00052		mg/L	3.4	20	01-SEP-20
Iron (Fe)-Dissolved		0.022	0.022		mg/L	0.5	20	01-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-20
Lithium (Li)-Dissolved		0.0049	0.0048		mg/L	0.5	20	01-SEP-20
Magnesium (Mg)-Dissolved		19.9	19.0		mg/L	4.4	20	01-SEP-20
Manganese (Mn)-Dissolved		0.00243	0.00239		mg/L	1.7	20	01-SEP-20
Molybdenum (Mo)-Dissolved		0.00170	0.00171		mg/L	0.5	20	01-SEP-20
Nickel (Ni)-Dissolved		0.00119	0.00122		mg/L	2.1	20	01-SEP-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-11	DUP	L2497010-1						
Potassium (K)-Dissolved		0.65	0.64		mg/L	1.5	20	01-SEP-20
Selenium (Se)-Dissolved		0.0109	0.0109		mg/L	0.3	20	01-SEP-20
Silicon (Si)-Dissolved		2.58	2.58		mg/L	0.2	20	01-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-20
Sodium (Na)-Dissolved		5.34	5.25		mg/L	1.8	20	01-SEP-20
Strontium (Sr)-Dissolved		0.220	0.221		mg/L	0.6	20	01-SEP-20
Sulfur (S)-Dissolved		24.1	23.7		mg/L	1.8	20	01-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	01-SEP-20
Uranium (U)-Dissolved		0.00126	0.00124		mg/L	1.5	20	01-SEP-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-SEP-20
Zinc (Zn)-Dissolved		0.0015	0.0014		mg/L	4.1	20	01-SEP-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	01-SEP-20
WG3396202-10	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			96.0		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			98.3		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			99.7		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			98.5		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			98.9		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			103.9		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			104.0		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			94.3		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			100.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			97.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			98.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.1		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			90.9		%		70-130	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-10 LCS								
Potassium (K)-Dissolved			94.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			101.7		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			92.0		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			97.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.9		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			99.2		%		80-120	01-SEP-20
Sulfur (S)-Dissolved			95.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			100.4		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			99.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			92.4		%		80-120	01-SEP-20
Uranium (U)-Dissolved			100.8		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			98.8		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			97.9		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			96.4		%		80-120	01-SEP-20
WG3396202-2 LCS								
Aluminum (Al)-Dissolved			104.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			93.7		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.5		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			101.2		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			98.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			100.7		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.8		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			99.8		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.4		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			97.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			97.7		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			100.1		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			105.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.5		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			101.9		%		70-130	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-2	LCS							
Potassium (K)-Dissolved			101.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			95.4		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			96.5		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			95.9		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.3		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			96.2		%		80-120	01-SEP-20
Sulfur (S)-Dissolved			101.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			98.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.3		%		80-120	01-SEP-20
Uranium (U)-Dissolved			98.0		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			100.7		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			94.8		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			95.7		%		80-120	01-SEP-20
WG3396202-6	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			98.6		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.1		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			98.1		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	01-SEP-20
Boron (B)-Dissolved			101.9		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			99.98		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			100.1		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.5		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			96.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			102.0		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			101.8		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			110.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			96.7		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.9		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			101.2		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			103.1		%		70-130	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-6	LCS							
Potassium (K)-Dissolved			98.1		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			102.5		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			101.8		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			101.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.7		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			102.4		%		80-120	01-SEP-20
Sulfur (S)-Dissolved			105.5		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			100.5		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.0		%		80-120	01-SEP-20
Uranium (U)-Dissolved			101.5		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			99.9		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			99.0		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-1	MB							
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-5	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-5 MB								
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch R5209195								
WG3396202-9 MB								
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
NH3-L-F-CL		Water						
Batch R5208799								
WG3396013-18 LCS								
Ammonia as N			104.5		%		85-115	01-SEP-20
WG3396013-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	01-SEP-20
NO2-L-IC-N-CL		Water						
Batch R5209724								
WG3397675-2 LCS								
Nitrite (as N)			104.3		%		90-110	02-SEP-20
WG3397675-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-SEP-20
NO3-L-IC-N-CL		Water						
Batch R5209724								
WG3397675-2 LCS								
Nitrate (as N)			104.2		%		90-110	02-SEP-20
WG3397675-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-SEP-20
OH-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5208902							
WG3396784-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	02-SEP-20
ORP-CL	Water							
Batch	R5208445							
WG3396212-3 CRM		CL-ORP						
ORP			220		mV		210-230	01-SEP-20
WG3396212-5 CRM		CL-ORP						
ORP			221		mV		210-230	01-SEP-20
P-T-L-COL-CL	Water							
Batch	R5208940							
WG3396834-12 LCS								
Phosphorus (P)-Total			107.8		%		80-120	02-SEP-20
WG3396834-14 LCS								
Phosphorus (P)-Total			108.1		%		80-120	02-SEP-20
WG3396834-11 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
WG3396834-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
PH-CL	Water							
Batch	R5208902							
WG3396784-5 LCS								
pH			7.00		pH		6.9-7.1	02-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5208418							
WG3395787-10 LCS								
Orthophosphate-Dissolved (as P)			101.5		%		80-120	01-SEP-20
WG3395787-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-SEP-20
SO4-IC-N-CL	Water							
Batch	R5209724							
WG3397675-2 LCS								
Sulfate (SO4)			105.0		%		90-110	02-SEP-20
WG3397675-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-SEP-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5209883							
WG3396905-2	LCS							
Total Dissolved Solids			100.4		%		85-115	02-SEP-20
WG3396905-1	MB							
Total Dissolved Solids			<10		mg/L		10	02-SEP-20
TKN-L-F-CL		Water						
Batch	R5209635							
WG3397556-11	LCS							
Total Kjeldahl Nitrogen			105.6		%		75-125	03-SEP-20
WG3397556-13	LCS							
Total Kjeldahl Nitrogen			98.5		%		75-125	03-SEP-20
WG3397556-2	LCS							
Total Kjeldahl Nitrogen			119.1		%		75-125	03-SEP-20
WG3397556-21	LCS							
Total Kjeldahl Nitrogen			95.9		%		75-125	03-SEP-20
WG3397556-24	LCS							
Total Kjeldahl Nitrogen			118.3		%		75-125	03-SEP-20
WG3397556-4	LCS							
Total Kjeldahl Nitrogen			115.8		%		75-125	03-SEP-20
WG3397556-8	LCS							
Total Kjeldahl Nitrogen			108.7		%		75-125	03-SEP-20
WG3397556-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5209827							
WG3396900-2	LCS							
Total Suspended Solids			100.5		%		85-115	02-SEP-20
WG3396900-1	MB							
Total Suspended Solids			<1.0		mg/L		1	02-SEP-20
TURBIDITY-CL	Water							
Batch	R5208429							
WG3396162-6	LCS							
Turbidity			96.9		%		85-115	01-SEP-20
WG3396162-5	MB							
Turbidity			<0.10		NTU		0.1	01-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	31-AUG-20 10:20	01-SEP-20 20:15	0.25	34	hours	EHTR-FM
	2	31-AUG-20 16:00	01-SEP-20 20:15	0.25	28	hours	EHTR-FM
pH	1	31-AUG-20 10:20	02-SEP-20 13:00	0.25	51	hours	EHTR-FM
	2	31-AUG-20 16:00	02-SEP-20 13:00	0.25	45	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2497010 were received on 01-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To			Report Format / Distribution				Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)												
Company: SNC-Lavalin ~Nelson			Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply												
Contact: Mark Newman			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				Priority (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>				Emergency: 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>								
Phone: Tel.:250-464-5672			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				Date and Time Required for all E&P TATs:												
Street: 520 Lake Street			Emails: SNC - 'Mark.Newman'				For tests that can not be performed according to the service level selected, you will be contacted.												
City/Province: Nelson, BC			'Stefan.Humphries', Vicky.Lipinski@sncivalin.com				Analysis Request												
Postal Code: V1L 4C6			Teck:				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution				SAMPLES ON HOLD												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				Sample is hazardous (please provide further details)												
Company: Same as Report To			Emails: Mark.Newman@sncivalin.com				NUMBER OF CONTAINERS												
Contact: payables@sncivalin.com			Oil and Gas Required Fields (client use)																
ALS Account # / Quote #: MOR125 / Q78198			AFE/Cost Center:		PO#														
Job #: 672225			Major/Minor Code:		Routing Code:														
PO / AFE: 672225			Requisitioner:																
LSD:			Location:																
ALS Lab Work Order # (lab use only):			ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB/JD														
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS	
	RC-MW-MC10C-WG-2020-08-31-NP				WG	R	R	R	R	R	R	R	R	R	R				5
	RC-MW-WW-2020-08-31-NP	RC-MW-WW	31-Aug-20	10:20	WG	R	R	R	R	R	R	R	R	R	R				5
	RC-MW-MC10C-WG-2020-08-31-NP	RC-MW-MC10C	31-Aug-20	16:00	WG	R	R	R	R	R	R	R	R	R	R				5
		NA			WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
					WG	R	R	R	R	R	R	R	R	R	R				5
Drinking Water (DW) Samples ¹ (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO			<div style="border: 2px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: auto;"> REP </div>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO							Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
SHIPMENT RELEASE (client use)			Teck Facility Name: (please select the applicable Facility)				Cooling Initiated <input checked="" type="checkbox"/>												
Released by: Marc Beaton			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C						
Date: 20-Aug-31			Time: 1700				Received by: M						Date: 9/1						
							Received by: SKD						Date:						





SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 01-SEP-20
Report Date: 09-SEP-20 16:14 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2497018
Project P.O. #: 672225
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497018-1 WG 31-AUG-20 15:30 EV_MW_GV4A_W G_2020_08_31_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	616			
	Hardness (as CaCO3) (mg/L)	327			
	pH (pH)	8.08			
	ORP (mV)	422			
	Total Suspended Solids (mg/L)	254			
	Total Dissolved Solids (mg/L)	475	DLHC		
	Turbidity (NTU)	119			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	273			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	273			
	Ammonia as N (mg/L)	0.0421			
	Bicarbonate (HCO3) (mg/L)	334			
	Bromide (Br) (mg/L)	0.053			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	3.56			
	Fluoride (F) (mg/L)	0.729			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	96.5			
	Nitrate and Nitrite (as N) (mg/L)	0.0351			
	Nitrate (as N) (mg/L)	0.0351			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.117			
	Total Nitrogen (mg/L)	0.152			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019			
	Phosphorus (P)-Total (mg/L)	0.138	DLHC		
	Sulfate (SO4) (mg/L)	110			
	Anion Sum (meq/L)	7.90			
	Cation Sum (meq/L)	7.63			
	Cation - Anion Balance (%)	-1.8			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.18			
	Total Organic Carbon (mg/L)	2.81			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0017			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497018-1 WG 31-AUG-20 15:30 EV_MW_GV4A_W G_2020_08_31_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00029			
	Arsenic (As)-Dissolved (mg/L)	0.00040			
	Barium (Ba)-Dissolved (mg/L)	0.0411			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.012			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000168			
	Calcium (Ca)-Dissolved (mg/L)	78.3			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00028			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000051			
	Lithium (Li)-Dissolved (mg/L)	0.0110			
	Magnesium (Mg)-Dissolved (mg/L)	31.9			
	Manganese (Mn)-Dissolved (mg/L)	0.0710			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00274			
	Nickel (Ni)-Dissolved (mg/L)	0.00171			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.41			
	Selenium (Se)-Dissolved (mg/L)	0.00540			
	Silicon (Si)-Dissolved (mg/L)	4.41			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	24.2			
	Strontium (Sr)-Dissolved (mg/L)	0.325			
	Sulfur (S)-Dissolved (mg/L)	34.3			
	Thallium (Tl)-Dissolved (mg/L)	0.000015			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00271			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2497018

Report Date: 09-SEP-20

Page 1 of 13

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5208912							
WG3396799-2	LCS							
Acidity (as CaCO3)			101.3		%		85-115	02-SEP-20
WG3396799-1	MB							
Acidity (as CaCO3)			1.2		mg/L		2	02-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5208902							
WG3396784-14	LCS							
Alkalinity, Total (as CaCO3)			98.7		%		85-115	02-SEP-20
WG3396784-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-10	LCS							
Beryllium (Be)-Dissolved			95.3		%		80-120	01-SEP-20
WG3396202-2	LCS							
Beryllium (Be)-Dissolved			100.5		%		80-120	01-SEP-20
WG3396202-6	LCS							
Beryllium (Be)-Dissolved			103.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
BIC-CL								
	Water							
Batch	R5208902							
WG3396784-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-6	LCS							
Bromide (Br)			106.0		%		85-115	02-SEP-20
WG3397675-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-SEP-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2497018

Report Date: 09-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5208898							
WG3396424-10 LCS								
Dissolved Organic Carbon			100.1		%		80-120	31-AUG-20
WG3396424-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5208898							
WG3396424-10 LCS								
Total Organic Carbon			95.2		%		80-120	31-AUG-20
WG3396424-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
CL-L-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6 LCS								
Chloride (Cl)			102.8		%		85-115	02-SEP-20
WG3397675-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-SEP-20
CO3-CL	Water							
Batch	R5208902							
WG3396784-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	02-SEP-20
EC-L-PCT-CL	Water							
Batch	R5208902							
WG3396784-14 LCS								
Conductivity (@ 25C)			95.6		%		90-110	02-SEP-20
WG3396784-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-SEP-20
F-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6 LCS								
Fluoride (F)			102.3		%		90-110	02-SEP-20
WG3397675-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-SEP-20
HG-D-CVAA-CL	Water							



Quality Control Report

Workorder: L2497018

Report Date: 09-SEP-20

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL		Water						
Batch	R5218357							
WG3401040-2	LCS							
Mercury (Hg)-Dissolved			110.0		%		80-120	09-SEP-20
WG3401040-6	LCS							
Mercury (Hg)-Dissolved			114.0		%		80-120	09-SEP-20
WG3401040-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
WG3401040-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-10	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			96.0		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			98.3		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			99.7		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			98.5		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			98.9		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			103.9		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			104.0		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			94.3		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			100.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			97.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			98.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.1		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			90.9		%		70-130	01-SEP-20
Potassium (K)-Dissolved			94.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			101.7		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			92.0		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			97.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.9		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			99.2		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-10 LCS								
Sulfur (S)-Dissolved			95.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			100.4		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			99.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			92.4		%		80-120	01-SEP-20
Uranium (U)-Dissolved			100.8		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			98.8		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			97.9		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			96.4		%		80-120	01-SEP-20
WG3396202-2 LCS								
Aluminum (Al)-Dissolved			104.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			93.7		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.5		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			101.2		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			98.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			100.7		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.8		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			99.8		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.4		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			97.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			97.7		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			100.1		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			105.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.5		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			101.9		%		70-130	01-SEP-20
Potassium (K)-Dissolved			101.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			95.4		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			96.5		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			95.9		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.3		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			96.2		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-2	LCS							
Sulfur (S)-Dissolved			101.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			98.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.3		%		80-120	01-SEP-20
Uranium (U)-Dissolved			98.0		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			100.7		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			94.8		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			95.7		%		80-120	01-SEP-20
WG3396202-6	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			98.6		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.1		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			98.1		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	01-SEP-20
Boron (B)-Dissolved			101.9		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			99.98		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			100.1		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.5		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			96.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			102.0		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			101.8		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			110.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			96.7		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.9		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			101.2		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			103.1		%		70-130	01-SEP-20
Potassium (K)-Dissolved			98.1		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			102.5		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			101.8		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			101.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.7		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			102.4		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-6	LCS							
Sulfur (S)-Dissolved			105.5		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			100.5		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.0		%		80-120	01-SEP-20
Uranium (U)-Dissolved			101.5		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			99.9		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			99.0		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-1 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-5 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-9	MB							
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5208799							
WG3396013-18	LCS							
Ammonia as N			104.5		%		85-115	01-SEP-20
WG3396013-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	01-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-6	LCS							
Nitrite (as N)			102.3		%		90-110	02-SEP-20
WG3397675-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-6	LCS							
Nitrate (as N)			103.3		%		90-110	02-SEP-20
WG3397675-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-SEP-20
OH-CL								
	Water							
Batch	R5208902							
WG3396784-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-SEP-20
ORP-CL								
	Water							
Batch	R5208445							
WG3396212-5	CRM	CL-ORP						
ORP			221		mV		210-230	01-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5208940							
WG3396834-14 LCS								
Phosphorus (P)-Total			108.1		%		80-120	02-SEP-20
WG3396834-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
PH-CL	Water							
Batch	R5208902							
WG3396784-14 LCS								
pH			7.00		pH		6.9-7.1	02-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5208418							
WG3395787-10 LCS								
Orthophosphate-Dissolved (as P)			101.5		%		80-120	01-SEP-20
WG3395787-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-SEP-20
SO4-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6 LCS								
Sulfate (SO4)			103.9		%		90-110	02-SEP-20
WG3397675-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5209883							
WG3396905-5 LCS								
Total Dissolved Solids			101.7		%		85-115	02-SEP-20
WG3396905-4 MB								
Total Dissolved Solids			<10		mg/L		10	02-SEP-20
TKN-L-F-CL	Water							
Batch	R5209635							
WG3397556-11 LCS								
Total Kjeldahl Nitrogen			105.6		%		75-125	03-SEP-20
WG3397556-13 LCS								
Total Kjeldahl Nitrogen			98.5		%		75-125	03-SEP-20
WG3397556-2 LCS								
Total Kjeldahl Nitrogen			119.1		%		75-125	03-SEP-20
WG3397556-21 LCS								
Total Kjeldahl Nitrogen			95.9		%		75-125	03-SEP-20



Quality Control Report

Workorder: L2497018

Report Date: 09-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5209635							
WG3397556-24	LCS							
Total Kjeldahl Nitrogen			118.3		%		75-125	03-SEP-20
WG3397556-4	LCS							
Total Kjeldahl Nitrogen			115.8		%		75-125	03-SEP-20
WG3397556-8	LCS							
Total Kjeldahl Nitrogen			108.7		%		75-125	03-SEP-20
WG3397556-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
TSS-L-CL		Water						
Batch	R5209827							
WG3396900-5	LCS							
Total Suspended Solids			97.6		%		85-115	02-SEP-20
WG3396900-4	MB							
Total Suspended Solids			<1.0		mg/L		1	02-SEP-20
TURBIDITY-CL		Water						
Batch	R5208429							
WG3396162-9	LCS							
Turbidity			97.4		%		85-115	01-SEP-20
WG3396162-8	MB							
Turbidity			<0.10		NTU		0.1	01-SEP-20

Quality Control Report

Workorder: L2497018

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2497018

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	31-AUG-20 15:30	01-SEP-20 20:15	0.25	29	hours	EHTR-FM
pH	1	31-AUG-20 15:30	02-SEP-20 13:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2497018 were received on 01-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)													
Contact and company name below will appear on the final report		Select Report Format:	Quality Control (QC) Report with Report		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Company:	SNC-Lavalin ~Nelson	<input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>					1 Business day [E1 - 100%] <input type="checkbox"/>								
Contact:	Mark Newman	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>								
Phone:	Tel.: 250-464-5672	Select Distribution:			2 day [P2-50%] <input type="checkbox"/>					EMERGENCY								
Company address below will appear on the final report		<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:													
Street:	520 Lake Street	Emails: SNC - 'Mark.Newman'			For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province:	Nelson, BC	'Stefan.Humphries', Vicky.Lipinski@snc-lavalin.com			Analysis Request													
Postal Code:	V1L 4C6	Teck:			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Distribution			SAMPLES ON HOLD													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution:			Sample is hazardous (please provide further details)													
Company:		Emails: Mark.Newman@snc-lavalin.com			NUMBER OF CONTAINERS													
Contact:		payables@snc-lavalin.com																
Project Information		Oil and Gas Required Fields (client use)																
ALS Account # / Quote #:	MOR125 / Q78198	AFE/Cost Center:	PO#															
Job #:	672225	Major/Minor Code:	Routing Code:															
PO / AFE:	672225	Requisitioner:																
LSD:		Location:																
ALS Lab Work Order # (lab use only):		ALS Contact:	Inayat Dhaliwal 403-407-1784	Sampler:	MTB/JD													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Mel. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	EL-MW-GV4A-WG-200-08-31-NP	EL-MW-GV4A	31-Aug-20	1530	WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)													
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION <u>EVO-ELKVIEW OPERATIONS</u>			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
					Cooling Initiated <input type="checkbox"/>													
					INITIAL COOLER TEMPERATURES °C													
					FINAL COOLER TEMPERATURES °C													
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)													
Released by: Marc Beaton		Date:	2020-Aug-31	Time:	1700	Received by:		Date:		9/1	Received by:		Date:					



L2497018-COFC



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 01-SEP-20
Report Date: 09-SEP-20 16:16 (MT)
Version: FINAL

Client Phone: 250-464-5672

Certificate of Analysis

Lab Work Order #: L2497030
Project P.O. #: 676383
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497030-1 WG 31-AUG-20 12:15 EV_GV3GWS_WG _2020_08_31_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	499			
	Hardness (as CaCO3) (mg/L)	290			
	pH (pH)	8.29			
	ORP (mV)	472			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	318	DLHC		
	Turbidity (NTU)	1.68			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	277			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	277			
	Ammonia as N (mg/L)	0.0255			
	Bicarbonate (HCO3) (mg/L)	337			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.54			
	Fluoride (F) (mg/L)	0.293			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	94.1			
	Nitrate and Nitrite (as N) (mg/L)	0.0601			
	Nitrate (as N) (mg/L)	0.0601			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.314			
	Total Nitrogen (mg/L)	0.374			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	37.5			
	Anion Sum (meq/L)	6.34			
	Cation Sum (meq/L)	5.97			
	Cation - Anion Balance (%)	-3.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0012			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497030-1 WG 31-AUG-20 12:15 EV_GV3GWS_WG _2020_08_31_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0714			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.011			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000125			
	Calcium (Ca)-Dissolved (mg/L)	75.9			
	Chromium (Cr)-Dissolved (mg/L)	0.00048			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00495			
	Iron (Fe)-Dissolved (mg/L)	0.059			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0080			
	Magnesium (Mg)-Dissolved (mg/L)	24.3			
	Manganese (Mn)-Dissolved (mg/L)	0.00371			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00104			
	Nickel (Ni)-Dissolved (mg/L)	0.00126			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.06			
	Selenium (Se)-Dissolved (mg/L)	0.00298			
	Silicon (Si)-Dissolved (mg/L)	3.63			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.40			
	Strontium (Sr)-Dissolved (mg/L)	0.216			
	Sulfur (S)-Dissolved (mg/L)	12.1			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00146			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0036			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

Reference Information

TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2497030

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5208912							
WG3396799-11	LCS							
Acidity (as CaCO3)			100.8		%		85-115	02-SEP-20
WG3396799-10	MB							
Acidity (as CaCO3)			1.4		mg/L		2	02-SEP-20
ALK-MAN-CL		Water						
Batch	R5208902							
WG3396784-11	LCS							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	02-SEP-20
WG3396784-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-SEP-20
BE-D-L-CCMS-CL		Water						
Batch	R5209195							
WG3396202-10	LCS							
Beryllium (Be)-Dissolved			95.3		%		80-120	01-SEP-20
WG3396202-2	LCS							
Beryllium (Be)-Dissolved			100.5		%		80-120	01-SEP-20
WG3396202-6	LCS							
Beryllium (Be)-Dissolved			103.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
WG3396202-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-20
BIC-CL		Water						
Batch	R5208902							
WG3396784-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-SEP-20
BR-L-IC-N-CL		Water						
Batch	R5209724							
WG3397675-6	LCS							
Bromide (Br)			106.0		%		85-115	02-SEP-20
WG3397675-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-SEP-20
C-DIS-ORG-LOW-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5208908							
WG3396461-6	LCS							
Dissolved Organic Carbon			93.7		%		80-120	31-AUG-20
WG3396461-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5208908							
WG3396461-6	LCS							
Total Organic Carbon			96.5		%		80-120	31-AUG-20
WG3396461-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-AUG-20
CL-L-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6	LCS							
Chloride (Cl)			102.8		%		85-115	02-SEP-20
WG3397675-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	02-SEP-20
CO3-CL	Water							
Batch	R5208902							
WG3396784-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	02-SEP-20
EC-L-PCT-CL	Water							
Batch	R5208902							
WG3396784-11	LCS							
Conductivity (@ 25C)			95.3		%		90-110	02-SEP-20
WG3396784-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-SEP-20
F-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6	LCS							
Fluoride (F)			102.3		%		90-110	02-SEP-20
WG3397675-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	02-SEP-20
HG-D-CVAA-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL		Water						
Batch	R5218357							
WG3401040-2	LCS							
Mercury (Hg)-Dissolved			110.0		%		80-120	09-SEP-20
WG3401040-6	LCS							
Mercury (Hg)-Dissolved			114.0		%		80-120	09-SEP-20
WG3401040-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
WG3401040-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-10	LCS							
Aluminum (Al)-Dissolved			97.4		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			96.0		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			98.3		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			99.7		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			98.5		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			98.9		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.7		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			103.9		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			104.0		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			94.3		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			100.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			97.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			98.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.1		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			90.9		%		70-130	01-SEP-20
Potassium (K)-Dissolved			94.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			101.7		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			92.0		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			97.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.9		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			99.2		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-10 LCS								
Sulfur (S)-Dissolved			95.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			100.4		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			99.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			92.4		%		80-120	01-SEP-20
Uranium (U)-Dissolved			100.8		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			98.8		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			97.9		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			96.4		%		80-120	01-SEP-20
WG3396202-2 LCS								
Aluminum (Al)-Dissolved			104.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			93.7		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.5		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			101.2		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			98.6		%		80-120	01-SEP-20
Boron (B)-Dissolved			100.7		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			100.1		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			98.8		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			99.8		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.4		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			97.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			97.7		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			100.1		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			105.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.2		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			98.5		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			101.9		%		70-130	01-SEP-20
Potassium (K)-Dissolved			101.4		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			95.4		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			96.5		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			95.9		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.3		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			96.2		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-2	LCS							
Sulfur (S)-Dissolved			101.7		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			98.4		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.3		%		80-120	01-SEP-20
Uranium (U)-Dissolved			98.0		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			100.7		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			94.8		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			95.7		%		80-120	01-SEP-20
WG3396202-6	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	01-SEP-20
Antimony (Sb)-Dissolved			98.6		%		80-120	01-SEP-20
Arsenic (As)-Dissolved			99.1		%		80-120	01-SEP-20
Barium (Ba)-Dissolved			98.1		%		80-120	01-SEP-20
Bismuth (Bi)-Dissolved			99.8		%		80-120	01-SEP-20
Boron (B)-Dissolved			101.9		%		80-120	01-SEP-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	01-SEP-20
Calcium (Ca)-Dissolved			99.98		%		80-120	01-SEP-20
Chromium (Cr)-Dissolved			100.1		%		80-120	01-SEP-20
Cobalt (Co)-Dissolved			96.5		%		80-120	01-SEP-20
Copper (Cu)-Dissolved			96.6		%		80-120	01-SEP-20
Iron (Fe)-Dissolved			102.0		%		80-120	01-SEP-20
Lead (Pb)-Dissolved			101.8		%		80-120	01-SEP-20
Lithium (Li)-Dissolved			110.5		%		80-120	01-SEP-20
Magnesium (Mg)-Dissolved			96.7		%		80-120	01-SEP-20
Manganese (Mn)-Dissolved			100.9		%		80-120	01-SEP-20
Molybdenum (Mo)-Dissolved			101.1		%		80-120	01-SEP-20
Nickel (Ni)-Dissolved			101.2		%		80-120	01-SEP-20
Phosphorus (P)-Dissolved			103.1		%		70-130	01-SEP-20
Potassium (K)-Dissolved			98.1		%		80-120	01-SEP-20
Selenium (Se)-Dissolved			102.5		%		80-120	01-SEP-20
Silicon (Si)-Dissolved			101.8		%		60-140	01-SEP-20
Silver (Ag)-Dissolved			101.0		%		80-120	01-SEP-20
Sodium (Na)-Dissolved			99.7		%		80-120	01-SEP-20
Strontium (Sr)-Dissolved			102.4		%		80-120	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-6	LCS							
Sulfur (S)-Dissolved			105.5		%		80-120	01-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	01-SEP-20
Tin (Sn)-Dissolved			100.5		%		80-120	01-SEP-20
Titanium (Ti)-Dissolved			95.0		%		80-120	01-SEP-20
Uranium (U)-Dissolved			101.5		%		80-120	01-SEP-20
Vanadium (V)-Dissolved			99.9		%		80-120	01-SEP-20
Zinc (Zn)-Dissolved			99.0		%		80-120	01-SEP-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	01-SEP-20
WG3396202-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-1 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5209195							
WG3396202-5 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
WG3396202-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20



Quality Control Report

Workorder: L2497030

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5209195							
WG3396202-9	MB							
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5208799							
WG3396013-18	LCS							
Ammonia as N			104.5		%		85-115	01-SEP-20
WG3396013-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	01-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-6	LCS							
Nitrite (as N)			102.3		%		90-110	02-SEP-20
WG3397675-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-6	LCS							
Nitrate (as N)			103.3		%		90-110	02-SEP-20
WG3397675-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-SEP-20
OH-CL								
	Water							
Batch	R5208902							
WG3396784-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-SEP-20
ORP-CL								
	Water							
Batch	R5208445							
WG3396212-5	CRM	CL-ORP						
ORP			221		mV		210-230	01-SEP-20

Quality Control Report

Workorder: L2497030

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5208940							
WG3396834-14 LCS								
Phosphorus (P)-Total			108.1		%		80-120	02-SEP-20
WG3396834-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
PH-CL	Water							
Batch	R5208902							
WG3396784-11 LCS								
pH			7.00		pH		6.9-7.1	02-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5208418							
WG3395787-10 LCS								
Orthophosphate-Dissolved (as P)			101.5		%		80-120	01-SEP-20
WG3395787-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-SEP-20
SO4-IC-N-CL	Water							
Batch	R5209724							
WG3397675-6 LCS								
Sulfate (SO4)			103.9		%		90-110	02-SEP-20
WG3397675-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5209883							
WG3396905-5 LCS								
Total Dissolved Solids			101.7		%		85-115	02-SEP-20
WG3396905-4 MB								
Total Dissolved Solids			<10		mg/L		10	02-SEP-20
TKN-L-F-CL	Water							
Batch	R5209635							
WG3397556-11 LCS								
Total Kjeldahl Nitrogen			105.6		%		75-125	03-SEP-20
WG3397556-13 LCS								
Total Kjeldahl Nitrogen			98.5		%		75-125	03-SEP-20
WG3397556-2 LCS								
Total Kjeldahl Nitrogen			119.1		%		75-125	03-SEP-20
WG3397556-21 LCS								
Total Kjeldahl Nitrogen			95.9		%		75-125	03-SEP-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5209635							
WG3397556-24	LCS							
Total Kjeldahl Nitrogen			118.3		%		75-125	03-SEP-20
WG3397556-4	LCS							
Total Kjeldahl Nitrogen			115.8		%		75-125	03-SEP-20
WG3397556-8	LCS							
Total Kjeldahl Nitrogen			108.7		%		75-125	03-SEP-20
WG3397556-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
TSS-L-CL		Water						
Batch	R5209827							
WG3396900-5	LCS							
Total Suspended Solids			97.6		%		85-115	02-SEP-20
WG3396900-4	MB							
Total Suspended Solids			<1.0		mg/L		1	02-SEP-20
TURBIDITY-CL		Water						
Batch	R5208429							
WG3396162-9	LCS							
Turbidity			97.4		%		85-115	01-SEP-20
WG3396162-8	MB							
Turbidity			<0.10		NTU		0.1	01-SEP-20

Quality Control Report

Workorder: L2497030

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	31-AUG-20 12:15	01-SEP-20 20:15	0.25	32	hours	EHTR-FM
pH	1	31-AUG-20 12:15	02-SEP-20 13:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2497030 were received on 01-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																		
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																		
Contact: Mark Newman		Quality Control (QC) Report with Report: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)				EMERGENCY														
Phone: Tel.: 250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>				1 Business day [E1-100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>				Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] <input type="checkbox"/>														
Street: 520 Lake Street		Emails: SNC - 'Mark Newman'		2 day [P2-50%] <input type="checkbox"/>				Date and Time Required for all E&P TATs:														
City/Province: Nelson, BC		'Stefan.Humphries', Vicky.Lipinski@snclavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																		
Postal Code: V1L 4C6		Teck:		Analysis Request																		
Invoice To		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P P F/P																		
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Mark.Newman@snclavalin.com		DOC (C-DIS-ORG-LOW-CL)																		
Company:		payables@snclavalin.com		TOC (C-TOT-ORG-LOW-CL)																		
Contact:		Project Information		BC MDG D-Met. + Hg (MET-D-BCMDG-CL)																		
		Oil and Gas Required Fields (client use)		Total N Calc. (N-T-CALC-CL)																		
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																		
Job #: 67225 676383		Major/Minor Code: Routing Code:		Teck Routine (TECKCOAL-ROUTINE-CL)																		
PO / AFE: 67225 676383		Requisitioner:		TKN (TKN-L-F-CL)																		
LSD:		Location:		Bicarbonate (BIC-CL)																		
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Carbonate (CO3-CL)																		
		Sampler: MTB/JD		Hydroxide (OH-CL)																		
				SAMPLES ON HOLD																		
				Sample is hazardous (please provide further details)																		
				NUMBER OF CONTAINERS																		
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide							
	EV-GV3g SWG 2018 08 21 NP	EV-GV3g SW	31-Aug-20	12:15	WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
					WG	R	R	R	R	R	R	R	R	R	R							5
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																		
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility)		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																		
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																		
				Cooling Initiated <input type="checkbox"/>																		
				INITIAL COOLER TEMPERATURES °C																		
				FINAL COOLER TEMPERATURES °C																		
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																		
Released by: Marc Beaton		Received by: [Signature]		Received by: [Signature]																		
Date: 2018 Aug 31		Date: 9/1		Date: [Blank]																		
Time: 1:00		Time: [Blank]		Time: [Blank]																		





Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 01-SEP-20
Report Date: 08-SEP-20 11:44 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2497141
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200831Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2497141-1 WG 31-AUG-20 13:35 EV_MW_MC1A_W G_2020_Q3_NP	L2497141-2 WG 31-AUG-20 14:20 EV_MW_MC1B_W G_2020_Q3_NP	L2497141-3 WG 31-AUG-20 09:30 EV_MW_MC2A_W G_2020_Q3_NP	L2497141-4 WG 31-AUG-20 10:20 EV_MW_MC2B_W G_2020_Q3_NP	L2497141-5 WG 31-AUG-20 11:40 EV_MW_BC1A_W G_2020_Q3_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	758	1060	806	1120	1810
	Hardness (as CaCO3) (mg/L)	389	563	402	676	1210
	pH (pH)	8.10	8.21	8.13	8.08	8.08
	ORP (mV)	444	408	423	466	409
	Total Suspended Solids (mg/L)	<1.0	25.0	1.4	<1.0	6.0
	Total Dissolved Solids (mg/L)	541 ^{DLHC}	805 ^{DLHC}	512 ^{DLHC}	946 ^{DLHC}	1740 ^{DLHC}
	Turbidity (NTU)	11.4	167	23.1	0.10	7.09
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.3	5.0	1.4	2.7	2.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	330	380	363	234	242
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	330 ^{DLHC}	380 ^{DLHC}	363 ^{DLHC}	234	242
	Ammonia as N (mg/L)	1.67 ^{DLHC}	0.745 ^{DLHC}	1.23 ^{DLHC}	0.0066	0.0176
	Bicarbonate (HCO3) (mg/L)	403	464	443	285 ^{DLHC}	295 ^{DLHC}
	Bromide (Br) (mg/L)	0.576	0.83	0.052	0.53	0.85
	Carbonate (CO3) (mg/L)	<5.0	<5.0 ^{DLHC}	<5.0	<5.0 ^{DLHC}	<5.0 ^{DLHC}
	Chloride (Cl) (mg/L)	85.0	111 ^{DLHC}	80.2	31.6 ^{DLHC}	33.8 ^{DLHC}
	Fluoride (F) (mg/L)	0.387	0.25 ^{DLHC}	0.291	0.16 ^{DLHC}	0.27 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.6	99.9 ^{DLHC}	106	94.6 ^{DLHC}	94.3 ^{DLHC}
	Nitrate (as N) (mg/L)	0.0105	0.059 ^{DLHC}	<0.0050	8.58 ^{DLHC}	25.8 ^{DLHC}
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLHC}	<0.0010	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	1.70	0.943	2.68	<0.050 ^{TKNI}	<0.050 ^{TKNI}
	Total Nitrogen (mg/L)	1.71	1.00	2.68	8.58 ^{RRV}	25.8
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	0.0038 ^{RRV}	0.0164
	Phosphorus (P)-Total Dissolved (mg/L)	0.0094	0.0264	0.0063	0.0033 ^{RRV}	0.0211
	Phosphorus (P)-Total (mg/L)	0.0107	0.0293 ^{DLHC}	0.0120	0.0028 ^{DLHC}	0.0450 ^{DLHC}
	Sulfate (SO4) (mg/L)	<0.30	119	<0.30	419 ^{DLHC}	899 ^{DLHC}
	Anion Sum (meq/L)	9.01	13.2	9.54	14.9	26.3
	Cation Sum (meq/L)	8.98	13.2	10.1	14.1	24.8
	Cation - Anion Balance (%)	-0.2	0.0	2.9	-2.8	-2.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.95	1.82	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	1.04	1.81	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497141-6 WG 31-AUG-20 12:30 EV_MW_BC1B_W G_2020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	2100			
	Hardness (as CaCO3) (mg/L)	1430			
	pH (pH)	8.19			
	ORP (mV)	460			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	2080	DLHC		
	Turbidity (NTU)	1.64			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	253			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	253			
	Ammonia as N (mg/L)	0.303			
	Bicarbonate (HCO3) (mg/L)	309	DLHC		
	Bromide (Br) (mg/L)	0.81			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	33.1	DLHC		
	Fluoride (F) (mg/L)	0.33	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	91.9			
	Nitrate (as N) (mg/L)	31.9	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	31.9			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0273			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0330			
	Phosphorus (P)-Total (mg/L)	0.0294	DLHC		
	Sulfate (SO4) (mg/L)	1140			
	Anion Sum (meq/L)	31.9			
	Cation Sum (meq/L)	29.3			
	Cation - Anion Balance (%)	-4.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2497141-1	L2497141-2	L2497141-3	L2497141-4	L2497141-5
					WG	WG	WG	WG	WG
		31-AUG-20	13:35		31-AUG-20	31-AUG-20	31-AUG-20	31-AUG-20	31-AUG-20
					13:35	14:20	09:30	10:20	11:40
					EV_MW_MC1A_W G_2020_Q3_NP	EV_MW_MC1B_W G_2020_Q3_NP	EV_MW_MC2A_W G_2020_Q3_NP	EV_MW_MC2B_W G_2020_Q3_NP	EV_MW_BC1A_W G_2020_Q3_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00011	0.00076			
	Arsenic (As)-Dissolved (mg/L)	0.00058	0.00546	0.00122	0.00012	0.00025			
	Barium (Ba)-Dissolved (mg/L)	10.8	0.826	5.53	0.0593	0.0588			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.073	0.062	0.068	0.028	0.053			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	0.108	0.168			
	Calcium (Ca)-Dissolved (mg/L)	99.2	144	102	158	237			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00015	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.12	<0.10	<0.10	0.40			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00026	0.00049	0.00044			
	Iron (Fe)-Dissolved (mg/L)	0.821	11.7	1.36	<0.010	0.022			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.138	0.152	0.240	0.0575	0.191			
	Magnesium (Mg)-Dissolved (mg/L)	34.3	49.7	35.6	68.1	149			
	Manganese (Mn)-Dissolved (mg/L)	0.108	0.524	0.0539	<0.00010	0.0155			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000174	0.00230	0.000131	0.000606	0.00575			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00051	0.00200			
	Potassium (K)-Dissolved (mg/L)	4.75	4.05	3.80	2.38	6.55			
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	56.9	180			
	Silicon (Si)-Dissolved (mg/L)	3.62	5.63	3.99	3.52	3.48			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	21.2	26.2	41.6	12.5	13.1			
	Strontium (Sr)-Dissolved (mg/L)	1.85	0.882	1.52	0.359	1.05			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000248	0.000574	0.000017	0.00152	0.00713			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0065	<0.0010	0.0035	0.0022	0.0043			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2497141-6 WG 31-AUG-20 12:30 EV_MW_BC1B_W G_2020_Q3_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00168			
	Arsenic (As)-Dissolved (mg/L)	0.00024			
	Barium (Ba)-Dissolved (mg/L)	0.0529			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.060			
	Cadmium (Cd)-Dissolved (ug/L)	0.344			
	Calcium (Ca)-Dissolved (mg/L)	261			
	Chromium (Cr)-Dissolved (mg/L)	0.00012			
	Cobalt (Co)-Dissolved (ug/L)	0.15			
	Copper (Cu)-Dissolved (mg/L)	0.00045			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.206			
	Magnesium (Mg)-Dissolved (mg/L)	188			
	Manganese (Mn)-Dissolved (mg/L)	0.00143			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00806			
	Nickel (Ni)-Dissolved (mg/L)	0.00390			
	Potassium (K)-Dissolved (mg/L)	9.21			
	Selenium (Se)-Dissolved (ug/L)	236			
	Silicon (Si)-Dissolved (mg/L)	3.30			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	13.9			
	Strontium (Sr)-Dissolved (mg/L)	1.38			
	Thallium (Tl)-Dissolved (mg/L)	0.000040			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00881			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0071			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2497141-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2497141-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2497141-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2497141-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2497141-1, -2, -3, -4, -5, -6
Matrix Spike	Ammonia as N	MS-B	L2497141-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200831Q3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2497141

Report Date: 08-SEP-20

Page 1 of 10

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5208912							
WG3396799-9	DUP	L2497141-5						
Acidity (as CaCO3)		2.8	2.9		mg/L	4.9	20	02-SEP-20
WG3396799-8	LCS							
Acidity (as CaCO3)			101.9		%		85-115	02-SEP-20
WG3396799-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	02-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5208902							
WG3396784-14	LCS							
Alkalinity, Total (as CaCO3)			98.7		%		85-115	02-SEP-20
WG3396784-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5210405							
WG3397705-2	LCS							
Beryllium (Be)-Dissolved			86.6		%		80-120	04-SEP-20
WG3397705-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-SEP-20
BIC-CL								
	Water							
Batch	R5208902							
WG3396784-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-11	DUP	L2497141-3						
Bromide (Br)		0.052	<0.050	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3397675-10	LCS							
Bromide (Br)			106.1		%		85-115	02-SEP-20
WG3397675-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-SEP-20
WG3397675-12	MS	L2497141-3						
Bromide (Br)			108.1		%		75-125	02-SEP-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2497141

Report Date: 08-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch R5209468								
WG3397436-2 LCS								
Dissolved Organic Carbon			92.6		%		80-120	02-SEP-20
WG3397436-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
Batch R5209472								
WG3397435-6 LCS								
Dissolved Organic Carbon			102.6		%		80-120	02-SEP-20
WG3397435-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
C-TOT-ORG-LOW-CL Water								
Batch R5209468								
WG3397436-2 LCS								
Total Organic Carbon			96.4		%		80-120	02-SEP-20
WG3397436-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
Batch R5209472								
WG3397435-6 LCS								
Total Organic Carbon			101.3		%		80-120	02-SEP-20
WG3397435-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
CL-L-IC-N-CL Water								
Batch R5209724								
WG3397675-11 DUP								
Chloride (Cl)		L2497141-3 80.2	81.4		mg/L	1.4	20	02-SEP-20
WG3397675-10 LCS								
Chloride (Cl)			103.3		%		85-115	02-SEP-20
WG3397675-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-SEP-20
WG3397675-12 MS								
Chloride (Cl)		L2497141-3	115.3		%		75-125	02-SEP-20
CO3-CL Water								
Batch R5208902								
WG3396784-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	02-SEP-20
EC-L-PCT-CL Water								



Quality Control Report

Workorder: L2497141

Report Date: 08-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R5208902							
WG3396784-14	LCS							
Conductivity (@ 25C)			95.6		%		90-110	02-SEP-20
WG3396784-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-SEP-20
F-IC-N-CL								
Water								
Batch	R5209724							
WG3397675-11	DUP	L2497141-3						
Fluoride (F)		0.291	0.284		mg/L	2.3	20	02-SEP-20
WG3397675-10	LCS							
Fluoride (F)			102.1		%		90-110	02-SEP-20
WG3397675-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	02-SEP-20
WG3397675-12	MS	L2497141-3						
Fluoride (F)			108.6		%		75-125	02-SEP-20
HG-D-CVAA-VA								
Water								
Batch	R5210113							
WG3397897-14	LCS							
Mercury (Hg)-Dissolved			97.2		%		80-120	04-SEP-20
WG3397897-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5210405							
WG3397705-2	LCS							
Aluminum (Al)-Dissolved			103.7		%		80-120	04-SEP-20
Antimony (Sb)-Dissolved			90.7		%		80-120	04-SEP-20
Arsenic (As)-Dissolved			96.4		%		80-120	04-SEP-20
Barium (Ba)-Dissolved			105.6		%		80-120	04-SEP-20
Bismuth (Bi)-Dissolved			93.5		%		80-120	04-SEP-20
Boron (B)-Dissolved			87.9		%		80-120	04-SEP-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	04-SEP-20
Calcium (Ca)-Dissolved			91.7		%		80-120	04-SEP-20
Chromium (Cr)-Dissolved			99.4		%		80-120	04-SEP-20
Cobalt (Co)-Dissolved			99.8		%		80-120	04-SEP-20
Copper (Cu)-Dissolved			100.5		%		80-120	04-SEP-20
Iron (Fe)-Dissolved			95.9		%		80-120	04-SEP-20
Lead (Pb)-Dissolved			96.3		%		80-120	04-SEP-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5210405							
WG3397705-2	LCS							
Lithium (Li)-Dissolved			83.5		%		80-120	04-SEP-20
Magnesium (Mg)-Dissolved			99.2		%		80-120	04-SEP-20
Manganese (Mn)-Dissolved			105.1		%		80-120	04-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	04-SEP-20
Nickel (Ni)-Dissolved			98.8		%		80-120	04-SEP-20
Potassium (K)-Dissolved			101.5		%		80-120	04-SEP-20
Selenium (Se)-Dissolved			100.1		%		80-120	04-SEP-20
Silicon (Si)-Dissolved			97.4		%		60-140	04-SEP-20
Silver (Ag)-Dissolved			99.2		%		80-120	04-SEP-20
Sodium (Na)-Dissolved			100.8		%		80-120	04-SEP-20
Strontium (Sr)-Dissolved			102.5		%		80-120	04-SEP-20
Thallium (Tl)-Dissolved			93.9		%		80-120	04-SEP-20
Tin (Sn)-Dissolved			98.7		%		80-120	04-SEP-20
Titanium (Ti)-Dissolved			97.5		%		80-120	04-SEP-20
Uranium (U)-Dissolved			101.5		%		80-120	04-SEP-20
Vanadium (V)-Dissolved			102.4		%		80-120	04-SEP-20
Zinc (Zn)-Dissolved			99.8		%		80-120	04-SEP-20
WG3397705-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20



Quality Control Report

Workorder: L2497141

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5210405							
WG3397705-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5208799							
WG3396013-23	DUP	L2497141-6						
Ammonia as N		0.303	0.331		mg/L	9.0	20	01-SEP-20
WG3396013-22	LCS							
Ammonia as N			106.3		%		85-115	01-SEP-20
WG3396013-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	01-SEP-20
WG3396013-24	MS	L2497141-6						
Ammonia as N			N/A	MS-B	%		-	01-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5209724							
WG3397675-11	DUP	L2497141-3						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3397675-10	LCS							
Nitrite (as N)			102.5		%		90-110	02-SEP-20
WG3397675-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-SEP-20
WG3397675-12	MS	L2497141-3						
Nitrite (as N)			115.7		%		75-125	02-SEP-20
NO3-L-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Batch R5209724								
WG3397675-11	DUP	L2497141-3						
Nitrate (as N)		<0.0050	0.0066	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3397675-10	LCS							
Nitrate (as N)			103.8		%		90-110	02-SEP-20
WG3397675-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-SEP-20
WG3397675-12	MS	L2497141-3						
Nitrate (as N)			115.3		%		75-125	02-SEP-20
OH-CL								
Batch R5208902								
WG3396784-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	02-SEP-20
ORP-CL								
Batch R5208445								
WG3396212-7	CRM	CL-ORP						
ORP			222		mV		210-230	01-SEP-20
WG3396212-8	DUP	L2497141-6						
ORP		460	469	J	mV	9.6	15	01-SEP-20
P-T-L-COL-CL								
Batch R5208940								
WG3396834-10	LCS							
Phosphorus (P)-Total			106.2		%		80-120	02-SEP-20
WG3396834-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-SEP-20
P-TD-L-COL-CL								
Batch R5208940								
WG3396834-10	LCS							
Phosphorus (P)-Total Dissolved			106.2		%		80-120	02-SEP-20
WG3396834-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	02-SEP-20
PH-CL								
Batch R5208902								
WG3396784-14	LCS							
pH			7.00		pH		6.9-7.1	02-SEP-20
PO4-DO-L-COL-CL								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
Water								
Batch	R5208418							
WG3395787-14	LCS							
Orthophosphate-Dissolved (as P)			98.8		%		80-120	01-SEP-20
WG3395787-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-SEP-20
SO4-IC-N-CL								
Water								
Batch	R5209724							
WG3397675-11	DUP	L2497141-3						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3397675-10	LCS							
Sulfate (SO4)			104.3		%		90-110	02-SEP-20
WG3397675-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	02-SEP-20
WG3397675-12	MS	L2497141-3						
Sulfate (SO4)			112.7		%		75-125	02-SEP-20
SOLIDS-TDS-CL								
Water								
Batch	R5209883							
WG3396905-8	LCS							
Total Dissolved Solids			109.4		%		85-115	02-SEP-20
WG3396905-7	MB							
Total Dissolved Solids			<10		mg/L		10	02-SEP-20
TKN-L-F-CL								
Water								
Batch	R5208703							
WG3396570-12	LCS							
Total Kjeldahl Nitrogen			97.3		%		75-125	02-SEP-20
WG3396570-15	LCS							
Total Kjeldahl Nitrogen			95.1		%		75-125	02-SEP-20
WG3396570-17	LCS							
Total Kjeldahl Nitrogen			97.3		%		75-125	02-SEP-20
WG3396570-2	LCS							
Total Kjeldahl Nitrogen			103.0		%		75-125	02-SEP-20
WG3396570-4	LCS							
Total Kjeldahl Nitrogen			103.3		%		75-125	02-SEP-20
WG3396570-8	LCS							
Total Kjeldahl Nitrogen			99.7		%		75-125	02-SEP-20
WG3396570-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20
WG3396570-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5208703							
WG3396570-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20
WG3396570-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20
WG3396570-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20
WG3396570-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-SEP-20
TSS-L-CL								
	Water							
Batch	R5209827							
WG3396900-8 LCS								
Total Suspended Solids			96.2		%		85-115	02-SEP-20
WG3396900-7 MB								
Total Suspended Solids			<1.0		mg/L		1	02-SEP-20
TURBIDITY-CL								
	Water							
Batch	R5208429							
WG3396162-10 DUP		L2497141-6						
Turbidity		1.64	1.56		NTU	5.0	15	01-SEP-20
WG3396162-12 LCS								
Turbidity			97.4		%		85-115	01-SEP-20
WG3396162-11 MB								
Turbidity			<0.10		NTU		0.1	01-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2497141

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	31-AUG-20 13:35	01-SEP-20 21:00	0.25	31	hours	EHTR-FM
	2	31-AUG-20 14:20	01-SEP-20 21:00	0.25	31	hours	EHTR-FM
	3	31-AUG-20 09:30	01-SEP-20 21:00	0.25	36	hours	EHTR-FM
	4	31-AUG-20 10:20	01-SEP-20 21:00	0.25	35	hours	EHTR-FM
	5	31-AUG-20 11:40	01-SEP-20 21:00	0.25	33	hours	EHTR-FM
	6	31-AUG-20 12:30	01-SEP-20 21:00	0.25	32	hours	EHTR-FM
pH	1	31-AUG-20 13:35	02-SEP-20 13:00	0.25	48	hours	EHTR-FM
	2	31-AUG-20 14:20	02-SEP-20 13:00	0.25	47	hours	EHTR-FM
	3	31-AUG-20 09:30	02-SEP-20 13:00	0.25	52	hours	EHTR-FM
	4	31-AUG-20 10:20	02-SEP-20 13:00	0.25	51	hours	EHTR-FM
	5	31-AUG-20 11:40	02-SEP-20 13:00	0.25	49	hours	EHTR-FM
	6	31-AUG-20 12:30	02-SEP-20 13:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2497141 were received on 01-SEP-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200831Q3GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (ALPHA 5310)	Dissolved Phosphorus	TKN/TOC (ALPHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_MC1A_WG_2020_Q3_NP	EV_MW_MC1A	WG	N	8/31/2020	13:35	G	5	1	1	1	1	1	1	1	1	1				
EV_MW_MC1B_WG_2020_Q3_NP	EV_MW_MC1B	WG	N	8/31/2020	14:20	G	5	1	1	1	1	1	1	1	1	1				
EV_MW_MC2A_WG_2020_Q3_NP	EV_MW_MC2A	WG	N	8/31/2020	9:30	G	5	1	1	1	1	1	1	1	1	1				
EV_MW_MC2B_WG_2020_Q3_NP	EV_MW_MC2B	WG	N	8/31/2020	10:20	G	5	1	1	1	1	1	1	1	1	1				
EV_MW_BC1A_WG_2020_Q3_NP	EV_MW_BC1A	WG	N	8/31/2020	11:40	G	5	1	1	1	1	1	1	1	1	1				
EV_MW_BC1B_WG_2020_Q3_NP	EV_MW_BC1B	WG	N	8/31/2020	12:30	G	5	1	1	1	1	1	1	1	1	1				
Total							30													



L2497141-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	August 31, 2020	<i>[Signature]</i>	9/1/2020

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jason Gravelle	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	August 31, 2020





Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 02-SEP-20
Report Date: 15-SEP-20 16:10 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2497819
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200901Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2497819-1	L2497819-2	L2497819-3	L2497819-4	L2497819-5
					L2497819-1 WG 01-SEP-20 13:00 EV_MW_GT1A_W G_2020_Q3_NP	L2497819-2 WG 01-SEP-20 13:45 EV_MW_GT1B_W G_2020_Q3_NP	L2497819-3 WG 01-SEP-20 13:05 EV_MW_BC10A_ WG_2020_Q3_NP	L2497819-4 WG 01-SEP-20 13:10 EV_MW_BC10B_ WG_2020_Q3_NP	L2497819-5 WG 01-SEP-20 13:15 EV_MW_BC10C_ WG_2020_Q3_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	493	1880	489	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	281	1290	284	<0.50	<0.50			
	pH (pH)	8.24	8.20	8.24	5.59	5.51			
	ORP (mV)	234	257	217	263	344			
	Total Suspended Solids (mg/L)	<1.0	1.2	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	350 ^{DLHC}	1790 ^{DLHC}	336 ^{DLHC}	<10	<10			
	Turbidity (NTU)	1.05	0.21	1.09	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	4.3	<1.0	1.3	1.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	176	240	176	<1.0	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	176	240	176	<1.0	<1.0			
	Ammonia as N (mg/L)	0.284	0.0379	0.407	0.335 ^{RRV}	0.0645 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	215	292 ^{DLHC}	215	<5.0	<5.0			
	Bromide (Br) (mg/L)	0.100	<0.25 ^{DLHC}	0.088	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0 ^{DLHC}	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	2.17	17.5 ^{DLHC}	2.16	<0.10	<0.10			
	Fluoride (F) (mg/L)	0.121	0.16 ^{DLHC}	0.119	<0.020	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	98.9	98.4	100	0.0	0.0			
	Nitrate (as N) (mg/L)	<0.0050	26.7 ^{DLHC}	<0.0050	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLHC}	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.939	<0.050 ^{TKNI}	0.561	0.260 ^{RRV}	<0.050			
	Total Nitrogen (mg/L)	0.939	26.7	0.561	0.260	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0053	0.0115	0.0055	<0.0010	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0076	0.0118	0.0087	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0126	0.0108 ^{DLHC}	0.0091	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	109	939	110	<0.30	<0.30			
	Anion Sum (meq/L)	5.86	26.8	5.88	<0.10	<0.10			
Cation Sum (meq/L)	5.80	26.3	5.88	<0.10	<0.10				
Cation - Anion Balance (%)	-0.5	-0.8	0.0	0.0	0.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.27	1.56	0.81	<0.50	<0.50			
	Total Organic Carbon (mg/L)	1.30	1.56	0.89	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497819-6 WG 01-SEP-20 11:50 EV_GCGW_WG_2 020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	405			
	Hardness (as CaCO3) (mg/L)	252			
	pH (pH)	8.18			
	ORP (mV)	252			
	Total Suspended Solids (mg/L)	8.1			
	Total Dissolved Solids (mg/L)	281	DLHC		
	Turbidity (NTU)	6.97			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	177			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	177			
	Ammonia as N (mg/L)	0.139			
	Bicarbonate (HCO3) (mg/L)	215			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	4.35			
	Fluoride (F) (mg/L)	0.450			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	105			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.773			
	Total Nitrogen (mg/L)	0.773			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0144	DLM		
	Sulfate (SO4) (mg/L)	64.9			
	Anion Sum (meq/L)	5.03			
	Cation Sum (meq/L)	5.28			
	Cation - Anion Balance (%)	2.4			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.82			
	Total Organic Carbon (mg/L)	1.00			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2497819-1 WG 01-SEP-20 13:00 EV_MW_GT1A_W G_2020_Q3_NP	L2497819-2 WG 01-SEP-20 13:45 EV_MW_GT1B_W G_2020_Q3_NP	L2497819-3 WG 01-SEP-20 13:05 EV_MW_BC10A_ WG_2020_Q3_NP	L2497819-4 WG 01-SEP-20 13:10 EV_MW_BC10B_ WG_2020_Q3_NP	L2497819-5 WG 01-SEP-20 13:15 EV_MW_BC10C_ WG_2020_Q3_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00158	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00024	0.00026	0.00022	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0653	0.0886	0.0608	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	0.046	0.012	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.205	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	74.0	230	75.1	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00045	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.150	<0.010	0.144	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0099	0.153	0.0102	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	23.3	173	23.5	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.0823	<0.00010	0.0795	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00104	0.00647	0.00101	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0247	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.876	6.75	0.850	<0.050
	Selenium (Se)-Dissolved (ug/L)	0.106	271	0.073	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.86	3.16	2.69	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.08	9.33	3.14	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.121	1.03	0.121	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000036	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000483	0.00872	0.000487	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0064	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2497819-6 WG 01-SEP-20 11:50 EV_GCGW_WG_2 020_Q3_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00276			
	Barium (Ba)-Dissolved (mg/L)	0.0730			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.016			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	70.3			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.19			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.375			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0094			
	Magnesium (Mg)-Dissolved (mg/L)	18.6			
	Manganese (Mn)-Dissolved (mg/L)	0.0826			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00280			
	Nickel (Ni)-Dissolved (mg/L)	0.00054			
	Potassium (K)-Dissolved (mg/L)	0.812			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	4.36			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.20			
	Strontium (Sr)-Dissolved (mg/L)	0.285			
	Thallium (Tl)-Dissolved (mg/L)	0.000019			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00123			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0024			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2497819-1, -2, -3, -4, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200901Q3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2497819

Report Date: 15-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5210148							
WG3398255-14	LCS							
Acidity (as CaCO3)			98.7		%		85-115	03-SEP-20
WG3398255-13	MB							
Acidity (as CaCO3)			1.5		mg/L		2	03-SEP-20
Batch	R5214848							
WG3400036-5	LCS							
Acidity (as CaCO3)			92.4		%		85-115	08-SEP-20
WG3400036-4	MB							
Acidity (as CaCO3)			1.6		mg/L		2	08-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5210136							
WG3398247-14	LCS							
Alkalinity, Total (as CaCO3)			101.1		%		85-115	03-SEP-20
WG3398247-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-SEP-20
Batch	R5214816							
WG3400027-11	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	08-SEP-20
WG3400027-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5211937							
WG3398864-3	DUP	L2497819-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	05-SEP-20
WG3398864-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	05-SEP-20
WG3398864-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-SEP-20
WG3398864-4	MS	L2497819-2						
Beryllium (Be)-Dissolved			99.8		%		70-130	05-SEP-20
Batch	R5221478							
WG3400961-2	LCS							
Beryllium (Be)-Dissolved			95.7		%		80-120	10-SEP-20
WG3400961-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-SEP-20
BIC-CL								
	Water							



Quality Control Report

Workorder: L2497819

Report Date: 15-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL								
Water								
Batch	R5210136							
WG3398247-13 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	03-SEP-20
Batch	R5214816							
WG3400027-10 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	08-SEP-20
BR-L-IC-N-CL								
Water								
Batch	R5213799							
WG3399738-2 LCS								
Bromide (Br)			104.0		%		85-115	04-SEP-20
WG3399738-1 MB								
Bromide (Br)			<0.050		mg/L		0.05	04-SEP-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5212636							
WG3399131-6 LCS								
Dissolved Organic Carbon			96.6		%		80-120	05-SEP-20
WG3399131-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
Batch	R5212638							
WG3399122-3 DUP		L2497819-3						
Dissolved Organic Carbon		0.81	0.90		mg/L	11	20	05-SEP-20
WG3399122-2 LCS								
Dissolved Organic Carbon			104.4		%		80-120	05-SEP-20
WG3399122-6 LCS								
Dissolved Organic Carbon			114.3		%		80-120	05-SEP-20
WG3399122-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
WG3399122-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
WG3399122-4 MS		L2497819-3						
Dissolved Organic Carbon			102.7		%		70-130	05-SEP-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5212636							
WG3399131-6 LCS								
Total Organic Carbon			110.8		%		80-120	05-SEP-20
WG3399131-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5212638							
WG3399122-3	DUP	L2497819-3						
Total Organic Carbon		0.89	0.80		mg/L	12	20	05-SEP-20
WG3399122-2	LCS							
Total Organic Carbon			103.5		%		80-120	05-SEP-20
WG3399122-6	LCS							
Total Organic Carbon			95.2		%		80-120	05-SEP-20
WG3399122-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
WG3399122-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
WG3399122-4	MS	L2497819-3						
Total Organic Carbon			97.2		%		70-130	05-SEP-20
CL-L-IC-N-CL								
Water								
Batch	R5213799							
WG3399738-2	LCS							
Chloride (Cl)			105.4		%		85-115	04-SEP-20
WG3399738-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-SEP-20
CO3-CL								
Water								
Batch	R5210136							
WG3398247-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-SEP-20
Batch	R5214816							
WG3400027-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	08-SEP-20
EC-L-PCT-CL								
Water								
Batch	R5210136							
WG3398247-14	LCS							
Conductivity (@ 25C)			95.7		%		90-110	03-SEP-20
WG3398247-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-SEP-20
Batch	R5214816							
WG3400027-11	LCS							
Conductivity (@ 25C)			96.7		%		90-110	08-SEP-20
WG3400027-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5213799							
WG3399738-2	LCS							
Fluoride (F)			98.9		%		90-110	04-SEP-20
WG3399738-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-SEP-20
HG-D-CVAA-VA								
Water								
Batch	R5212801							
WG3399298-14	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	06-SEP-20
WG3399298-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-SEP-20
Batch	R5219467							
WG3401359-2	LCS							
Mercury (Hg)-Dissolved			95.9		%		80-120	10-SEP-20
WG3401359-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5211937							
WG3398864-3	DUP	L2497819-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	05-SEP-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-20
Arsenic (As)-Dissolved		0.00024	0.00022		mg/L	7.1	20	05-SEP-20
Barium (Ba)-Dissolved		0.0653	0.0622		mg/L	4.8	20	05-SEP-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-SEP-20
Boron (B)-Dissolved		0.012	0.012		mg/L	2.1	20	05-SEP-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	05-SEP-20
Calcium (Ca)-Dissolved		74.0	75.8		mg/L	2.5	20	05-SEP-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	05-SEP-20
Iron (Fe)-Dissolved		0.150	0.144		mg/L	4.0	20	05-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-SEP-20
Lithium (Li)-Dissolved		0.0099	0.0100		mg/L	0.7	20	05-SEP-20
Magnesium (Mg)-Dissolved		23.3	22.6		mg/L	3.1	20	05-SEP-20
Manganese (Mn)-Dissolved		0.0823	0.0791		mg/L	4.0	20	05-SEP-20
Molybdenum (Mo)-Dissolved		0.00104	0.00100		mg/L	4.0	20	05-SEP-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5211937							
WG3398864-3	DUP	L2497819-1						
Potassium (K)-Dissolved		0.876	0.831		mg/L	5.3	20	05-SEP-20
Selenium (Se)-Dissolved		0.000106	0.000107		mg/L	0.7	20	05-SEP-20
Silicon (Si)-Dissolved		2.86	2.79		mg/L	2.5	20	05-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-SEP-20
Sodium (Na)-Dissolved		3.08	3.00		mg/L	2.5	20	05-SEP-20
Strontium (Sr)-Dissolved		0.121	0.119		mg/L	1.4	20	05-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-SEP-20
Uranium (U)-Dissolved		0.000483	0.000471		mg/L	2.4	20	05-SEP-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	05-SEP-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	05-SEP-20
WG3398864-2	LCS							
Aluminum (Al)-Dissolved			98.9		%		80-120	05-SEP-20
Antimony (Sb)-Dissolved			98.4		%		80-120	05-SEP-20
Arsenic (As)-Dissolved			98.6		%		80-120	05-SEP-20
Barium (Ba)-Dissolved			102.1		%		80-120	05-SEP-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	05-SEP-20
Boron (B)-Dissolved			95.5		%		80-120	05-SEP-20
Cadmium (Cd)-Dissolved			99.4		%		80-120	05-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	05-SEP-20
Chromium (Cr)-Dissolved			99.6		%		80-120	05-SEP-20
Cobalt (Co)-Dissolved			99.4		%		80-120	05-SEP-20
Copper (Cu)-Dissolved			96.9		%		80-120	05-SEP-20
Iron (Fe)-Dissolved			102.1		%		80-120	05-SEP-20
Lead (Pb)-Dissolved			101.6		%		80-120	05-SEP-20
Lithium (Li)-Dissolved			99.1		%		80-120	05-SEP-20
Magnesium (Mg)-Dissolved			98.8		%		80-120	05-SEP-20
Manganese (Mn)-Dissolved			101.0		%		80-120	05-SEP-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	05-SEP-20
Nickel (Ni)-Dissolved			102.2		%		80-120	05-SEP-20
Potassium (K)-Dissolved			103.1		%		80-120	05-SEP-20
Selenium (Se)-Dissolved			105.0		%		80-120	05-SEP-20
Silicon (Si)-Dissolved			98.5		%		60-140	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5211937							
WG3398864-2	LCS							
Silver (Ag)-Dissolved			99.9		%		80-120	05-SEP-20
Sodium (Na)-Dissolved			104.6		%		80-120	05-SEP-20
Strontium (Sr)-Dissolved			99.8		%		80-120	05-SEP-20
Thallium (Tl)-Dissolved			99.8		%		80-120	05-SEP-20
Tin (Sn)-Dissolved			98.5		%		80-120	05-SEP-20
Titanium (Ti)-Dissolved			91.1		%		80-120	05-SEP-20
Uranium (U)-Dissolved			99.8		%		80-120	05-SEP-20
Vanadium (V)-Dissolved			100.1		%		80-120	05-SEP-20
Zinc (Zn)-Dissolved			98.6		%		80-120	05-SEP-20
WG3398864-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5211937							
WG3398864-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-SEP-20
WG3398864-4	MS	L2497819-2						
Aluminum (Al)-Dissolved			101.4		%		70-130	05-SEP-20
Antimony (Sb)-Dissolved			100.0		%		70-130	05-SEP-20
Arsenic (As)-Dissolved			105.3		%		70-130	05-SEP-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Bismuth (Bi)-Dissolved			84.1		%		70-130	05-SEP-20
Boron (B)-Dissolved			92.3		%		70-130	05-SEP-20
Cadmium (Cd)-Dissolved			94.1		%		70-130	05-SEP-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Chromium (Cr)-Dissolved			102.2		%		70-130	05-SEP-20
Cobalt (Co)-Dissolved			94.3		%		70-130	05-SEP-20
Copper (Cu)-Dissolved			89.0		%		70-130	05-SEP-20
Iron (Fe)-Dissolved			98.9		%		70-130	05-SEP-20
Lead (Pb)-Dissolved			88.8		%		70-130	05-SEP-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Manganese (Mn)-Dissolved			101.1		%		70-130	05-SEP-20
Molybdenum (Mo)-Dissolved			103.4		%		70-130	05-SEP-20
Nickel (Ni)-Dissolved			90.4		%		70-130	05-SEP-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Silicon (Si)-Dissolved			92.9		%		70-130	05-SEP-20
Silver (Ag)-Dissolved			91.1		%		70-130	05-SEP-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Thallium (Tl)-Dissolved			88.8		%		70-130	05-SEP-20
Tin (Sn)-Dissolved			95.9		%		70-130	05-SEP-20
Titanium (Ti)-Dissolved			104.2		%		70-130	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5211937							
WG3398864-4 MS		L2497819-2						
Uranium (U)-Dissolved			N/A	MS-B	%		-	05-SEP-20
Vanadium (V)-Dissolved			106.6		%		70-130	05-SEP-20
Zinc (Zn)-Dissolved			92.5		%		70-130	05-SEP-20
Batch	R5221478							
WG3400961-2 LCS								
Aluminum (Al)-Dissolved			97.3		%		80-120	10-SEP-20
Antimony (Sb)-Dissolved			94.6		%		80-120	10-SEP-20
Arsenic (As)-Dissolved			95.2		%		80-120	10-SEP-20
Barium (Ba)-Dissolved			95.8		%		80-120	10-SEP-20
Bismuth (Bi)-Dissolved			108.8		%		80-120	10-SEP-20
Boron (B)-Dissolved			87.9		%		80-120	10-SEP-20
Cadmium (Cd)-Dissolved			92.8		%		80-120	10-SEP-20
Calcium (Ca)-Dissolved			102.1		%		80-120	10-SEP-20
Chromium (Cr)-Dissolved			93.6		%		80-120	10-SEP-20
Cobalt (Co)-Dissolved			96.5		%		80-120	10-SEP-20
Copper (Cu)-Dissolved			92.7		%		80-120	10-SEP-20
Iron (Fe)-Dissolved			92.8		%		80-120	10-SEP-20
Lead (Pb)-Dissolved			102.6		%		80-120	10-SEP-20
Lithium (Li)-Dissolved			98.6		%		80-120	10-SEP-20
Magnesium (Mg)-Dissolved			90.8		%		80-120	10-SEP-20
Manganese (Mn)-Dissolved			95.9		%		80-120	10-SEP-20
Molybdenum (Mo)-Dissolved			98.8		%		80-120	10-SEP-20
Nickel (Ni)-Dissolved			93.6		%		80-120	10-SEP-20
Potassium (K)-Dissolved			96.1		%		80-120	10-SEP-20
Selenium (Se)-Dissolved			95.7		%		80-120	10-SEP-20
Silicon (Si)-Dissolved			95.4		%		60-140	10-SEP-20
Silver (Ag)-Dissolved			96.3		%		80-120	10-SEP-20
Sodium (Na)-Dissolved			95.7		%		80-120	10-SEP-20
Strontium (Sr)-Dissolved			102.7		%		80-120	10-SEP-20
Thallium (Tl)-Dissolved			97.6		%		80-120	10-SEP-20
Tin (Sn)-Dissolved			91.3		%		80-120	10-SEP-20
Titanium (Ti)-Dissolved			90.5		%		80-120	10-SEP-20
Uranium (U)-Dissolved			108.0		%		80-120	10-SEP-20
Vanadium (V)-Dissolved			95.9		%		80-120	10-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5221478							
WG3400961-2	LCS							
Zinc (Zn)-Dissolved			90.4		%		80-120	10-SEP-20
WG3400961-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
NH3-L-F-CL	Water							



Quality Control Report

Workorder: L2497819

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5209017								
WG3396902-18 LCS								
Ammonia as N			94.3		%		85-115	02-SEP-20
WG3396902-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	02-SEP-20
Batch R5214846								
WG3398942-2 LCS								
Ammonia as N			110.3		%		85-115	04-SEP-20
WG3398942-1 MB								
Ammonia as N			<0.0050		mg/L		0.005	04-SEP-20
NO2-L-IC-N-CL								
Water								
Batch R5213799								
WG3399738-2 LCS								
Nitrite (as N)			102.3		%		90-110	04-SEP-20
WG3399738-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-SEP-20
NO3-L-IC-N-CL								
Water								
Batch R5213799								
WG3399738-2 LCS								
Nitrate (as N)			106.3		%		90-110	04-SEP-20
WG3399738-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	04-SEP-20
OH-CL								
Water								
Batch R5210136								
WG3398247-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	03-SEP-20
Batch R5214816								
WG3400027-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	08-SEP-20
ORP-CL								
Water								
Batch R5210951								
WG3398830-7 CRM								
ORP		CL-ORP	221		mV		210-230	04-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5211338							
WG3398964-8	CRM	CL-ORP						
ORP			222		mV		210-230	04-SEP-20
P-T-L-COL-CL	Water							
Batch	R5209705							
WG3397696-30	LCS							
Phosphorus (P)-Total			109.6		%		80-120	03-SEP-20
WG3397696-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-SEP-20
Batch	R5218176							
WG3401003-3	DUP	L2497819-5						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	09-SEP-20
WG3401003-2	LCS							
Phosphorus (P)-Total			97.6		%		80-120	09-SEP-20
WG3401003-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-SEP-20
WG3401003-4	MS	L2497819-5						
Phosphorus (P)-Total			112.0		%		70-130	09-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5209705							
WG3397696-30	LCS							
Phosphorus (P)-Total Dissolved			109.6		%		80-120	03-SEP-20
WG3397696-29	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	03-SEP-20
Batch	R5218176							
WG3401003-3	DUP	L2497819-5						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	09-SEP-20
WG3401003-2	LCS							
Phosphorus (P)-Total Dissolved			97.6		%		80-120	09-SEP-20
WG3401003-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	09-SEP-20
WG3401003-4	MS	L2497819-5						
Phosphorus (P)-Total Dissolved			110.8		%		70-130	09-SEP-20
PH-CL	Water							
Batch	R5210136							
WG3398247-14	LCS							
pH			6.98		pH		6.9-7.1	03-SEP-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL Water								
Batch	R5214816							
WG3400027-11	LCS							
pH			7.00		pH		6.9-7.1	08-SEP-20
PO4-DO-L-COL-CL Water								
Batch	R5209226							
WG3396929-23	DUP	L2497819-6						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-SEP-20
WG3396929-22	LCS							
Orthophosphate-Dissolved (as P)			98.0		%		80-120	02-SEP-20
WG3396929-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-SEP-20
Batch	R5210049							
WG3397927-2	LCS							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	03-SEP-20
WG3397927-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
SO4-IC-N-CL Water								
Batch	R5213799							
WG3399738-2	LCS							
Sulfate (SO4)			105.0		%		90-110	04-SEP-20
WG3399738-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	04-SEP-20
SOLIDS-TDS-CL Water								
Batch	R5211861							
WG3398497-5	LCS							
Total Dissolved Solids			103.8		%		85-115	04-SEP-20
WG3398497-4	MB							
Total Dissolved Solids			<10		mg/L		10	04-SEP-20
TKN-L-F-CL Water								
Batch	R5209635							
WG3397556-11	LCS							
Total Kjeldahl Nitrogen			105.6		%		75-125	03-SEP-20
WG3397556-13	LCS							
Total Kjeldahl Nitrogen			98.5		%		75-125	03-SEP-20
WG3397556-2	LCS							
Total Kjeldahl Nitrogen			119.1		%		75-125	03-SEP-20
WG3397556-21	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5209635							
WG3397556-21	LCS							
Total Kjeldahl Nitrogen			95.9		%		75-125	03-SEP-20
WG3397556-24	LCS							
Total Kjeldahl Nitrogen			118.3		%		75-125	03-SEP-20
WG3397556-4	LCS							
Total Kjeldahl Nitrogen			115.8		%		75-125	03-SEP-20
WG3397556-8	LCS							
Total Kjeldahl Nitrogen			108.7		%		75-125	03-SEP-20
WG3397556-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
WG3397556-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-20
Batch	R5212121							
WG3399260-14	LCS							
Total Kjeldahl Nitrogen			90.6		%		75-125	05-SEP-20
WG3399260-18	LCS							
Total Kjeldahl Nitrogen			90.3		%		75-125	05-SEP-20
WG3399260-2	LCS							
Total Kjeldahl Nitrogen			94.6		%		75-125	05-SEP-20
WG3399260-23	LCS							
Total Kjeldahl Nitrogen			87.0		%		75-125	05-SEP-20
WG3399260-6	LCS							
Total Kjeldahl Nitrogen			92.2		%		75-125	05-SEP-20
WG3399260-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5212121							
WG3399260-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
WG3399260-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-SEP-20
TSS-L-CL		Water						
Batch	R5210838							
WG3398093-4 LCS								
Total Suspended Solids			93.4		%		85-115	04-SEP-20
WG3398093-3 MB								
Total Suspended Solids			<1.0		mg/L		1	04-SEP-20
TURBIDITY-CL		Water						
Batch	R5209258							
WG3397055-18 LCS								
Turbidity			96.9		%		85-115	02-SEP-20
WG3397055-17 MB								
Turbidity			<0.10		NTU		0.1	02-SEP-20
Batch	R5210048							
WG3397976-2 LCS								
Turbidity			97.4		%		85-115	03-SEP-20
WG3397976-1 MB								
Turbidity			<0.10		NTU		0.1	03-SEP-20

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	01-SEP-20 13:00	04-SEP-20 15:00	0.25	74	hours	EHTR-FM
	2	01-SEP-20 13:45	04-SEP-20 15:00	0.25	73	hours	EHTR-FM
	3	01-SEP-20 13:05	04-SEP-20 15:00	0.25	74	hours	EHTR-FM
	4	01-SEP-20 13:10	04-SEP-20 15:00	0.25	74	hours	EHTR-FM
	5	01-SEP-20 13:15	04-SEP-20 16:00	0.25	75	hours	EHTR-FM
	6	01-SEP-20 11:50	04-SEP-20 15:00	0.25	75	hours	EHTR-FM
pH	1	01-SEP-20 13:00	03-SEP-20 13:00	0.25	48	hours	EHTR-FM
	2	01-SEP-20 13:45	03-SEP-20 13:00	0.25	47	hours	EHTR-FM
	3	01-SEP-20 13:05	03-SEP-20 13:00	0.25	48	hours	EHTR-FM
	4	01-SEP-20 13:10	03-SEP-20 13:00	0.25	48	hours	EHTR-FM
	5	01-SEP-20 13:15	03-SEP-20 13:00	0.25	48	hours	EHTR-FM
	6	01-SEP-20 11:50	08-SEP-20 14:00	0.25	170	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2497819 were received on 02-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20200901Q3GW	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q3 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.hackett@teck.com X X X
Project Manager	Cameron Griffin	Email	lyudmyla.shvets@alsglobal.com	Email 2:	cameron.griffin@teck.com X X X
Email	Cameron.Griffin@Teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allan@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.com X X X
				Email 5:	teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	VPO00678877



L2497819-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-C+VI	
1 EV_MW_GT1A_WG_2020_Q3_NP	EV_MW_GT1A	WG	N	9/1/2020	13:00	G	5	1	1	1	1	1	1					1		
2 EV_MW_GT1B_WG_2020_Q3_NP	EV_MW_GT1B	WG	N	9/1/2020	13:45	G	5	1	1	1	1	1	1					1		
3 EV_MW_BC10A_WG_2020_Q3_NP	EV_MW_BC10A	WG	N	9/1/2020	13:05	G	5	1	1	1	1	1	1					1		
4 EV_MW_BC10B_WG_2020_Q3_NP	EV_MW_BC10B	WG	N	9/1/2020	13:10	G	5	1	1	1	1	1	1					1		
5 EV_MW_BC10C_WG_2020_Q3_NP	EV_MW_BC10C	WG	N	9/1/2020	13:15	G	5	1	1	1	1	1	1					1		
6 EV_GCGW_WG_2020_Q3_NP	EV_GCGW	WG	N	9/1/2020	11:50	G	5	1	1	1	1	1	1					1		
Total							30													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	September 1, 2020	<i>[Signature]</i>	9/2/2020
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #		
Regular (default) X	Kimberley Hackett			
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time		
Emergency (1 Business Day) - 100% surcharge	<i>[Signature]</i>	September 1, 2020		
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



SNC-Lavalin
ATTN: Mark Newman
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 02-SEP-20
Report Date: 10-SEP-20 16:46 (MT)
Version: FINAL

Client Phone: 250-464-5672

Certificate of Analysis

Lab Work Order #: L2498069
Project P.O. #: 672225
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2498069-1 WG 01-SEP-20 10:00 EV_MW_GC1A_W G_2020_09_01_NP	L2498069-2 WG 01-SEP-20 09:40 EV_MW_GC1B_W G_2020_09_01_NP	L2498069-3 WG 01-SEP-20 15:00 EV_MW_MC10C_ WG_2020_09_01_ NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	405	1060	<2.0		
	Hardness (as CaCO3) (mg/L)	212	605	<0.50		
	pH (pH)	8.07	7.76	5.51		
	ORP (mV)	279	246	276		
	Total Suspended Solids (mg/L)	42.9	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	257 ^{DLHC}	798 ^{DLHC}	<10		
	Turbidity (NTU)	28.6	0.31	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.6	4.9	1.2		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	196	345	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	196	345	<1.0		
	Ammonia as N (mg/L)	0.0895	0.0557	<0.0050		
	Bicarbonate (HCO3) (mg/L)	239	421	<5.0		
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	2.21	22.9 ^{DLHC}	<0.10		
	Fluoride (F) (mg/L)	0.713	0.16 ^{DLHC}	<0.020		
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	95.3	93.8	0.0		
	Nitrate and Nitrite (as N) (mg/L)	0.0065	<0.025	<0.0051		
	Nitrate (as N) (mg/L)	0.0052	<0.025 ^{DLHC}	<0.0050		
	Nitrite (as N) (mg/L)	0.0013	<0.0050 ^{DLHC}	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.172	0.096	<0.050		
	Total Nitrogen (mg/L)	0.179	0.096	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0046	0.0018	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0243	<0.0020	<0.0020		
	Sulfate (SO4) (mg/L)	39.6	298 ^{DLHC}	<0.30		
	Anion Sum (meq/L)	4.84	13.8	<0.10		
	Cation Sum (meq/L)	4.62	12.9	<0.10		
	Cation - Anion Balance (%)	-2.4	-3.2	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.74	1.09	<0.50		
	Total Organic Carbon (mg/L)	1.06	1.54	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0024	<0.0010	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2498069-1	L2498069-2	L2498069-3
		Description	WG	WG	WG
		Sampled Date	01-SEP-20	01-SEP-20	01-SEP-20
		Sampled Time	10:00	09:40	15:00
		Client ID	EV_MW_GC1A_W G_2020_09_01_NP	EV_MW_GC1B_W G_2020_09_01_NP	EV_MW_MC10C_ WG_2020_09_01_ NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)		0.00083	0.00015	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00142	0.00019	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0874	0.0964	<0.00010
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.051	0.063	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000124	0.000125	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		53.0	125	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00012	0.00043	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.057	<0.010
	Lead (Pb)-Dissolved (mg/L)		0.000051	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0094	0.0431	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		19.4	71.1	<0.0050
	Manganese (Mn)-Dissolved (mg/L)		0.0411	0.674	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.0114	0.00251	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00366	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		1.44	2.40	<0.10
	Selenium (Se)-Dissolved (mg/L)		0.000248	0.00115	<0.000050
	Silicon (Si)-Dissolved (mg/L)		4.12	4.13	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		7.69	16.8	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.406	0.858	<0.00020
	Sulfur (S)-Dissolved (mg/L)		11.6	94.4	<0.50
	Thallium (Tl)-Dissolved (mg/L)		0.000040	0.000066	<0.000010
	Tin (Sn)-Dissolved (mg/L)		0.00012	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00280	0.00191	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0016	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2498069-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2498069-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2498069-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2498069

Report Date: 10-SEP-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: Mark Newman

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5210148							
WG3398255-20	LCS							
Acidity (as CaCO3)			95.0		%		85-115	03-SEP-20
WG3398255-19	MB							
Acidity (as CaCO3)			1.5		mg/L		2	03-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5210136							
WG3398247-17	LCS							
Alkalinity, Total (as CaCO3)			103.2		%		85-115	03-SEP-20
WG3398247-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2	LCS	TMRM						
Beryllium (Be)-Dissolved			97.1		%		80-120	03-SEP-20
WG3397999-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-SEP-20
BIC-CL								
	Water							
Batch	R5210136							
WG3398247-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5212017							
WG3399227-10	LCS							
Bromide (Br)			105.7		%		85-115	03-SEP-20
WG3399227-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	03-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5212617							
WG3399145-10	LCS							
Dissolved Organic Carbon			96.1		%		80-120	05-SEP-20
WG3399145-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
Batch	R5212638							
WG3399122-6	LCS							
Dissolved Organic Carbon			114.3		%		80-120	05-SEP-20
WG3399122-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL								
	Water							
Batch	R5218357							
WG3401040-6	LCS							
Mercury (Hg)-Dissolved			114.0		%		80-120	09-SEP-20
WG3401040-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
WG3401040-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2	LCS	TMRM						
Aluminum (Al)-Dissolved			98.8		%		80-120	03-SEP-20
Antimony (Sb)-Dissolved			95.0		%		80-120	03-SEP-20
Arsenic (As)-Dissolved			100.1		%		80-120	03-SEP-20
Barium (Ba)-Dissolved			99.8		%		80-120	03-SEP-20
Bismuth (Bi)-Dissolved			99.2		%		80-120	03-SEP-20
Boron (B)-Dissolved			98.3		%		80-120	03-SEP-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	03-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	03-SEP-20
Chromium (Cr)-Dissolved			99.9		%		80-120	03-SEP-20
Cobalt (Co)-Dissolved			99.7		%		80-120	03-SEP-20
Copper (Cu)-Dissolved			99.1		%		80-120	03-SEP-20
Iron (Fe)-Dissolved			87.2		%		80-120	03-SEP-20
Lead (Pb)-Dissolved			99.7		%		80-120	03-SEP-20
Lithium (Li)-Dissolved			90.7		%		80-120	03-SEP-20
Magnesium (Mg)-Dissolved			107.4		%		80-120	03-SEP-20
Manganese (Mn)-Dissolved			99.2		%		80-120	03-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	03-SEP-20
Nickel (Ni)-Dissolved			99.7		%		80-120	03-SEP-20
Phosphorus (P)-Dissolved			101.0		%		70-130	03-SEP-20
Potassium (K)-Dissolved			98.3		%		80-120	03-SEP-20
Selenium (Se)-Dissolved			83.8		%		80-120	03-SEP-20
Silicon (Si)-Dissolved			86.3		%		60-140	03-SEP-20
Silver (Ag)-Dissolved			95.9		%		80-120	03-SEP-20
Sodium (Na)-Dissolved			103.0		%		80-120	03-SEP-20
Strontium (Sr)-Dissolved			99.5		%		80-120	03-SEP-20
Sulfur (S)-Dissolved			85.6		%		80-120	03-SEP-20
Thallium (Tl)-Dissolved			97.7		%		80-120	03-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2	LCS	TMRM						
Tin (Sn)-Dissolved			98.9		%		80-120	03-SEP-20
Titanium (Ti)-Dissolved			94.7		%		80-120	03-SEP-20
Uranium (U)-Dissolved			94.3		%		80-120	03-SEP-20
Vanadium (V)-Dissolved			101.2		%		80-120	03-SEP-20
Zinc (Zn)-Dissolved			95.1		%		80-120	03-SEP-20
Zirconium (Zr)-Dissolved			92.9		%		80-120	03-SEP-20
WG3397999-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL Water								
Batch R5210057								
WG3397999-1 MB								
			Tin (Sn)-Dissolved		<0.00010		mg/L	0.0001 03-SEP-20
			Titanium (Ti)-Dissolved		<0.00030		mg/L	0.0003 03-SEP-20
			Uranium (U)-Dissolved		<0.000010		mg/L	0.00001 03-SEP-20
			Vanadium (V)-Dissolved		<0.00050		mg/L	0.0005 03-SEP-20
			Zinc (Zn)-Dissolved		<0.0010		mg/L	0.001 03-SEP-20
			Zirconium (Zr)-Dissolved		<0.00020		mg/L	0.0002 03-SEP-20
NH3-L-F-CL Water								
Batch R5210223								
WG3397829-10 LCS								
			Ammonia as N		100.8		%	85-115 03-SEP-20
WG3397829-9 MB								
			Ammonia as N		<0.0050		mg/L	0.005 03-SEP-20
NO2-L-IC-N-CL Water								
Batch R5212017								
WG3399227-10 LCS								
			Nitrite (as N)		103.1		%	90-110 03-SEP-20
WG3399227-9 MB								
			Nitrite (as N)		<0.0010		mg/L	0.001 03-SEP-20
NO3-L-IC-N-CL Water								
Batch R5212017								
WG3399227-10 LCS								
			Nitrate (as N)		106.1		%	90-110 03-SEP-20
WG3399227-9 MB								
			Nitrate (as N)		<0.0050		mg/L	0.005 03-SEP-20
OH-CL Water								
Batch R5210136								
WG3398247-16 MB								
			Hydroxide (OH)		<5.0		mg/L	5 03-SEP-20
ORP-CL Water								
Batch R5211338								
			WG3398964-8 CRM					
		CL-ORP	ORP		222		mV	210-230 04-SEP-20
P-T-L-COL-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5210664							
WG3398750-6 LCS								
Phosphorus (P)-Total			104.6		%		80-120	04-SEP-20
WG3398750-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-20
PH-CL	Water							
Batch	R5210136							
WG3398247-17 LCS								
pH			6.98		pH		6.9-7.1	03-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5210049							
WG3397927-2 LCS								
Orthophosphate-Dissolved (as P)			100.7		%		80-120	03-SEP-20
WG3397927-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
SO4-IC-N-CL	Water							
Batch	R5212017							
WG3399227-10 LCS								
Sulfate (SO4)			105.9		%		90-110	03-SEP-20
WG3399227-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5210942							
WG3398029-5 LCS								
Total Dissolved Solids			104.7		%		85-115	03-SEP-20
WG3398029-4 MB								
Total Dissolved Solids			<10		mg/L		10	03-SEP-20
TKN-L-F-CL	Water							
Batch	R5210523							
WG3398628-13 LCS								
Total Kjeldahl Nitrogen			91.3		%		75-125	04-SEP-20
WG3398628-15 LCS								
Total Kjeldahl Nitrogen			89.4		%		75-125	04-SEP-20
WG3398628-17 LCS								
Total Kjeldahl Nitrogen			88.4		%		75-125	04-SEP-20
WG3398628-2 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	04-SEP-20



Quality Control Report

Workorder: L2498069

Report Date: 10-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5210523							
WG3398628-7	LCS							
Total Kjeldahl Nitrogen			109.3		%		75-125	04-SEP-20
WG3398628-9	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	04-SEP-20
WG3398628-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
TSS-L-CL		Water						
Batch	R5210838							
WG3398093-2	LCS							
Total Suspended Solids			90.1		%		85-115	04-SEP-20
WG3398093-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-SEP-20
TURBIDITY-CL		Water						
Batch	R5210048							
WG3397976-2	LCS							
Turbidity			97.4		%		85-115	03-SEP-20
WG3397976-1	MB							
Turbidity			<0.10		NTU		0.1	03-SEP-20

Quality Control Report

Workorder: L2498069

Report Date: 10-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2498069

Report Date: 10-SEP-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	01-SEP-20 10:00	04-SEP-20 16:30	0.25	78	hours	EHTR-FM
	2	01-SEP-20 09:40	04-SEP-20 16:30	0.25	79	hours	EHTR-FM
	3	01-SEP-20 15:00	04-SEP-20 16:30	0.25	73	hours	EHTR-FM
pH	1	01-SEP-20 10:00	03-SEP-20 13:00	0.25	51	hours	EHTR-FM
	2	01-SEP-20 09:40	03-SEP-20 13:00	0.25	51	hours	EHTR-FM
	3	01-SEP-20 15:00	03-SEP-20 13:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498069 were received on 02-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)														
Company: SNC-Lavalin - Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact: Mark Newman		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PROPERTY (business days)		4 day [P4-20%] <input type="checkbox"/>		EMERGENCY		1 Business day [E1 - 100%] <input type="checkbox"/>								
Phone: Tel.:250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>						Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>								
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>														
Street: 520 Lake Street		Emails: SNC - 'Mark Newman'		Date and Time Required for all E&P TATs:														
City/Province: Nelson, BC		'Stefan.Humphries', Vicky.Lipinski@snc-lavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.														
Postal Code: V1L 4C6		Teck: <i>SEE Digital COC</i>																
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																
Company:		Emails: Mark.Newman@snc-lavalin.com																
Contact:		payables@snc-lavalin.com																
Project Information		Oil and Gas Required Fields (client use)																
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																
Job #: 672225 <i>EVO-ELKVIEW OPERATIONS</i>		Major/Minor Code: Routing Code:																
PO / AFE: 672225		Requisitioner:																
LSD:		Location:																
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB/JD														
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BG-MDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	<i>EV.MW.CC1A.WG.2020.09.01.NP</i>	<i>EV.MW.CC1A</i>	<i>01-SEP-20</i>	<i>10:00</i>	WG	R	R	R	R	R	R	R	R	R	R			5
	<i>EV.MW.CC1B.WG.2020.09.01.NP</i>	<i>EV.MW.CC1B</i>	<i>01-SEP-20</i>	<i>9:40</i>	WG	R	R	R	R	R	R	R	R	R	R			5
	<i>EV.MW.MC10C.WG.2020.09.01.NP</i>	<i>EV.MW.MC10C</i>	<i>01-SEP-20</i>	<i>15:00</i>	WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
	<i>EV.MW.MC10C.WG.2020.09.01.NP</i>	<i>EV.MW.MC10C</i>	<i>01-SEP-20</i>	<i>15:00</i>	WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
					WG	R	R	R	R	R	R	R	R	R	R			5
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)												
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION <i>EVO-ELKVIEW OPERATIONS</i>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO						Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
						Cooling Initiated <input type="checkbox"/>												
						INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)												
Released by: Marc Beaton		Date: <i>01-SEP-20</i>		Time: <i>16:00</i>		Received by: <i>[Signature]</i>		Date: <i>01-SEP-20</i>		Time: <i>08:30</i>		Received by: <i>[Signature]</i>		Date:		Time:		

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WRITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 03-SEP-20
Report Date: 11-SEP-20 13:55 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2498414
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200902Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2498414-1 WG 02-SEP-20 14:20 EV_BCGW_WG_2 020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	624			
	Hardness (as CaCO3) (mg/L)	361			
	pH (pH)	8.33			
	ORP (mV)	224			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	503	DLHC		
	Turbidity (NTU)	0.26			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	179			
	Alkalinity, Total (as CaCO3) (mg/L)	179			
	Ammonia as N (mg/L)	0.0156			
	Bicarbonate (HCO3) (mg/L)	216			
	Bromide (Br) (mg/L)	0.092			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	4.92			
	Fluoride (F) (mg/L)	0.158			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	93.5			
	Nitrate (as N) (mg/L)	2.95			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	2.95			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0033			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0044	DLM		
	Phosphorus (P)-Total (mg/L)	0.0057	DLM		
	Sulfate (SO4) (mg/L)	191			
	Anion Sum (meq/L)	7.92			
	Cation Sum (meq/L)	7.40			
	Cation - Anion Balance (%)	-3.4			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2498414-1 WG 02-SEP-20 14:20 EV_BCGW_WG_2 020_Q3_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00013			
	Barium (Ba)-Dissolved (mg/L)	0.0339			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013			
	Cadmium (Cd)-Dissolved (ug/L)	0.0291			
	Calcium (Ca)-Dissolved (mg/L)	85.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00024			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0208			
	Magnesium (Mg)-Dissolved (mg/L)	35.9			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000940			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.00			
	Selenium (Se)-Dissolved (ug/L)	20.7			
	Silicon (Si)-Dissolved (mg/L)	2.67			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.92			
	Strontium (Sr)-Dissolved (mg/L)	0.158			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00153			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Barium (Ba)-Dissolved	B	L2498414-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2498414-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2498414-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2498414-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2498414-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2498414-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2498414-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2498414-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2498414-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2498414-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2498414-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2498414-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2498414-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2498414-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2498414-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2498414-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2498414-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2498414-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2498414-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2498414-1
Matrix Spike	Ammonia as N	MS-B	L2498414-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO₃) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum

Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200902Q3GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2498414

Report Date: 11-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5214848							
WG3400036-5	LCS							
Acidity (as CaCO3)			92.4		%		85-115	08-SEP-20
WG3400036-4	MB							
Acidity (as CaCO3)			1.6		mg/L		2	08-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5213396							
WG3399646-5	LCS							
Alkalinity, Total (as CaCO3)			102.7		%		85-115	06-SEP-20
WG3399646-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5212177							
WG3399162-2	LCS							
Beryllium (Be)-Dissolved			96.5		%		80-120	06-SEP-20
WG3399162-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-SEP-20
BIC-CL								
	Water							
Batch	R5213396							
WG3399646-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	06-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5219256							
WG3401305-10	LCS							
Bromide (Br)			106.2		%		85-115	05-SEP-20
WG3401305-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5212638							
WG3399122-6	LCS							
Dissolved Organic Carbon			114.3		%		80-120	05-SEP-20
WG3399122-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5212638							
WG3399122-6	LCS							
Total Organic Carbon			95.2		%		80-120	05-SEP-20
WG3399122-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5219256							
WG3401305-10	LCS							
Chloride (Cl)			109.3		%		85-115	05-SEP-20
WG3401305-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-SEP-20
CO3-CL	Water							
Batch	R5213396							
WG3399646-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	06-SEP-20
EC-L-PCT-CL	Water							
Batch	R5213396							
WG3399646-5	LCS							
Conductivity (@ 25C)			94.3		%		90-110	06-SEP-20
WG3399646-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-SEP-20
F-IC-N-CL	Water							
Batch	R5219256							
WG3401305-10	LCS							
Fluoride (F)			102.8		%		90-110	05-SEP-20
WG3401305-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-SEP-20
HG-D-CVAA-VA	Water							
Batch	R5216596							
WG3400163-6	LCS							
Mercury (Hg)-Dissolved			99.3		%		80-120	09-SEP-20
WG3400163-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5212177							
WG3399162-2	LCS							
Aluminum (Al)-Dissolved			96.5		%		80-120	06-SEP-20
Antimony (Sb)-Dissolved			94.3		%		80-120	06-SEP-20
Arsenic (As)-Dissolved			95.6		%		80-120	06-SEP-20
Barium (Ba)-Dissolved			92.8		%		80-120	06-SEP-20
Bismuth (Bi)-Dissolved			97.8		%		80-120	06-SEP-20
Boron (B)-Dissolved			94.0		%		80-120	06-SEP-20
Cadmium (Cd)-Dissolved			100.2		%		80-120	06-SEP-20
Calcium (Ca)-Dissolved			104.1		%		80-120	06-SEP-20
Chromium (Cr)-Dissolved			96.2		%		80-120	06-SEP-20
Cobalt (Co)-Dissolved			95.4		%		80-120	06-SEP-20
Copper (Cu)-Dissolved			98.1		%		80-120	06-SEP-20
Iron (Fe)-Dissolved			97.6		%		80-120	06-SEP-20
Lead (Pb)-Dissolved			102.6		%		80-120	06-SEP-20
Lithium (Li)-Dissolved			110.5		%		80-120	06-SEP-20
Magnesium (Mg)-Dissolved			101.8		%		80-120	06-SEP-20
Manganese (Mn)-Dissolved			93.8		%		80-120	06-SEP-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	06-SEP-20
Nickel (Ni)-Dissolved			97.5		%		80-120	06-SEP-20
Potassium (K)-Dissolved			92.8		%		80-120	06-SEP-20
Selenium (Se)-Dissolved			96.9		%		80-120	06-SEP-20
Silicon (Si)-Dissolved			105.3		%		60-140	06-SEP-20
Silver (Ag)-Dissolved			97.1		%		80-120	06-SEP-20
Sodium (Na)-Dissolved			92.6		%		80-120	06-SEP-20
Strontium (Sr)-Dissolved			102.7		%		80-120	06-SEP-20
Thallium (Tl)-Dissolved			100.9		%		80-120	06-SEP-20
Tin (Sn)-Dissolved			97.5		%		80-120	06-SEP-20
Titanium (Ti)-Dissolved			93.1		%		80-120	06-SEP-20
Uranium (U)-Dissolved			116.2		%		80-120	06-SEP-20
Vanadium (V)-Dissolved			95.8		%		80-120	06-SEP-20
Zinc (Zn)-Dissolved			101.4		%		80-120	06-SEP-20
WG3399162-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5212177							
WG3399162-1	MB	NP						
Barium (Ba)-Dissolved			0.00022	B	mg/L		0.0001	06-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5210223							
WG3397829-14	LCS							
Ammonia as N			100.8		%		85-115	03-SEP-20
WG3397829-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	03-SEP-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5219256							
WG3401305-10	LCS							
Nitrite (as N)			105.3		%		90-110	05-SEP-20
WG3401305-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-SEP-20
NO3-L-IC-N-CL	Water							
Batch	R5219256							
WG3401305-10	LCS							
Nitrate (as N)			110.0		%		90-110	05-SEP-20
WG3401305-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-SEP-20
OH-CL	Water							
Batch	R5213396							
WG3399646-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	06-SEP-20
ORP-CL	Water							
Batch	R5211338							
WG3398964-8	CRM	CL-ORP						
ORP			222		mV		210-230	04-SEP-20
P-T-L-COL-CL	Water							
Batch	R5210664							
WG3398750-14	LCS							
Phosphorus (P)-Total			108.7		%		80-120	04-SEP-20
WG3398750-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5210664							
WG3398750-14	LCS							
Phosphorus (P)-Total Dissolved			108.7		%		80-120	04-SEP-20
WG3398750-13	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-SEP-20
PH-CL	Water							
Batch	R5213396							
WG3399646-5	LCS							
pH			7.00		pH		6.9-7.1	06-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5210049							
WG3397927-10 LCS								
Orthophosphate-Dissolved (as P)			97.0		%		80-120	03-SEP-20
WG3397927-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
SO4-IC-N-CL	Water							
Batch	R5219256							
WG3401305-10 LCS								
Sulfate (SO4)			108.1		%		90-110	05-SEP-20
WG3401305-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	05-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5218159							
WG3399663-14 LCS								
Total Dissolved Solids			96.8		%		85-115	08-SEP-20
WG3399663-13 MB								
Total Dissolved Solids			<10		mg/L		10	08-SEP-20
TKN-L-F-CL	Water							
Batch	R5210523							
WG3398628-13 LCS								
Total Kjeldahl Nitrogen			91.3		%		75-125	04-SEP-20
WG3398628-15 LCS								
Total Kjeldahl Nitrogen			89.4		%		75-125	04-SEP-20
WG3398628-17 LCS								
Total Kjeldahl Nitrogen			88.4		%		75-125	04-SEP-20
WG3398628-2 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	04-SEP-20
WG3398628-7 LCS								
Total Kjeldahl Nitrogen			109.3		%		75-125	04-SEP-20
WG3398628-9 LCS								
Total Kjeldahl Nitrogen			92.0		%		75-125	04-SEP-20
WG3398628-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5210523							
WG3398628-6 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
TSS-L-CL	Water							
Batch	R5217721							
WG3399662-8 LCS								
Total Suspended Solids			92.0		%		85-115	08-SEP-20
WG3399662-7 MB								
Total Suspended Solids			<1.0		mg/L		1	08-SEP-20
TURBIDITY-CL	Water							
Batch	R5210048							
WG3397976-2 LCS								
Turbidity			97.4		%		85-115	03-SEP-20
WG3397976-1 MB								
Turbidity			<0.10		NTU		0.1	03-SEP-20

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	02-SEP-20 14:20	04-SEP-20 16:30	0.25	50	hours	EHTR-FM
pH	1	02-SEP-20 14:20	06-SEP-20 14:00	0.25	96	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498414 were received on 03-SEP-20 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 04-SEP-20
Report Date: 18-SEP-20 09:16 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2499352
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200903Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2499352-1 WG 03-SEP-20 12:35 EV_MW_SPR1A_ WG_2020_Q3_NP	L2499352-2 WG 03-SEP-20 11:35 EV_MW_SPR1B_ WG_2020_Q3_NP	L2499352-3 WG 03-SEP-20 10:45 EV_MW_SPR1C_ WG_2020_Q3_NP		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	556	548	532		
	Hardness (as CaCO3) (mg/L)	328	140	305		
	pH (pH)	8.11	8.09	8.18		
	ORP (mV)	297	357	258		
	Total Suspended Solids (mg/L)	20.4	1350	1.6		
	Total Dissolved Solids (mg/L)	351 ^{DLHC}	590 ^{DLHC}	372 ^{DLHC}		
	Turbidity (NTU)	5.93	>4000	0.18		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.7	<1.0	1.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	302	449	224		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	302	449	224		
	Ammonia as N (mg/L)	0.137	0.194	0.337		
	Bicarbonate (HCO3) (mg/L)	369	549	273		
	Bromide (Br) (mg/L)	<0.050	<0.050	0.125		
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)	12.1	1.70	13.9		
	Fluoride (F) (mg/L)	0.229	1.12	0.135		
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0		
	Ion Balance (%)	96.4	57.7 ^{RRV}	95.7		
	Nitrate (as N) (mg/L)	<0.0050	0.0089	0.591		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.165	0.409	0.549		
	Total Nitrogen (mg/L)	0.165	0.418	1.14		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0016	0.0035		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0027	0.0025	0.0030		
	Phosphorus (P)-Total (mg/L)	0.0151	6.7 ^{DLHC}	0.0038		
	Sulfate (SO4) (mg/L)	32.7	103	83.8		
	Anion Sum (meq/L)	7.08	11.2 ^{RRV}	6.66		
	Cation Sum (meq/L)	6.82	6.48	6.38		
Cation - Anion Balance (%)	-1.8	-26.8	-2.2			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.07	5.81	<0.50		
	Total Organic Carbon (mg/L)	0.93	28.6 ^{DLM}	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2499352-1 WG 03-SEP-20 12:35 EV_MW_SPR1A_ WG_2020_Q3_NP	L2499352-2 WG 03-SEP-20 11:35 EV_MW_SPR1B_ WG_2020_Q3_NP	L2499352-3 WG 03-SEP-20 10:45 EV_MW_SPR1C_ WG_2020_Q3_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00017	0.00012	
	Arsenic (As)-Dissolved (mg/L)	0.00083	0.00178	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.374	0.0449	0.135	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.022	0.147	0.015	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.020 ^{DLM}	0.0539	
	Calcium (Ca)-Dissolved (mg/L)	85.9	36.1	84.5	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	
	Cobalt (Co)-Dissolved (ug/L)	0.64	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00021	
	Iron (Fe)-Dissolved (mg/L)	0.280	0.030	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0135	0.0125	0.0128	
	Magnesium (Mg)-Dissolved (mg/L)	27.7	12.2	22.7	
	Manganese (Mn)-Dissolved (mg/L)	0.291	0.0849	0.00132	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00124	0.0236	0.000894	
	Nickel (Ni)-Dissolved (mg/L)	0.00185	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	1.45	1.36	1.13	
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.222	7.20	
	Silicon (Si)-Dissolved (mg/L)	4.35	4.23	2.59	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	4.29	83.3	5.52	
	Strontium (Sr)-Dissolved (mg/L)	0.312	0.690	0.187	
	Thallium (Tl)-Dissolved (mg/L)	0.000014	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00015	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000909	0.00354	0.000994	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0023	<0.0010	0.0012	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2499352-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2499352-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200903Q3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2499352

Report Date: 18-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5221519							
WG3402087-5	LCS							
Acidity (as CaCO3)			91.5		%		85-115	09-SEP-20
WG3402087-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	09-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5223321							
WG3403880-2	LCS							
Alkalinity, Total (as CaCO3)			98.2		%		85-115	12-SEP-20
WG3403880-5	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	12-SEP-20
WG3403880-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-SEP-20
WG3403880-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5222317							
WG3402177-2	LCS							
Beryllium (Be)-Dissolved			93.2		%		80-120	10-SEP-20
WG3402177-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-SEP-20
BIC-CL								
	Water							
Batch	R5223321							
WG3403880-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-SEP-20
WG3403880-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5214724							
WG3399942-10	LCS							
Bromide (Br)			105.1		%		85-115	05-SEP-20
WG3399942-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5217336							
WG3400590-2	LCS							
Dissolved Organic Carbon			99.3		%		80-120	08-SEP-20
WG3400590-1	MB							



Quality Control Report

Workorder: L2499352

Report Date: 18-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5217336							
WG3400590-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-SEP-20
Batch	R5220562							
WG3401556-3	DUP	L2499352-1						
Dissolved Organic Carbon		1.07	1.07		mg/L	0.4	20	09-SEP-20
WG3401556-2	LCS							
Dissolved Organic Carbon			109.6		%		80-120	09-SEP-20
WG3401556-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-SEP-20
WG3401556-4	MS	L2499352-1						
Dissolved Organic Carbon			119.0		%		70-130	09-SEP-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5217336							
WG3400590-2	LCS							
Total Organic Carbon			101.4		%		80-120	08-SEP-20
WG3400590-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-SEP-20
Batch	R5220562							
WG3401556-3	DUP	L2499352-1						
Total Organic Carbon		0.93	0.95		mg/L	2.9	20	09-SEP-20
WG3401556-2	LCS							
Total Organic Carbon			113.1		%		80-120	09-SEP-20
WG3401556-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	09-SEP-20
CL-L-IC-N-CL								
	Water							
Batch	R5214724							
WG3399942-10	LCS							
Chloride (Cl)			104.6		%		85-115	05-SEP-20
WG3399942-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-SEP-20
CO3-CL								
	Water							
Batch	R5223321							
WG3403880-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	12-SEP-20
WG3403880-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	12-SEP-20
EC-L-PCT-CL								
	Water							



Quality Control Report

Workorder: L2499352

Report Date: 18-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R5223321							
WG3403880-2	LCS							
Conductivity (@ 25C)			98.0		%		90-110	12-SEP-20
WG3403880-5	LCS							
Conductivity (@ 25C)			94.3		%		90-110	12-SEP-20
WG3403880-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-SEP-20
WG3403880-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-SEP-20
F-IC-N-CL								
Water								
Batch	R5214724							
WG3399942-10	LCS							
Fluoride (F)			94.1		%		90-110	05-SEP-20
WG3399942-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-SEP-20
HG-D-CVAA-VA								
Water								
Batch	R5219467							
WG3401359-2	LCS							
Mercury (Hg)-Dissolved			95.9		%		80-120	10-SEP-20
WG3401359-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5222317							
WG3402177-2	LCS							
Aluminum (Al)-Dissolved			106.3		%		80-120	10-SEP-20
Antimony (Sb)-Dissolved			95.3		%		80-120	10-SEP-20
Arsenic (As)-Dissolved			99.4		%		80-120	10-SEP-20
Barium (Ba)-Dissolved			104.5		%		80-120	10-SEP-20
Bismuth (Bi)-Dissolved			94.9		%		80-120	10-SEP-20
Boron (B)-Dissolved			97.1		%		80-120	10-SEP-20
Cadmium (Cd)-Dissolved			102.7		%		80-120	10-SEP-20
Calcium (Ca)-Dissolved			103.1		%		80-120	10-SEP-20
Chromium (Cr)-Dissolved			98.1		%		80-120	10-SEP-20
Cobalt (Co)-Dissolved			99.7		%		80-120	10-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	10-SEP-20
Iron (Fe)-Dissolved			98.3		%		80-120	10-SEP-20
Lead (Pb)-Dissolved			96.6		%		80-120	10-SEP-20



Quality Control Report

Workorder: L2499352

Report Date: 18-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5222317							
WG3402177-2	LCS							
Lithium (Li)-Dissolved			94.6		%		80-120	10-SEP-20
Magnesium (Mg)-Dissolved			97.0		%		80-120	10-SEP-20
Manganese (Mn)-Dissolved			99.2		%		80-120	10-SEP-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	10-SEP-20
Nickel (Ni)-Dissolved			98.0		%		80-120	10-SEP-20
Potassium (K)-Dissolved			103.4		%		80-120	10-SEP-20
Selenium (Se)-Dissolved			99.9		%		80-120	10-SEP-20
Silicon (Si)-Dissolved			100.9		%		60-140	10-SEP-20
Silver (Ag)-Dissolved			103.3		%		80-120	10-SEP-20
Sodium (Na)-Dissolved			100.4		%		80-120	10-SEP-20
Strontium (Sr)-Dissolved			110.8		%		80-120	10-SEP-20
Thallium (Tl)-Dissolved			94.7		%		80-120	10-SEP-20
Tin (Sn)-Dissolved			98.6		%		80-120	10-SEP-20
Titanium (Ti)-Dissolved			97.8		%		80-120	10-SEP-20
Uranium (U)-Dissolved			95.7		%		80-120	10-SEP-20
Vanadium (V)-Dissolved			103.1		%		80-120	10-SEP-20
Zinc (Zn)-Dissolved			98.1		%		80-120	10-SEP-20
WG3402177-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20



Quality Control Report

Workorder: L2499352

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5222317							
WG3402177-1	MB	NP						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5215097							
WG3400120-13	LCS							
Ammonia as N			100.1		%		85-115	08-SEP-20
WG3400120-12	MB							
Ammonia as N			<0.0050		mg/L		0.005	08-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5214724							
WG3399942-10	LCS							
Nitrite (as N)			101.2		%		90-110	05-SEP-20
WG3399942-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5214724							
WG3399942-10	LCS							
Nitrate (as N)			106.4		%		90-110	05-SEP-20
WG3399942-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-SEP-20
OH-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5223321							
WG3403880-1 MB								
Hydroxide (OH)			<5.0		mg/L		5	12-SEP-20
WG3403880-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	12-SEP-20
ORP-CL	Water							
Batch	R5219182							
WG3401255-5 CRM		CL-ORP						
ORP			219		mV		210-230	09-SEP-20
P-T-L-COL-CL	Water							
Batch	R5221078							
WG3401635-18 LCS								
Phosphorus (P)-Total			90.8		%		80-120	10-SEP-20
WG3401635-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5221078							
WG3401635-18 LCS								
Phosphorus (P)-Total Dissolved			90.8		%		80-120	10-SEP-20
WG3401635-17 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	10-SEP-20
PH-CL	Water							
Batch	R5223321							
WG3403880-2 LCS								
pH			6.99		pH		6.9-7.1	12-SEP-20
WG3403880-5 LCS								
pH			7.00		pH		6.9-7.1	12-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5211297							
WG3398847-50 LCS								
Orthophosphate-Dissolved (as P)			95.4		%		80-120	04-SEP-20
WG3398847-49 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-SEP-20
SO4-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5214724							
WG3399942-10 LCS								
Sulfate (SO4)			104.6		%		90-110	05-SEP-20
WG3399942-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	05-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5222235							
WG3401478-8 LCS								
Total Dissolved Solids			98.4		%		85-115	10-SEP-20
WG3401478-7 MB								
Total Dissolved Solids			<10		mg/L		10	10-SEP-20
TKN-L-F-CL	Water							
Batch	R5216916							
WG3400637-24 LCS								
Total Kjeldahl Nitrogen			92.6		%		75-125	08-SEP-20
WG3400637-27 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	08-SEP-20
WG3400637-32 LCS								
Total Kjeldahl Nitrogen			94.0		%		75-125	08-SEP-20
WG3400637-36 LCS								
Total Kjeldahl Nitrogen			92.9		%		75-125	08-SEP-20
WG3400637-38 LCS								
Total Kjeldahl Nitrogen			93.7		%		75-125	08-SEP-20
WG3400637-44 LCS								
Total Kjeldahl Nitrogen			98.9		%		75-125	08-SEP-20
WG3400637-23 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
WG3400637-26 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
WG3400637-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
WG3400637-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
WG3400637-37 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
WG3400637-43 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-SEP-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5222190							
WG3401246-6	LCS							
Total Suspended Solids			101.8		%		85-115	10-SEP-20
WG3401246-5	MB							
Total Suspended Solids			<1.0		mg/L		1	10-SEP-20
TURBIDITY-CL	Water							
Batch	R5211359							
WG3398907-15	DUP	L2499352-2						
WG3398907-10	LCS							
Turbidity			96.9		%		85-115	04-SEP-20
WG3398907-13	LCS							
Turbidity			97.4		%		85-115	04-SEP-20
WG3398907-11	MB							
Turbidity			<0.10		NTU		0.1	04-SEP-20
WG3398907-14	MB							
Turbidity			<0.10		NTU		0.1	04-SEP-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	03-SEP-20 12:35	09-SEP-20 17:30	0.25	149	hours	EHTR-FM
	2	03-SEP-20 11:35	09-SEP-20 17:30	0.25	150	hours	EHTR-FM
	3	03-SEP-20 10:45	09-SEP-20 17:30	0.25	151	hours	EHTR-FM
pH	1	03-SEP-20 12:35	12-SEP-20 12:00	0.25	216	hours	EHTR-FM
	2	03-SEP-20 11:35	12-SEP-20 12:00	0.25	216	hours	EHTR-FM
	3	03-SEP-20 10:45	12-SEP-20 12:00	0.25	217	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2499352 were received on 04-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20200903Q3GW		TURNAROUND TIME:		RUSH:					
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO					
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin		Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com		Address	2559 29 Street NE		Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
						Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB			
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	403-407-1800		PO number	VPO00678877			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - Field, Lab, CL, Field & Lab, N, Note



L2499352-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED										
								TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury
EV_MW_SPRIA_WG_2020_Q3_NP	EV_MW_SPRIA	WG	N	9/3/2020	12:35	G	5	1	1	1	1						1	
EV_MW_SPRI1B_WG_2020_Q3_NP	EV_MW_SPRI1B	WG	N	9/3/2020	11:35	G	5	1	1	1	1						1	
EV_MW_SPRI1C_WG_2020_Q3_NP	EV_MW_SPRI1C	WG	N	9/3/2020	10:45	G	5	1	1	1	1						1	
							Total	15										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	September 3, 2020	<i>nh</i>	9/4 0850

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
SAMPLER INFORMATION	Sampler's Name	Kimberley Hackett	Mobile #	
	Sampler's Signature	<i>Kimberley Hackett</i>	Date/Time	September 3, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 17-SEP-20
Report Date: 26-SEP-20 13:01 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2504597
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2504597-1 WG 16-SEP-20 13:20 EV_MW_SP1A_W G_2020_Q3_NP	L2504597-2 WG 16-SEP-20 14:15 EV_MW_SP1B_W G_2020_Q3_NP	L2504597-3 WG 16-SEP-20 15:15 EV_MW_SP1C_W G_2020_Q3_NP	L2504597-4 WG 16-SEP-20 13:25 EV_MW_MC10A_ WG_2020_Q3_NP	L2504597-5 WG 16-SEP-20 13:30 EV_MW_MC10B_ WG_2020_Q3_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	518	435	429	428	<2.0
	Hardness (as CaCO3) (mg/L)	287	218	225	221	<0.50
	pH (pH)	8.14	8.26	8.28	8.29	5.54
	ORP (mV)	446	437	482	358	402
	Total Suspended Solids (mg/L)	<1.0	<1.0	7.2	2.3	<1.0
	Total Dissolved Solids (mg/L)	327 ^{DLHC}	274 ^{DLHC}	259 ^{DLHC}	257 ^{DLHC}	<10
	Turbidity (NTU)	8.48	0.10	1.47	0.84	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	245	161	<1.0	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	176	178	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	245	161	176	178	<1.0
	Ammonia as N (mg/L)	1.03 ^{DLHC}	0.276	0.127	0.0163	0.120 ^{RRV}
	Bicarbonate (HCO3) (mg/L)	298	197	213	215	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.053	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	4.43	4.06	6.91	6.91	<0.10
	Fluoride (F) (mg/L)	0.265	0.120	0.114	0.118	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	106	97.8	102	99.9	0.0
	Nitrate (as N) (mg/L)	0.0274	0.638	0.353	0.352	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.04	0.437	0.146	<0.050	<0.050 ^{RRV}
	Total Nitrogen (mg/L)	1.07	1.07	0.499	0.352	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0021	0.0035	0.0040	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.010 ^{DLM}	<0.0020 ^{RRV}	<0.0020 ^{RRV}	<0.0020 ^{RRV}	<0.0020
	Phosphorus (P)-Total (mg/L)	0.010 ^{DLM}	<0.0020 ^{RRV}	0.015 ^{DLM}	0.011 ^{DLM}	<0.0020
	Sulfate (SO4) (mg/L)	41.0	66.8	47.0	47.1	<0.30
	Anion Sum (meq/L)	5.88	4.78	4.72	4.77	<0.10
	Cation Sum (meq/L)	6.23	4.68	4.82	4.76	<0.10
Cation - Anion Balance (%)	2.9	-1.1	1.1	-0.1	0.0	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2504597-6 WG 16-SEP-20 13:45 EV_MW_MC10C_ WG_2020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.53			
	ORP (mV)	430			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	0.185 ^{RRV}			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{RRV}			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2504597-1 WG 16-SEP-20 13:20 EV_MW_SP1A_W G_2020_Q3_NP	L2504597-2 WG 16-SEP-20 14:15 EV_MW_SP1B_W G_2020_Q3_NP	L2504597-3 WG 16-SEP-20 15:15 EV_MW_SP1C_W G_2020_Q3_NP	L2504597-4 WG 16-SEP-20 13:25 EV_MW_MC10A_ WG_2020_Q3_NP	L2504597-5 WG 16-SEP-20 13:30 EV_MW_MC10B_ WG_2020_Q3_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.925	0.152	0.170	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.025	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0070	0.0212	0.0244
	Calcium (Ca)-Dissolved (mg/L)	76.6	61.3	63.3	62.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00017	0.00015	0.00016
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.627	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0800	0.0070	0.0091	0.0089
	Magnesium (Mg)-Dissolved (mg/L)	23.3	15.8	16.2	15.7
	Manganese (Mn)-Dissolved (mg/L)	0.0545	0.00015	0.00052	0.00050
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000465	0.000844	0.000848	0.000861
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	3.12	0.706	0.866	0.826
	Selenium (Se)-Dissolved (ug/L)	<0.050	5.52	3.37	3.45
	Silicon (Si)-Dissolved (mg/L)	2.99	2.39	2.61	2.64
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.71	6.95	7.10	7.31
	Strontium (Sr)-Dissolved (mg/L)	0.299	0.152	0.152	0.146
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000109	0.000687	0.000643	0.000673
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2504597-6 WG 16-SEP-20 13:45 EV_MW_MC10C_ WG_2020_Q3_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2504597

Report Date: 26-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5229719							
WG3407723-9	DUP	L2504597-4						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	18-SEP-20
WG3407723-8	LCS							
Acidity (as CaCO3)			100.5		%		85-115	18-SEP-20
WG3407723-7	MB							
Acidity (as CaCO3)			1.9		mg/L		2	18-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5231980							
WG3409502-5	LCS							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	21-SEP-20
WG3409502-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-2	LCS							
Beryllium (Be)-Dissolved			103.7		%		80-120	19-SEP-20
WG3407962-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-SEP-20
BIC-CL								
	Water							
Batch	R5231980							
WG3409502-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Bromide (Br)			102.0		%		85-115	17-SEP-20
WG3407420-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5232353							
WG3409899-6	LCS							
Dissolved Organic Carbon			92.9		%		80-120	21-SEP-20
WG3409899-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-SEP-20



Quality Control Report

Workorder: L2504597

Report Date: 26-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5232361							
WG3409957-2	LCS							
Dissolved Organic Carbon			86.3		%		80-120	21-SEP-20
WG3409957-6	LCS							
Dissolved Organic Carbon			100.3		%		80-120	21-SEP-20
WG3409957-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3409957-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
C-TOT-ORG-LOW-CL Water								
Batch	R5232361							
WG3409957-2	LCS							
Total Organic Carbon			91.4		%		80-120	21-SEP-20
WG3409957-6	LCS							
Total Organic Carbon			108.7		%		80-120	21-SEP-20
WG3409957-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3409957-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
CL-L-IC-N-CL Water								
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Chloride (Cl)			99.1		%		85-115	17-SEP-20
WG3407420-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	17-SEP-20
CO3-CL Water								
Batch	R5231980							
WG3409502-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-SEP-20
EC-L-PCT-CL Water								
Batch	R5231980							
WG3409502-5	LCS							
Conductivity (@ 25C)			108.0		%		90-110	21-SEP-20
WG3409502-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-SEP-20
	Water							



Quality Control Report

Workorder: L2504597

Report Date: 26-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Fluoride (F)			103.5		%		90-110	17-SEP-20
WG3407420-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-SEP-20
HG-D-CVAA-VA								
Water								
Batch	R5231937							
WG3409392-2	LCS							
Mercury (Hg)-Dissolved			86.3		%		80-120	22-SEP-20
WG3409392-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-SEP-20
MET-D-CCMS-VA								
Water								
Batch	R5231479							
WG3407962-2	LCS							
Aluminum (Al)-Dissolved			101.4		%		80-120	19-SEP-20
Antimony (Sb)-Dissolved			104.2		%		80-120	19-SEP-20
Arsenic (As)-Dissolved			99.6		%		80-120	19-SEP-20
Barium (Ba)-Dissolved			106.4		%		80-120	19-SEP-20
Bismuth (Bi)-Dissolved			96.4		%		80-120	19-SEP-20
Boron (B)-Dissolved			105.6		%		80-120	19-SEP-20
Cadmium (Cd)-Dissolved			98.9		%		80-120	19-SEP-20
Calcium (Ca)-Dissolved			106.6		%		80-120	19-SEP-20
Chromium (Cr)-Dissolved			103.3		%		80-120	19-SEP-20
Cobalt (Co)-Dissolved			98.7		%		80-120	19-SEP-20
Copper (Cu)-Dissolved			97.4		%		80-120	19-SEP-20
Iron (Fe)-Dissolved			98.9		%		80-120	19-SEP-20
Lead (Pb)-Dissolved			100.6		%		80-120	19-SEP-20
Lithium (Li)-Dissolved			110.0		%		80-120	19-SEP-20
Magnesium (Mg)-Dissolved			97.0		%		80-120	19-SEP-20
Manganese (Mn)-Dissolved			100.3		%		80-120	19-SEP-20
Molybdenum (Mo)-Dissolved			106.3		%		80-120	19-SEP-20
Nickel (Ni)-Dissolved			99.2		%		80-120	19-SEP-20
Potassium (K)-Dissolved			102.2		%		80-120	19-SEP-20
Selenium (Se)-Dissolved			97.6		%		80-120	19-SEP-20
Silicon (Si)-Dissolved			103.2		%		60-140	19-SEP-20



Quality Control Report

Workorder: L2504597

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-2	LCS							
Silver (Ag)-Dissolved			108.9		%		80-120	19-SEP-20
Sodium (Na)-Dissolved			101.8		%		80-120	19-SEP-20
Strontium (Sr)-Dissolved			117.8		%		80-120	19-SEP-20
Thallium (Tl)-Dissolved			99.5		%		80-120	19-SEP-20
Tin (Sn)-Dissolved			101.8		%		80-120	19-SEP-20
Titanium (Ti)-Dissolved			92.9		%		80-120	19-SEP-20
Uranium (U)-Dissolved			101.6		%		80-120	19-SEP-20
Vanadium (V)-Dissolved			100.1		%		80-120	19-SEP-20
Zinc (Zn)-Dissolved			97.9		%		80-120	19-SEP-20
WG3407962-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5231479							
WG3407962-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5232236							
WG3409307-2	LCS							
Ammonia as N			99.7		%		85-115	21-SEP-20
WG3409307-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Nitrite (as N)			101.4		%		90-110	17-SEP-20
WG3407420-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Nitrate (as N)			100.2		%		90-110	17-SEP-20
WG3407420-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-20
OH-CL								
	Water							
Batch	R5231980							
WG3409502-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-SEP-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5230757							
WG3407855-3	CRM	CL-ORP						
ORP			221		mV		210-230	18-SEP-20
P-T-L-COL-CL	Water							
Batch	R5232246							
WG3409788-6	LCS							
Phosphorus (P)-Total			99.0		%		80-120	22-SEP-20
WG3409788-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5232246							
WG3409788-6	LCS							
Phosphorus (P)-Total Dissolved			99.0		%		80-120	22-SEP-20
WG3409788-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	22-SEP-20
PH-CL	Water							
Batch	R5231980							
WG3409502-5	LCS							
pH			7.00		pH		6.9-7.1	21-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5228141							
WG3406978-4	LCS							
Orthophosphate-Dissolved (as P)			100.4		%		80-120	17-SEP-20
WG3406978-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-SEP-20
SO4-IC-N-CL	Water							
Batch	R5228923							
WG3407420-3	DUP	L2504597-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3407420-2	LCS							
Sulfate (SO4)			99.9		%		90-110	17-SEP-20
WG3407420-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-SEP-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5232371							
WG3408576-17 LCS								
Total Dissolved Solids			101.0		%		85-115	21-SEP-20
WG3408576-16 MB								
Total Dissolved Solids			<10		mg/L		10	21-SEP-20
TKN-L-F-CL		Water						
Batch	R5231791							
WG3409258-12 LCS								
Total Kjeldahl Nitrogen			93.7		%		75-125	21-SEP-20
WG3409258-16 LCS								
Total Kjeldahl Nitrogen			95.0		%		75-125	21-SEP-20
WG3409258-2 LCS								
Total Kjeldahl Nitrogen			94.1		%		75-125	21-SEP-20
WG3409258-20 LCS								
Total Kjeldahl Nitrogen			97.7		%		75-125	21-SEP-20
WG3409258-4 LCS								
Total Kjeldahl Nitrogen			101.8		%		75-125	21-SEP-20
WG3409258-8 LCS								
Total Kjeldahl Nitrogen			97.6		%		75-125	21-SEP-20
WG3409258-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-15 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-19 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
TSS-L-CL		Water						
Batch	R5231562							
WG3408575-10 LCS								
Total Suspended Solids			108.0		%		85-115	21-SEP-20
WG3408575-9 MB								
Total Suspended Solids			<1.0		mg/L		1	21-SEP-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5228150							
WG3406697-12	LCS							
Turbidity			96.5		%		85-115	17-SEP-20
WG3406697-15	LCS							
Turbidity			96.5		%		85-115	17-SEP-20
WG3406697-11	MB							
Turbidity			<0.10		NTU		0.1	17-SEP-20
WG3406697-14	MB							
Turbidity			<0.10		NTU		0.1	17-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	16-SEP-20 13:20	18-SEP-20 14:15	0.25	49	hours	EHTR-FM
	2	16-SEP-20 14:15	18-SEP-20 14:15	0.25	48	hours	EHTR-FM
	3	16-SEP-20 15:15	18-SEP-20 14:15	0.25	47	hours	EHTR-FM
	4	16-SEP-20 13:25	18-SEP-20 14:15	0.25	49	hours	EHTR-FM
	5	16-SEP-20 13:30	18-SEP-20 14:15	0.25	49	hours	EHTR-FM
	6	16-SEP-20 13:45	18-SEP-20 14:15	0.25	48	hours	EHTR-FM
pH							
	1	16-SEP-20 13:20	21-SEP-20 14:00	0.25	121	hours	EHTR-FM
	2	16-SEP-20 14:15	21-SEP-20 14:00	0.25	120	hours	EHTR-FM
	3	16-SEP-20 15:15	21-SEP-20 14:00	0.25	119	hours	EHTR-FM
	4	16-SEP-20 13:25	21-SEP-20 14:00	0.25	120	hours	EHTR-FM
	5	16-SEP-20 13:30	21-SEP-20 14:00	0.25	120	hours	EHTR-FM
	6	16-SEP-20 13:45	21-SEP-20 14:00	0.25	120	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2504597 were received on 17-SEP-20 10:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20200916Q3GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_SP1A_WG_2020_Q3_NP	EV_MW_SP1A	WG	N	9/16/2020	13:20	G	5	1		1	1		1					1		
EV_MW_SP1B_WG_2020_Q3_NP	EV_MW_SP1B	WG	N	9/16/2020	14:15	G	5	1		1	1		1					1		
EV_MW_SP1C_WG_2020_Q3_NP	EV_MW_SP1C	WG	N	9/16/2020	15:15	G	5	1		1	1		1					1		
EV_MW_MC10A_WG_2020_Q3_NP	EV_MW_MC10A	WG	N	9/16/2020	13:25	G	5	1		1	1		1					1		
EV_MW_MC10B_WG_2020_Q3_NP	EV_MW_MC10B	WG	N	9/16/2020	13:30	G	5	1		1	1		1					1		
EV_MW_MC10C_WG_2020_Q3_NP	EV_MW_MC10C	WG	N	9/16/2020	13:45	G	5	1		1	1		1					1		
							Total	30												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	September 16, 2020	<i>[Signature]</i>	September 16, 2020

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	September 16, 2020



L2504597-COFC

[Handwritten mark]



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 18-SEP-20
Report Date: 28-SEP-20 09:24 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2505183
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200917Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2505183-1 WG 17-SEP-20 14:20 EV_OCGW_WG_2 020-09_NP	L2505183-2 WG 17-SEP-20 11:10 EV_ECGW_WG_2 020_Q3_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	472	414		
	Hardness (as CaCO3) (mg/L)	147	157		
	pH (pH)	8.27	8.23		
	ORP (mV)	261	296		
	Total Suspended Solids (mg/L)	6.0	147		
	Total Dissolved Solids (mg/L)	289 ^{DLHC}	271 ^{DLHC}		
	Turbidity (NTU)	4.91	135		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	188	219		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	188	219		
	Ammonia as N (mg/L)	0.0658	0.222		
	Bicarbonate (HCO3) (mg/L)	229	268		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	1.93	0.45		
	Fluoride (F) (mg/L)	1.20	0.816		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	95.2	91.9		
	Nitrate (as N) (mg/L)	0.0390	0.120		
	Nitrite (as N) (mg/L)	0.0045	0.0270		
	Total Kjeldahl Nitrogen (mg/L)	0.141	0.27 ^{DLM}		
	Total Nitrogen (mg/L)	0.185	0.42		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0096	0.0134		
	Phosphorus (P)-Total Dissolved (mg/L)	0.020 ^{DLM}	0.016 ^{DLM}		
	Phosphorus (P)-Total (mg/L)	0.032 ^{DLM}	0.230 ^{DLHC}		
	Sulfate (SO4) (mg/L)	71.4	26.3		
	Anion Sum (meq/L)	5.36	5.00		
	Cation Sum (meq/L)	5.10	4.59		
	Cation - Anion Balance (%)	-2.4	-4.2		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.89	0.99		
	Total Organic Carbon (mg/L)	0.90	1.92		
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2505183-1 WG 17-SEP-20 14:20 EV_OCGW_WG_2 020-09_NP	L2505183-2 WG 17-SEP-20 11:10 EV_ECGW_WG_2 020_Q3_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00133	0.00036		
	Barium (Ba)-Dissolved (mg/L)	0.0588	0.0546		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.117	0.112		
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLM}	0.0280		
	Calcium (Ca)-Dissolved (mg/L)	29.0	36.4		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.11		
	Copper (Cu)-Dissolved (mg/L)	0.00039	0.00050		
	Iron (Fe)-Dissolved (mg/L)	0.215	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0271	0.0128		
	Magnesium (Mg)-Dissolved (mg/L)	18.2	16.1		
	Manganese (Mn)-Dissolved (mg/L)	0.0767	0.0894		
	Mercury (Hg)-Dissolved (mg/L)		<0.000050		
	Mercury (Hg)-Dissolved (ug/L)	<0.00050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0152	0.0145		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00128		
	Potassium (K)-Dissolved (mg/L)	1.68	1.05		
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.186		
	Silicon (Si)-Dissolved (mg/L)	4.32	5.03		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 ^{DLM}		
	Sodium (Na)-Dissolved (mg/L)	48.2	32.3		
	Strontium (Sr)-Dissolved (mg/L)	0.434	0.420		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000033		
	Tin (Sn)-Dissolved (mg/L)	0.00016	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00111	0.00162		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0010	0.0021		
Speciated Metals	Hexavalent Chromium-Dissolved (mg/L)	<0.00050			
Hydrocarbons	EPH10-19 (mg/L)	<0.25			
	EPH (C10-C32) (mg/L)	<0.50			
	EPH19-32 (mg/L)	<0.25			
	TEH (C10-C30) (mg/L)	<0.25			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2505183-1	L2505183-2			
		Description	WG	WG			
		Sampled Date	17-SEP-20	17-SEP-20			
		Sampled Time	14:20	11:10			
		Client ID	EV_OCGW_WG_2 020-09_NP	EV_ECGW_WG_2 020_Q3_NP			
Grouping	Analyte						
WATER							
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)	90.6					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Fluoride (F)	MS-B	L2505183-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2505183-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2505183-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
CR6-D-IC-ED	Water	Chromium, Dissolved Hexavalent (Cr +6)	APHA 3500-Cr C (Ion Chromatography)

Reference Information

This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Results are based on a field-filtered, field-preserved sample.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B
 Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated
 The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B
 Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)
 Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E
 This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
 This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

Reference Information

P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TEH-BC-VA-CL	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
TEH-WATER-VA-CL	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200917Q3GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2505183

Report Date: 28-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5231675							
WG3409068-2	LCS							
Acidity (as CaCO3)			98.0		%		85-115	19-SEP-20
WG3409068-1	MB							
Acidity (as CaCO3)			1.6		mg/L		2	19-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5231980							
WG3409502-6	DUP	L2505183-1						
Alkalinity, Total (as CaCO3)		188	187		mg/L	0.5	20	21-SEP-20
WG3409502-5	LCS							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	21-SEP-20
WG3409502-8	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	21-SEP-20
WG3409502-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-SEP-20
WG3409502-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5232851							
WG3409290-3	DUP	L2505183-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-SEP-20
WG3409290-2	LCS							
Beryllium (Be)-Dissolved			97.1		%		80-120	23-SEP-20
WG3409290-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-SEP-20
WG3409290-4	MS	L2505183-2						
Beryllium (Be)-Dissolved			99.2		%		70-130	23-SEP-20
BIC-CL								
	Water							
Batch	R5231980							
WG3409502-6	DUP	L2505183-1						
Bicarbonate (HCO3)		229	228		mg/L	0.5	20	21-SEP-20
WG3409502-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-SEP-20
WG3409502-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-SEP-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2505183

Report Date: 28-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Water								
Batch	R5230801							
WG3408040-3	DUP	L2505183-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-SEP-20
WG3408040-2	LCS							
Bromide (Br)			112.5		%		85-115	18-SEP-20
WG3408040-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-SEP-20
WG3408040-4	MS	L2505183-1						
Bromide (Br)			99.0		%		75-125	18-SEP-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5234902							
WG3411572-2	LCS							
Dissolved Organic Carbon			98.2		%		80-120	22-SEP-20
WG3411572-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-SEP-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5234902							
WG3411572-2	LCS							
Total Organic Carbon			104.0		%		80-120	22-SEP-20
WG3411572-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-SEP-20
CL-L-IC-N-CL								
Water								
Batch	R5230801							
WG3408040-3	DUP	L2505183-1						
Chloride (Cl)		1.93	1.92		mg/L	0.5	20	18-SEP-20
WG3408040-2	LCS							
Chloride (Cl)			98.9		%		85-115	18-SEP-20
WG3408040-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	18-SEP-20
WG3408040-4	MS	L2505183-1						
Chloride (Cl)			90.8		%		75-125	18-SEP-20
CO3-CL								
Water								
Batch	R5231980							
WG3409502-6	DUP	L2505183-1						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	21-SEP-20
WG3409502-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-SEP-20
WG3409502-7	MB							



Quality Control Report

Workorder: L2505183

Report Date: 28-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL								
Water								
Batch R5231980								
WG3409502-7 MB								
Carbonate (CO3)								
			<5.0		mg/L		5	21-SEP-20
CR6-D-IC-ED								
Water								
Batch R5232896								
WG3407557-11 LCS								
Hexavalent Chromium-Dissolved								
			99.4		%		70-130	19-SEP-20
WG3407557-13 LCS								
Hexavalent Chromium-Dissolved								
			99.6		%		70-130	19-SEP-20
WG3407557-15 LCS								
Hexavalent Chromium-Dissolved								
			98.4		%		70-130	19-SEP-20
WG3407557-2 LCS								
Hexavalent Chromium-Dissolved								
			99.7		%		70-130	19-SEP-20
WG3407557-1 MB								
Hexavalent Chromium-Dissolved								
			<0.00050		mg/L		0.0005	19-SEP-20
WG3407557-12 MB								
Hexavalent Chromium-Dissolved								
			<0.00050		mg/L		0.0005	19-SEP-20
WG3407557-14 MB								
Hexavalent Chromium-Dissolved								
			<0.00050		mg/L		0.0005	19-SEP-20
WG3407557-16 MB								
Hexavalent Chromium-Dissolved								
			<0.00050		mg/L		0.0005	19-SEP-20
EC-L-PCT-CL								
Water								
Batch R5231980								
WG3409502-6 DUP								
Conductivity (@ 25C)								
		L2505183-1	474		uS/cm	0.4	10	21-SEP-20
		472						
WG3409502-5 LCS								
Conductivity (@ 25C)								
			108.0		%		90-110	21-SEP-20
WG3409502-8 LCS								
Conductivity (@ 25C)								
			100.2		%		90-110	21-SEP-20
WG3409502-4 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	21-SEP-20
WG3409502-7 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	21-SEP-20
F-IC-N-CL								
Water								
Batch R5230801								
WG3408040-3 DUP								
Fluoride (F)								
		L2505183-1	1.19		mg/L	0.6	20	18-SEP-20
		1.20						
WG3408040-2 LCS								



Quality Control Report

Workorder: L2505183

Report Date: 28-SEP-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Batch R5230801								
WG3408040-2	LCS							
Fluoride (F)			95.9		%		90-110	18-SEP-20
WG3408040-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	18-SEP-20
WG3408040-4	MS	L2505183-1						
Fluoride (F)			N/A	MS-B	%		-	18-SEP-20
HG-D-CVAA-VA								
Batch R5233684								
WG3411190-2	LCS							
Mercury (Hg)-Dissolved			94.3		%		80-120	24-SEP-20
WG3411190-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-SEP-20
HG-D-U-CVAF-VA								
Batch R5238718								
WG3413015-2	LCS							
Mercury (Hg)-Dissolved			93.6		%		80-120	26-SEP-20
WG3413015-1	MB	LF						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	26-SEP-20
MET-D-CCMS-VA								
Batch R5232851								
WG3409290-3	DUP	L2505183-1						
Aluminum (Al)-Dissolved			<0.0030	RPD-NA	mg/L	N/A	20	23-SEP-20
Antimony (Sb)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Arsenic (As)-Dissolved			0.00133		mg/L	9.1	20	23-SEP-20
Barium (Ba)-Dissolved			0.0588		mg/L	2.4	20	23-SEP-20
Bismuth (Bi)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Boron (B)-Dissolved			0.117		mg/L	0.6	20	23-SEP-20
Cadmium (Cd)-Dissolved			<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Calcium (Ca)-Dissolved			29.0		mg/L	0.8	20	23-SEP-20
Chromium (Cr)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Cobalt (Co)-Dissolved			<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Copper (Cu)-Dissolved			0.00039		mg/L	9.0	20	23-SEP-20
Iron (Fe)-Dissolved			0.215		mg/L	0.6	20	23-SEP-20
Lead (Pb)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Lithium (Li)-Dissolved			0.0271		mg/L	0.7	20	23-SEP-20
Magnesium (Mg)-Dissolved			18.2		mg/L	2.3	20	23-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5232851							
WG3409290-3	DUP	L2505183-1						
Manganese (Mn)-Dissolved		0.0767	0.0766		mg/L	0.2	20	23-SEP-20
Molybdenum (Mo)-Dissolved		0.0152	0.0154		mg/L	1.1	20	23-SEP-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-20
Potassium (K)-Dissolved		1.68	1.70		mg/L	1.5	20	23-SEP-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Silicon (Si)-Dissolved		4.32	4.26		mg/L	1.4	20	23-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Sodium (Na)-Dissolved		48.2	49.5		mg/L	2.7	20	23-SEP-20
Strontium (Sr)-Dissolved		0.434	0.440		mg/L	1.5	20	23-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Tin (Sn)-Dissolved		0.00016	0.00014		mg/L	13	20	23-SEP-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-SEP-20
Uranium (U)-Dissolved		0.00111	0.00117		mg/L	5.3	20	23-SEP-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-20
Zinc (Zn)-Dissolved		0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-SEP-20
WG3409290-2	LCS							
Aluminum (Al)-Dissolved			98.8		%		80-120	23-SEP-20
Antimony (Sb)-Dissolved			102.2		%		80-120	23-SEP-20
Arsenic (As)-Dissolved			100.2		%		80-120	23-SEP-20
Barium (Ba)-Dissolved			112.5		%		80-120	23-SEP-20
Bismuth (Bi)-Dissolved			96.5		%		80-120	23-SEP-20
Boron (B)-Dissolved			93.5		%		80-120	23-SEP-20
Cadmium (Cd)-Dissolved			95.6		%		80-120	23-SEP-20
Calcium (Ca)-Dissolved			100.3		%		80-120	23-SEP-20
Chromium (Cr)-Dissolved			99.3		%		80-120	23-SEP-20
Cobalt (Co)-Dissolved			96.6		%		80-120	23-SEP-20
Copper (Cu)-Dissolved			98.0		%		80-120	23-SEP-20
Iron (Fe)-Dissolved			98.2		%		80-120	23-SEP-20
Lead (Pb)-Dissolved			97.1		%		80-120	23-SEP-20
Lithium (Li)-Dissolved			96.7		%		80-120	23-SEP-20
Magnesium (Mg)-Dissolved			94.1		%		80-120	23-SEP-20
Manganese (Mn)-Dissolved			99.96		%		80-120	23-SEP-20
Molybdenum (Mo)-Dissolved			102.3		%		80-120	23-SEP-20
Nickel (Ni)-Dissolved			98.5		%		80-120	23-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5232851							
WG3409290-2	LCS							
Potassium (K)-Dissolved			103.6		%		80-120	23-SEP-20
Selenium (Se)-Dissolved			104.8		%		80-120	23-SEP-20
Silicon (Si)-Dissolved			103.0		%		60-140	23-SEP-20
Silver (Ag)-Dissolved			104.6		%		80-120	23-SEP-20
Sodium (Na)-Dissolved			98.8		%		80-120	23-SEP-20
Strontium (Sr)-Dissolved			107.6		%		80-120	23-SEP-20
Thallium (Tl)-Dissolved			100.5		%		80-120	23-SEP-20
Tin (Sn)-Dissolved			98.7		%		80-120	23-SEP-20
Titanium (Ti)-Dissolved			96.6		%		80-120	23-SEP-20
Uranium (U)-Dissolved			99.0		%		80-120	23-SEP-20
Vanadium (V)-Dissolved			101.7		%		80-120	23-SEP-20
Zinc (Zn)-Dissolved			104.9		%		80-120	23-SEP-20
WG3409290-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5232851							
WG3409290-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
WG3409290-4	MS	L2505183-2						
Aluminum (Al)-Dissolved			97.3		%		70-130	23-SEP-20
Antimony (Sb)-Dissolved			107.4		%		70-130	23-SEP-20
Arsenic (As)-Dissolved			101.0		%		70-130	23-SEP-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Bismuth (Bi)-Dissolved			86.4		%		70-130	23-SEP-20
Boron (B)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Cadmium (Cd)-Dissolved			99.9		%		70-130	23-SEP-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Chromium (Cr)-Dissolved			98.5		%		70-130	23-SEP-20
Cobalt (Co)-Dissolved			95.2		%		70-130	23-SEP-20
Copper (Cu)-Dissolved			93.8		%		70-130	23-SEP-20
Iron (Fe)-Dissolved			96.6		%		70-130	23-SEP-20
Lead (Pb)-Dissolved			93.6		%		70-130	23-SEP-20
Lithium (Li)-Dissolved			95.9		%		70-130	23-SEP-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Molybdenum (Mo)-Dissolved			104.4		%		70-130	23-SEP-20
Nickel (Ni)-Dissolved			95.2		%		70-130	23-SEP-20
Potassium (K)-Dissolved			99.2		%		70-130	23-SEP-20
Selenium (Se)-Dissolved			104.4		%		70-130	23-SEP-20
Silicon (Si)-Dissolved			88.7		%		70-130	23-SEP-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Thallium (Tl)-Dissolved			93.5		%		70-130	23-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5232851							
WG3409290-4	MS	L2505183-2						
Tin (Sn)-Dissolved			102.4		%		70-130	23-SEP-20
Titanium (Ti)-Dissolved			96.6		%		70-130	23-SEP-20
Uranium (U)-Dissolved			97.5		%		70-130	23-SEP-20
Vanadium (V)-Dissolved			102.5		%		70-130	23-SEP-20
Zinc (Zn)-Dissolved			106.7		%		70-130	23-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5232236							
WG3409307-14	LCS							
Ammonia as N			99.6		%		85-115	21-SEP-20
WG3409307-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5230801							
WG3408040-3	DUP	L2505183-1						
Nitrite (as N)		0.0045	0.0041		mg/L	9.3	20	18-SEP-20
WG3408040-2	LCS							
Nitrite (as N)			100.2		%		90-110	18-SEP-20
WG3408040-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-SEP-20
WG3408040-4	MS	L2505183-1						
Nitrite (as N)			98.2		%		75-125	18-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5230801							
WG3408040-3	DUP	L2505183-1						
Nitrate (as N)		0.0390	0.0375		mg/L	3.9	20	18-SEP-20
WG3408040-2	LCS							
Nitrate (as N)			99.5		%		90-110	18-SEP-20
WG3408040-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-SEP-20
WG3408040-4	MS	L2505183-1						
Nitrate (as N)			90.8		%		75-125	18-SEP-20
OH-CL								
	Water							
Batch	R5231980							
WG3409502-6	DUP	L2505183-1						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	21-SEP-20
WG3409502-4	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5231980							
WG3409502-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-SEP-20
WG3409502-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-SEP-20
ORP-CL	Water							
Batch	R5230757							
WG3407855-5 CRM		CL-ORP						
ORP			222		mV		210-230	18-SEP-20
P-T-L-COL-CL	Water							
Batch	R5234676							
WG3410736-10 LCS								
Phosphorus (P)-Total			97.5		%		80-120	23-SEP-20
WG3410736-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5234676							
WG3410736-10 LCS								
Phosphorus (P)-Total Dissolved			97.5		%		80-120	23-SEP-20
WG3410736-9 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	23-SEP-20
PH-CL	Water							
Batch	R5231980							
WG3409502-6 DUP		L2505183-1						
pH		8.27	8.25	J	pH	0.02	0.2	21-SEP-20
WG3409502-5 LCS								
pH			7.00		pH		6.9-7.1	21-SEP-20
WG3409502-8 LCS								
pH			7.00		pH		6.9-7.1	21-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5230746							
WG3407781-2 LCS								
Orthophosphate-Dissolved (as P)			100.8		%		80-120	18-SEP-20
WG3407781-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-SEP-20
SO4-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
	Water							
Batch	R5230801							
WG3408040-3	DUP	L2505183-1						
Sulfate (SO4)		71.4	71.4		mg/L	0.0	20	18-SEP-20
WG3408040-2	LCS							
Sulfate (SO4)			99.6		%		90-110	18-SEP-20
WG3408040-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-SEP-20
WG3408040-4	MS	L2505183-1						
Sulfate (SO4)			89.9		%		75-125	18-SEP-20
SOLIDS-TDS-CL								
	Water							
Batch	R5233145							
WG3409473-8	LCS							
Total Dissolved Solids			98.7		%		85-115	22-SEP-20
WG3409473-7	MB							
Total Dissolved Solids			<10		mg/L		10	22-SEP-20
TEH-BC-VA-CL								
	Water							
Batch	R5238576							
WG3412152-2	LCS							
EPH10-19			78.8		%		70-130	25-SEP-20
EPH19-32			76.5		%		70-130	25-SEP-20
WG3412152-1	MB							
EPH10-19			<0.25		mg/L		0.25	25-SEP-20
EPH19-32			<0.25		mg/L		0.25	25-SEP-20
Surrogate: 2-Bromobenzotrifluoride			89.0		%		60-140	25-SEP-20
TEH-WATER-VA-CL								
	Water							
Batch	R5238576							
WG3412152-2	LCS							
TEH (C10-C30)			78.5		%		70-130	25-SEP-20
WG3412152-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	25-SEP-20
Surrogate: 2-Bromobenzotrifluoride			89.0		%		60-140	25-SEP-20
TKN-L-F-CL								
	Water							
Batch	R5231791							
WG3409258-12	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	21-SEP-20
WG3409258-16	LCS							
Total Kjeldahl Nitrogen			95.0		%		75-125	21-SEP-20
WG3409258-2	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5231791							
WG3409258-2	LCS							
Total Kjeldahl Nitrogen			94.1		%		75-125	21-SEP-20
WG3409258-20	LCS							
Total Kjeldahl Nitrogen			97.7		%		75-125	21-SEP-20
WG3409258-4	LCS							
Total Kjeldahl Nitrogen			101.8		%		75-125	21-SEP-20
WG3409258-8	LCS							
Total Kjeldahl Nitrogen			97.6		%		75-125	21-SEP-20
WG3409258-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3409258-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
TSS-L-CL		Water						
Batch	R5233042							
WG3409472-6	LCS							
Total Suspended Solids			89.8		%		85-115	22-SEP-20
WG3409472-5	MB							
Total Suspended Solids			<1.0		mg/L		1	22-SEP-20
TURBIDITY-CL		Water						
Batch	R5230765							
WG3407666-6	LCS							
Turbidity			98.0		%		85-115	18-SEP-20
WG3407666-5	MB							
Turbidity			<0.10		NTU		0.1	18-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	17-SEP-20 14:20	18-SEP-20 14:15	0.25	24	hours	EHTR-FM
	2	17-SEP-20 11:10	18-SEP-20 14:15	0.25	27	hours	EHTR-FM
pH	1	17-SEP-20 14:20	21-SEP-20 14:00	0.25	96	hours	EHTR-FM
	2	17-SEP-20 11:10	21-SEP-20 14:00	0.25	99	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2505183 were received on 18-SEP-20 09:25.

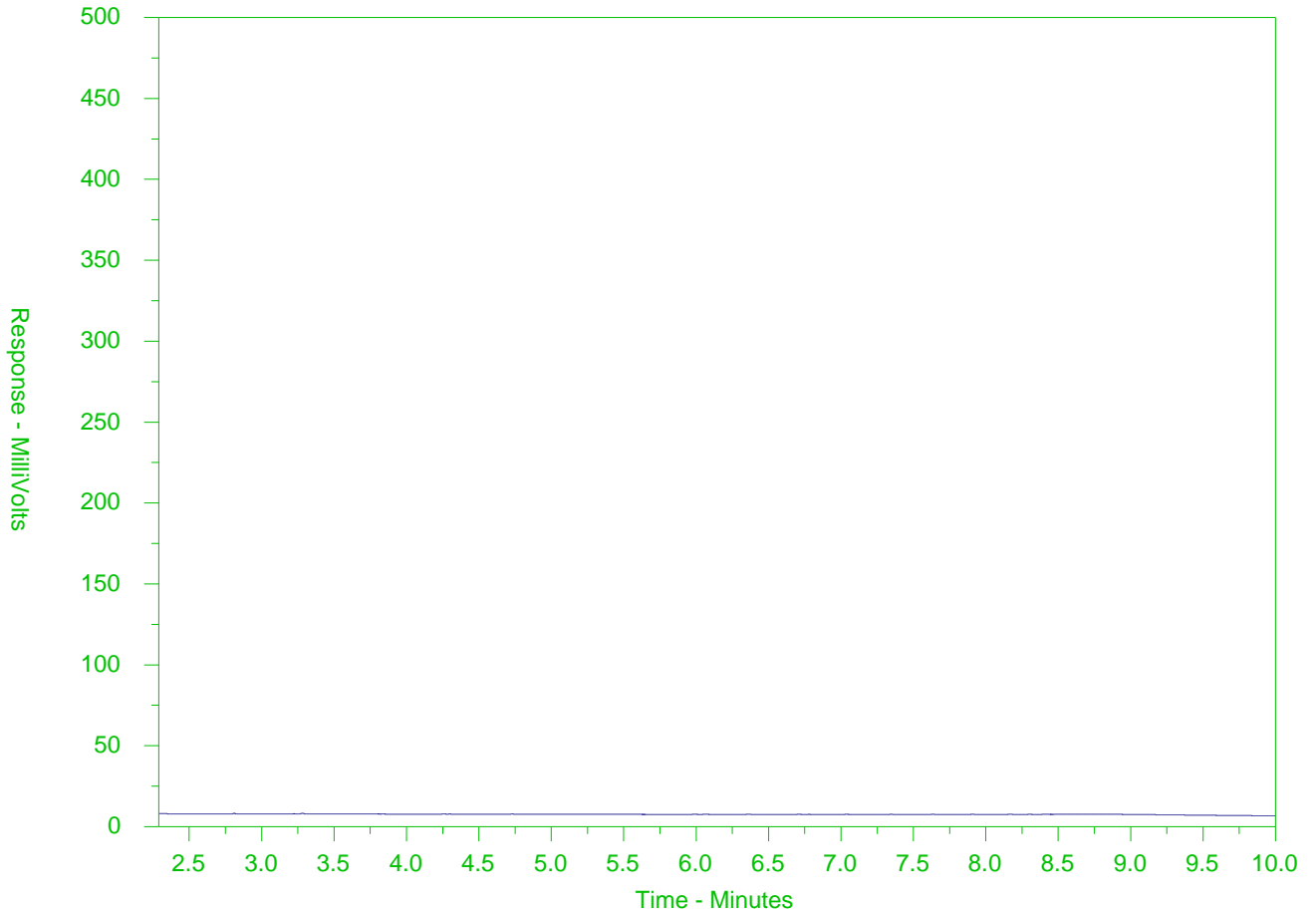
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2505183-1
 Client Sample ID: EV_OCGW_WG_2020-09_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Teck

COC ID: **20200917Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudnyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudnyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3				1			Email 4:	Teck.Lab.Results@barepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VTP000678877			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - Field, Lab, Field & Lab, None



L2505183-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED													
								EMERGENCY	No	Yes	Yes	No	No	No	No	Yes	Yes				
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
EV_ECGW_WG_2020_Q3_NP	EV_ECGW	WG	N	9/17/2020	11:10	G	8	1		1	1		1			1	2			1	
EV_OCGW_WG_2020-09_NP	EV_OCGW	WG	N	9/17/2020	14:20	G	5	1		1	1		1					1			
Total							13														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	September 17, 2020	<i>JKH</i>	09/18 9:25

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	Kimberley Hackett	Mobile #
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	Sampler's Signature	<i>Kimberley Hackett</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>			September 17, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>			

50



Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 22-SEP-20
Report Date: 29-SEP-20 14:05 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2506395
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200921Q3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2506395-1	L2506395-2	L2506395-3	L2506395-4
					WG	WG	WG	WG
		21-SEP-20	12:00	EV_LSGW_WG_20_20_Q3_NP	21-SEP-20	21-SEP-20	21-SEP-20	21-SEP-20
					12:05	12:05	12:10	12:15
					EV_ER5GW_WG_2020_Q3_NP	EV_ER5GW_WG_2020_Q3_NP	EV_ER6GW_WG_2020_Q3_NP	EV_ER7GW_WG_2020_Q3_NP
Grouping	Analyte							
WATER								
Physical Tests	Conductivity (@ 25C) (uS/cm)	1000	1000	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	611	618	<0.50	<0.50			
	pH (pH)	8.02	7.99	5.65	5.91			
	ORP (mV)	356	351	398	363			
	Total Suspended Solids (mg/L)	4.5	2.3	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	638 ^{DLHC}	655 ^{DLHC}	<10	<10			
	Turbidity (NTU)	38.4	34.1	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	5.7	6.1	1.7	1.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	614	589	<1.0	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	614	589	<1.0	<1.0			
	Ammonia as N (mg/L)	0.207	0.173	<0.0050	<0.0050			
	Bicarbonate (HCO3) (mg/L)	749	719	<5.0	<5.0			
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.25 ^{DLHC}	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	8.21 ^{DLHC}	8.20 ^{DLHC}	<0.10	<0.10			
	Fluoride (F) (mg/L)	0.21 ^{DLHC}	0.20 ^{DLHC}	<0.020	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	93.5	98.0	0.0	0.0			
	Nitrate (as N) (mg/L)	0.261 ^{DLHC}	0.230 ^{DLHC}	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.201	0.173	<0.050	<0.050			
	Total Nitrogen (mg/L)	0.462	0.403	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0200	0.0052	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.030 ^{DLM}	0.025 ^{DLM}	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	62.7 ^{DLHC}	62.6 ^{DLHC}	<0.30	<0.30			
	Anion Sum (meq/L)	13.8	13.3	<0.10	<0.10			
	Cation Sum (meq/L)	12.9	13.1	<0.10	<0.10			
	Cation - Anion Balance (%)	-3.4	-1.0	0.0	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.92	2.11	<0.50	<0.50			
	Total Organic Carbon (mg/L)	2.66	4.34	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2506395-1	L2506395-2	L2506395-3	L2506395-4
					WG	WG	WG	WG
		21-SEP-20	12:00	EV_LSGW_WG_2020_Q3_NP	21-SEP-20	21-SEP-20	21-SEP-20	21-SEP-20
					12:05	12:05	12:10	12:15
					EV_ER5GW_WG_2020_Q3_NP	EV_ER5GW_WG_2020_Q3_NP	EV_ER6GW_WG_2020_Q3_NP	EV_ER7GW_WG_2020_Q3_NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00191	0.00191	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.234	0.235	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.048	0.049	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	123	125	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	1.38	1.43	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00025	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	2.69	2.65	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0612	0.0669	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	73.6	74.2	<0.10	<0.10	<0.10	<0.10	<0.10
	Manganese (Mn)-Dissolved (mg/L)	1.14	1.14	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00227	0.00230	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00431	0.00423	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	4.24	4.25	<0.050	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)	0.093	0.075	<0.050	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	5.02	5.05	<0.050	<0.050	<0.050	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	9.95	9.94	<0.050	<0.050	<0.050	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.541	0.533	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	0.000044	0.000044	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00194	0.00193	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0023	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO ₃)	MB-LOR	L2506395-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2506395-3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2506395-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2506395-3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2506395-3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2506395-3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2506395-3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2506395-3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2506395-3
Matrix Spike	Phosphorus (P)-Total	MS-B	L2506395-1, -2, -3, -4
Matrix Spike	Phosphorus (P)-Total Dissolved	MS-B	L2506395-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon			

Reference Information

dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200921Q3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2506395

Report Date: 29-SEP-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5233679							
WG3411248-5	LCS							
Acidity (as CaCO3)			99.5		%		85-115	23-SEP-20
WG3411248-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	23-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5234356							
WG3411325-11	LCS							
Alkalinity, Total (as CaCO3)			102.1		%		85-115	23-SEP-20
WG3411325-10	MB							
Alkalinity, Total (as CaCO3)			1.1	MB-LOR	mg/L		1	23-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5233287							
WG3410906-2	LCS							
Beryllium (Be)-Dissolved			96.4		%		80-120	24-SEP-20
WG3410906-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-SEP-20
BIC-CL								
	Water							
Batch	R5234356							
WG3411325-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5232724							
WG3410376-6	LCS							
Bromide (Br)			106.5		%		85-115	22-SEP-20
WG3410376-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5237982							
WG3412924-2	LCS							
Dissolved Organic Carbon			103.3		%		80-120	25-SEP-20
WG3412924-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-SEP-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5237982							
WG3412924-2 LCS								
Total Organic Carbon			111.8		%		80-120	25-SEP-20
WG3412924-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	25-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5232724							
WG3410376-6 LCS								
Chloride (Cl)			100.1		%		85-115	22-SEP-20
WG3410376-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-SEP-20
CO3-CL	Water							
Batch	R5234356							
WG3411325-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	23-SEP-20
EC-L-PCT-CL	Water							
Batch	R5234356							
WG3411325-11 LCS								
Conductivity (@ 25C)			98.7		%		90-110	23-SEP-20
WG3411325-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	23-SEP-20
F-IC-N-CL	Water							
Batch	R5232724							
WG3410376-6 LCS								
Fluoride (F)			95.1		%		90-110	22-SEP-20
WG3410376-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-SEP-20
HG-D-CVAA-VA	Water							
Batch	R5237978							
WG3412895-2 LCS								
Mercury (Hg)-Dissolved			96.9		%		80-120	26-SEP-20
WG3412895-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-SEP-20
WG3412895-4 MS		L2506395-2						
Mercury (Hg)-Dissolved			97.9		%		70-130	26-SEP-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5233287							
WG3410906-2	LCS							
Aluminum (Al)-Dissolved			98.0		%		80-120	24-SEP-20
Antimony (Sb)-Dissolved			102.6		%		80-120	24-SEP-20
Arsenic (As)-Dissolved			99.1		%		80-120	24-SEP-20
Barium (Ba)-Dissolved			96.5		%		80-120	24-SEP-20
Bismuth (Bi)-Dissolved			106.5		%		80-120	24-SEP-20
Boron (B)-Dissolved			94.6		%		80-120	24-SEP-20
Cadmium (Cd)-Dissolved			95.9		%		80-120	24-SEP-20
Calcium (Ca)-Dissolved			103.1		%		80-120	24-SEP-20
Chromium (Cr)-Dissolved			98.1		%		80-120	24-SEP-20
Cobalt (Co)-Dissolved			97.8		%		80-120	24-SEP-20
Copper (Cu)-Dissolved			98.3		%		80-120	24-SEP-20
Iron (Fe)-Dissolved			93.2		%		80-120	24-SEP-20
Lead (Pb)-Dissolved			101.1		%		80-120	24-SEP-20
Lithium (Li)-Dissolved			93.2		%		80-120	24-SEP-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	24-SEP-20
Manganese (Mn)-Dissolved			96.0		%		80-120	24-SEP-20
Molybdenum (Mo)-Dissolved			101.4		%		80-120	24-SEP-20
Nickel (Ni)-Dissolved			96.6		%		80-120	24-SEP-20
Potassium (K)-Dissolved			103.7		%		80-120	24-SEP-20
Selenium (Se)-Dissolved			101.6		%		80-120	24-SEP-20
Silicon (Si)-Dissolved			104.7		%		60-140	24-SEP-20
Silver (Ag)-Dissolved			102.5		%		80-120	24-SEP-20
Sodium (Na)-Dissolved			105.9		%		80-120	24-SEP-20
Strontium (Sr)-Dissolved			106.0		%		80-120	24-SEP-20
Thallium (Tl)-Dissolved			100.9		%		80-120	24-SEP-20
Tin (Sn)-Dissolved			98.7		%		80-120	24-SEP-20
Titanium (Ti)-Dissolved			99.1		%		80-120	24-SEP-20
Uranium (U)-Dissolved			104.0		%		80-120	24-SEP-20
Vanadium (V)-Dissolved			100.5		%		80-120	24-SEP-20
Zinc (Zn)-Dissolved			100.3		%		80-120	24-SEP-20
WG3410906-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5233287							
WG3410906-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-SEP-20
Batch	R5235341							
WG3411686-2	LCS							
Aluminum (Al)-Dissolved			100.5		%		80-120	25-SEP-20
Antimony (Sb)-Dissolved			99.9		%		80-120	25-SEP-20
Arsenic (As)-Dissolved			102.5		%		80-120	25-SEP-20
Barium (Ba)-Dissolved			101.9		%		80-120	25-SEP-20
Bismuth (Bi)-Dissolved			109.7		%		80-120	25-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5235341							
WG3411686-2	LCS							
Boron (B)-Dissolved			91.4		%		80-120	25-SEP-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	25-SEP-20
Calcium (Ca)-Dissolved			108.8		%		80-120	25-SEP-20
Chromium (Cr)-Dissolved			102.1		%		80-120	25-SEP-20
Cobalt (Co)-Dissolved			99.8		%		80-120	25-SEP-20
Copper (Cu)-Dissolved			102.7		%		80-120	25-SEP-20
Iron (Fe)-Dissolved			102.3		%		80-120	25-SEP-20
Lead (Pb)-Dissolved			103.8		%		80-120	25-SEP-20
Lithium (Li)-Dissolved			98.4		%		80-120	25-SEP-20
Magnesium (Mg)-Dissolved			96.2		%		80-120	25-SEP-20
Manganese (Mn)-Dissolved			104.9		%		80-120	25-SEP-20
Molybdenum (Mo)-Dissolved			103.0		%		80-120	25-SEP-20
Nickel (Ni)-Dissolved			99.3		%		80-120	25-SEP-20
Potassium (K)-Dissolved			103.1		%		80-120	25-SEP-20
Selenium (Se)-Dissolved			102.7		%		80-120	25-SEP-20
Silicon (Si)-Dissolved			103.8		%		60-140	25-SEP-20
Silver (Ag)-Dissolved			103.4		%		80-120	25-SEP-20
Sodium (Na)-Dissolved			103.9		%		80-120	25-SEP-20
Strontium (Sr)-Dissolved			110.4		%		80-120	25-SEP-20
Thallium (Tl)-Dissolved			103.6		%		80-120	25-SEP-20
Tin (Sn)-Dissolved			103.1		%		80-120	25-SEP-20
Titanium (Ti)-Dissolved			99.4		%		80-120	25-SEP-20
Uranium (U)-Dissolved			104.7		%		80-120	25-SEP-20
Vanadium (V)-Dissolved			102.5		%		80-120	25-SEP-20
Zinc (Zn)-Dissolved			96.3		%		80-120	25-SEP-20
WG3411686-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5235341							
WG3411686-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5233201							
WG3410916-36	LCS							
Ammonia as N			101.6		%		85-115	23-SEP-20
WG3410916-35	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5232724							
WG3410376-6	LCS							
Nitrite (as N)			100.4		%		90-110	22-SEP-20
WG3410376-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	22-SEP-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5232724							
WG3410376-6	LCS							
Nitrate (as N)			100.9		%		90-110	22-SEP-20
WG3410376-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-SEP-20
OH-CL	Water							
Batch	R5234356							
WG3411325-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	23-SEP-20
ORP-CL	Water							
Batch	R5232572							
WG3410218-2	CRM	CL-ORP						
ORP			224		mV		210-230	22-SEP-20
P-T-L-COL-CL	Water							
Batch	R5240681							
WG3412539-6	LCS							
Phosphorus (P)-Total			106.7		%		80-120	25-SEP-20
WG3412539-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5240681							
WG3412539-6	LCS							
Phosphorus (P)-Total Dissolved			106.7		%		80-120	25-SEP-20
WG3412539-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	25-SEP-20
PH-CL	Water							
Batch	R5234356							
WG3411325-11	LCS							
pH			6.97		pH		6.9-7.1	23-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5232554							
WG3410038-6	LCS							
Orthophosphate-Dissolved (as P)			105.9		%		80-120	22-SEP-20
WG3410038-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Water								
Batch	R5232724							
WG3410376-6	LCS							
Sulfate (SO4)			100.6		%		90-110	22-SEP-20
WG3410376-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-SEP-20
SOLIDS-TDS-CL								
Water								
Batch	R5236316							
WG3411604-6	DUP	L2506395-4						
Total Dissolved Solids		<10	<10	RPD-NA	mg/L	N/A	20	24-SEP-20
WG3411604-2	LCS							
Total Dissolved Solids			100.1		%		85-115	24-SEP-20
WG3411604-5	LCS							
Total Dissolved Solids			100.0		%		85-115	24-SEP-20
WG3411604-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-SEP-20
WG3411604-4	MB							
Total Dissolved Solids			<10		mg/L		10	24-SEP-20
TKN-L-F-CL								
Water								
Batch	R5236796							
WG3412252-13	LCS							
Total Kjeldahl Nitrogen			91.2		%		75-125	25-SEP-20
WG3412252-17	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	25-SEP-20
WG3412252-19	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	25-SEP-20
WG3412252-2	LCS							
Total Kjeldahl Nitrogen			92.8		%		75-125	25-SEP-20
WG3412252-23	LCS							
Total Kjeldahl Nitrogen			87.7		%		75-125	25-SEP-20
WG3412252-27	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	25-SEP-20
WG3412252-29	LCS							
Total Kjeldahl Nitrogen			88.2		%		75-125	25-SEP-20
WG3412252-31	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	25-SEP-20
WG3412252-6	LCS							
Total Kjeldahl Nitrogen			88.1		%		75-125	25-SEP-20
WG3412252-9	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	25-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5236796							
WG3412252-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-18 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-22 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-26 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-28 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-30 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
WG3412252-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-SEP-20
TSS-L-CL		Water						
Batch	R5236396							
WG3411638-2 LCS								
Total Suspended Solids			104.4		%		85-115	24-SEP-20
WG3411638-1 MB								
Total Suspended Solids			<1.0		mg/L		1	24-SEP-20
TURBIDITY-CL		Water						
Batch	R5232534							
WG3410166-6 LCS								
Turbidity			98.5		%		85-115	22-SEP-20
WG3410166-5 MB								
Turbidity			<0.10		NTU		0.1	22-SEP-20

Quality Control Report

Workorder: L2506395

Report Date: 29-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2506395

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	21-SEP-20 12:00	22-SEP-20 17:45	0.25	30	hours	EHTR-FM
	2	21-SEP-20 12:05	22-SEP-20 17:45	0.25	30	hours	EHTR-FM
	3	21-SEP-20 12:10	22-SEP-20 17:45	0.25	30	hours	EHTR-FM
	4	21-SEP-20 12:15	22-SEP-20 17:45	0.25	30	hours	EHTR-FM
pH	1	21-SEP-20 12:00	23-SEP-20 14:00	0.25	50	hours	EHTR-FM
	2	21-SEP-20 12:05	23-SEP-20 14:00	0.25	50	hours	EHTR-FM
	3	21-SEP-20 12:10	23-SEP-20 14:00	0.25	50	hours	EHTR-FM
	4	21-SEP-20 12:15	23-SEP-20 14:00	0.25	50	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2506395 were received on 22-SEP-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: **20200921Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood		Province	BC		City	Calgary		Province	AB		
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada		
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_LSGW_WG_2020_Q3_NP	EV_LSGW	WG	N	9/21/2020	12:00	G	5	1		1	1		1					1	
EV_ER5GW_WG_2020_Q3_NP	EV_ER5GW	WG	N	9/21/2020	12:05	G	5	1		1	1		1					1	
EV_ER6GW_WG_2020_Q3_NP	EV_ER6GW	WG	N	9/21/2020	12:10	G	5	1		1	1		1					1	
EV_ER7GW_WG_2020_Q3_NP	EV_ER7GW	WG	N	9/21/2020	12:15	G	5	1		1	1		1					1	
							Total	20											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	September 21, 2020	<i>JG</i>	09/22 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	K. Allen/J. Gravelle		<i>K. Allen</i>	September 21, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Cameron Griffin
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 24-SEP-20
Report Date: 01-OCT-20 18:08 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2507821
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200923WFQ3GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2507821-1 WG 23-SEP-20 14:00 EV_WF_SW_WG_ 2020_Q3_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	874			
	Hardness (as CaCO3) (mg/L)	771			
	pH (pH)	7.92			
	ORP (mV)	433			
	Total Suspended Solids (mg/L)	27.9			
	Total Dissolved Solids (mg/L)	813	DLHC		
	Turbidity (NTU)	61.4			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	366			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	366			
	Ammonia as N (mg/L)	0.210			
	Bicarbonate (HCO3) (mg/L)	355	DLHC		
	Bromide (Br) (mg/L)	<0.25			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	2.78	DLHC		
	Fluoride (F) (mg/L)	0.32	DLHC		
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	111			
	Nitrate (as N) (mg/L)	0.030	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	0.163			
	Total Nitrogen (mg/L)	0.193			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0062			
	Sulfate (SO4) (mg/L)	345	DLHC		
	Anion Sum (meq/L)	14.6			
	Cation Sum (meq/L)	16.2			
	Cation - Anion Balance (%)	5.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.00			
	Total Organic Carbon (mg/L)	1.28			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2507821-1 WG 23-SEP-20 14:00 EV_WF_SW_WG_ 2020_Q3_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00029			
	Barium (Ba)-Dissolved (mg/L)	0.0176			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013			
	Cadmium (Cd)-Dissolved (ug/L)	0.0054			
	Calcium (Ca)-Dissolved (mg/L)	158			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	4.85			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	8.58			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0270			
	Magnesium (Mg)-Dissolved (mg/L)	91.3			
	Manganese (Mn)-Dissolved (mg/L)	0.470			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00115			
	Nickel (Ni)-Dissolved (mg/L)	0.00710			
	Potassium (K)-Dissolved (mg/L)	3.00			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	1.78			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.34			
	Strontium (Sr)-Dissolved (mg/L)	0.150			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00315			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2507821-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2507821-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2507821-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2507821-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2507821-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2507821-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2507821-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2507821-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2507821-1
Matrix Spike	Ammonia as N	MS-B	L2507821-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200923WFQ3GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2507821

Report Date: 01-OCT-20

Page 1 of 10

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5241948							
WG3414319-5	LCS							
Acidity (as CaCO3)			98.2		%		85-115	26-SEP-20
WG3414319-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	26-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5238157							
WG3412988-8	LCS							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	25-SEP-20
WG3412988-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-SEP-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5240798							
WG3412856-2	LCS							
Beryllium (Be)-Dissolved			101.4		%		80-120	29-SEP-20
WG3412856-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-SEP-20
BIC-CL								
	Water							
Batch	R5238157							
WG3412988-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	25-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5235420							
WG3412160-2	LCS							
Bromide (Br)			99.7		%		85-115	24-SEP-20
WG3412160-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5239936							
WG3413576-6	LCS							
Dissolved Organic Carbon			92.1		%		80-120	27-SEP-20
WG3413576-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5239936							
WG3413576-6	LCS							
Total Organic Carbon			96.1		%		80-120	27-SEP-20
WG3413576-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-20
CL-L-IC-N-CL	Water							
Batch	R5235420							
WG3412160-2	LCS							
Chloride (Cl)			100.6		%		85-115	24-SEP-20
WG3412160-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	24-SEP-20
CO3-CL	Water							
Batch	R5238157							
WG3412988-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	25-SEP-20
EC-L-PCT-CL	Water							
Batch	R5238157							
WG3412988-8	LCS							
Conductivity (@ 25C)			95.2		%		90-110	25-SEP-20
WG3412988-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-SEP-20
F-IC-N-CL	Water							
Batch	R5235420							
WG3412160-2	LCS							
Fluoride (F)			99.8		%		90-110	24-SEP-20
WG3412160-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-SEP-20
HG-D-CVAA-VA	Water							
Batch	R5241563							
WG3414183-7	DUP	L2507821-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	29-SEP-20
WG3414183-6	LCS							
Mercury (Hg)-Dissolved			99.6		%		80-120	29-SEP-20
WG3414183-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	29-SEP-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5240798							
WG3412856-2	LCS							
Aluminum (Al)-Dissolved			99.3		%		80-120	29-SEP-20
Antimony (Sb)-Dissolved			101.2		%		80-120	29-SEP-20
Arsenic (As)-Dissolved			102.7		%		80-120	29-SEP-20
Barium (Ba)-Dissolved			105.1		%		80-120	29-SEP-20
Bismuth (Bi)-Dissolved			112.0		%		80-120	29-SEP-20
Boron (B)-Dissolved			94.9		%		80-120	29-SEP-20
Cadmium (Cd)-Dissolved			99.97		%		80-120	29-SEP-20
Calcium (Ca)-Dissolved			107.1		%		80-120	29-SEP-20
Chromium (Cr)-Dissolved			104.2		%		80-120	29-SEP-20
Cobalt (Co)-Dissolved			103.6		%		80-120	29-SEP-20
Copper (Cu)-Dissolved			101.3		%		80-120	29-SEP-20
Iron (Fe)-Dissolved			92.2		%		80-120	29-SEP-20
Lead (Pb)-Dissolved			99.9		%		80-120	29-SEP-20
Lithium (Li)-Dissolved			104.4		%		80-120	29-SEP-20
Magnesium (Mg)-Dissolved			105.9		%		80-120	29-SEP-20
Manganese (Mn)-Dissolved			106.2		%		80-120	29-SEP-20
Molybdenum (Mo)-Dissolved			99.96		%		80-120	29-SEP-20
Nickel (Ni)-Dissolved			102.0		%		80-120	29-SEP-20
Potassium (K)-Dissolved			105.5		%		80-120	29-SEP-20
Selenium (Se)-Dissolved			101.8		%		80-120	29-SEP-20
Silicon (Si)-Dissolved			101.8		%		60-140	29-SEP-20
Silver (Ag)-Dissolved			102.6		%		80-120	29-SEP-20
Sodium (Na)-Dissolved			109.5		%		80-120	29-SEP-20
Strontium (Sr)-Dissolved			101.8		%		80-120	29-SEP-20
Thallium (Tl)-Dissolved			104.8		%		80-120	29-SEP-20
Tin (Sn)-Dissolved			100.4		%		80-120	29-SEP-20
Titanium (Ti)-Dissolved			96.8		%		80-120	29-SEP-20
Uranium (U)-Dissolved			99.4		%		80-120	29-SEP-20
Vanadium (V)-Dissolved			102.9		%		80-120	29-SEP-20
Zinc (Zn)-Dissolved			100.2		%		80-120	29-SEP-20
WG3412856-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5240798							
WG3412856-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-SEP-20
NH3-L-F-CL								
	Water							
Batch	R5240807							
WG3412692-15	DUP	L2507821-1						
Ammonia as N		0.210	0.214		mg/L	2.1	20	25-SEP-20
WG3412692-14	LCS							
Ammonia as N			94.4		%		85-115	25-SEP-20
WG3412692-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5240807							
WG3412692-16 MS		L2507821-1						
Ammonia as N			N/A	MS-B	%		-	25-SEP-20
NO2-L-IC-N-CL	Water							
Batch	R5235420							
WG3412160-2 LCS								
Nitrite (as N)			102.1		%		90-110	24-SEP-20
WG3412160-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	24-SEP-20
NO3-L-IC-N-CL	Water							
Batch	R5235420							
WG3412160-2 LCS								
Nitrate (as N)			100.6		%		90-110	24-SEP-20
WG3412160-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	24-SEP-20
OH-CL	Water							
Batch	R5238157							
WG3412988-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	25-SEP-20
ORP-CL	Water							
Batch	R5235318							
WG3411879-9 CRM		CL-ORP						
ORP			221		mV		210-230	24-SEP-20
P-T-L-COL-CL	Water							
Batch	R5242297							
WG3414535-6 LCS								
Phosphorus (P)-Total			99.96		%		80-120	29-SEP-20
WG3414535-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-SEP-20
P-TD-L-COL-CL	Water							
Batch	R5242297							
WG3414535-6 LCS								
Phosphorus (P)-Total Dissolved			99.96		%		80-120	29-SEP-20
WG3414535-5 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	29-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5238157							
WG3412988-8	LCS							
pH			7.00		pH		6.9-7.1	25-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5235320							
WG3411836-6	LCS							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	24-SEP-20
WG3411836-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-SEP-20
SO4-IC-N-CL	Water							
Batch	R5235420							
WG3412160-2	LCS							
Sulfate (SO4)			99.1		%		90-110	24-SEP-20
WG3412160-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5241991							
WG3413462-9	DUP	L2507821-1						
Total Dissolved Solids		813	816		mg/L	0.4	20	28-SEP-20
WG3413462-8	LCS							
Total Dissolved Solids			100.3		%		85-115	28-SEP-20
WG3413462-7	MB							
Total Dissolved Solids			<10		mg/L		10	28-SEP-20
TKN-L-F-CL	Water							
Batch	R5238419							
WG3412974-12	LCS							
Total Kjeldahl Nitrogen			95.1		%		75-125	26-SEP-20
WG3412974-14	LCS							
Total Kjeldahl Nitrogen			90.8		%		75-125	26-SEP-20
WG3412974-16	LCS							
Total Kjeldahl Nitrogen			103.4		%		75-125	26-SEP-20
WG3412974-18	LCS							
Total Kjeldahl Nitrogen			89.2		%		75-125	27-SEP-20
WG3412974-2	LCS							
Total Kjeldahl Nitrogen			95.7		%		75-125	26-SEP-20
WG3412974-20	LCS							
Total Kjeldahl Nitrogen			92.4		%		75-125	27-SEP-20
WG3412974-22	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5238419							
WG3412974-22	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	27-SEP-20
WG3412974-4	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	26-SEP-20
WG3412974-6	LCS							
Total Kjeldahl Nitrogen			89.3		%		75-125	26-SEP-20
WG3412974-8	LCS							
Total Kjeldahl Nitrogen			87.4		%		75-125	26-SEP-20
WG3412974-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3412974-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3412974-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-20
WG3412974-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
WG3412974-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-20
TSS-L-CL		Water						
Batch	R5241919							
WG3413957-2	LCS							
Total Suspended Solids			98.0		%		85-115	28-SEP-20
WG3413957-1	MB							
Total Suspended Solids			<1.0		mg/L		1	28-SEP-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5235322							
WG3411622-5	LCS							
Turbidity			97.0		%		85-115	24-SEP-20
WG3411622-4	MB							
Turbidity			<0.10		NTU		0.1	24-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	23-SEP-20 14:00	24-SEP-20 19:17	0.25	29	hours	EHTR-FM
pH	1	23-SEP-20 14:00	25-SEP-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2507821 were received on 24-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 29-SEP-20
Report Date: 06-OCT-20 16:58 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2509804
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20200928q3gw
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2509804-1 WG 28-SEP-20 09:15 EV_MW_MCGWA_ WG_2020_Q3_NP	L2509804-2 WG 28-SEP-20 09:10 EV_MW_MCGWB_ WG_2020_Q3_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	641	762		
	Hardness (as CaCO3) (mg/L)	405	412		
	pH (pH)	7.86	8.12		
	ORP (mV)	423	408		
	Total Suspended Solids (mg/L)	11.3	<1.0		
	Total Dissolved Solids (mg/L)	434 ^{DLHC}	461 ^{DLHC}		
	Turbidity (NTU)	13.2	0.17		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	6.9	3.2		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	272	335		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	272	335		
	Ammonia as N (mg/L)	0.389	0.251		
	Bicarbonate (HCO3) (mg/L)	332	408		
	Bromide (Br) (mg/L)	0.207	0.171		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	38.5	36.9		
	Fluoride (F) (mg/L)	0.178	0.179		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	121 ^{RRV}	103		
	Nitrate (as N) (mg/L)	0.996	2.60		
	Nitrite (as N) (mg/L)	0.0053	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.668	0.766		
	Total Nitrogen (mg/L)	1.67	3.37		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012	0.0062		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0056	0.0036 ^{RRV}		
	Phosphorus (P)-Total (mg/L)	0.0132	0.0060 ^{RRV}		
	Sulfate (SO4) (mg/L)	32.1	38.0		
	Anion Sum (meq/L)	7.28	8.72		
Cation Sum (meq/L)	8.80	8.98			
Cation - Anion Balance (%)	9.5	1.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.87	0.73		
	Total Organic Carbon (mg/L)	0.81	0.75		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0399	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2509804-1 WG 28-SEP-20 09:15 EV_MW_MCGWA_ WG_2020_Q3_NP	L2509804-2 WG 28-SEP-20 09:10 EV_MW_MCGWB_ WG_2020_Q3_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00030	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00026	0.00013		
	Barium (Ba)-Dissolved (mg/L)	0.461	0.258		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.032	0.036		
	Cadmium (Cd)-Dissolved (ug/L)	0.0250	0.0688		
	Calcium (Ca)-Dissolved (mg/L)	102	106		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.22	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00046		
	Iron (Fe)-Dissolved (mg/L)	0.083	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.000060	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0226	0.0168		
	Magnesium (Mg)-Dissolved (mg/L)	36.3	35.9		
	Manganese (Mn)-Dissolved (mg/L)	0.0433	0.00069		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00311	0.00318		
	Nickel (Ni)-Dissolved (mg/L)	0.00150	0.00139		
	Potassium (K)-Dissolved (mg/L)	2.25	2.65		
	Selenium (Se)-Dissolved (ug/L)	1.23	1.62		
	Silicon (Si)-Dissolved (mg/L)	5.06	5.00		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	14.0	15.2		
	Strontium (Sr)-Dissolved (mg/L)	0.457	0.334		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000015		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000685	0.000692		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0023	0.0012		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2509804-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2509804-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2509804-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2509804-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2509804-1, -2
Matrix Spike	Ammonia as N	MS-B	L2509804-1, -2
Matrix Spike	Nitrate (as N)	MS-B	L2509804-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20200928q3gw

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2509804

Report Date: 06-OCT-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5242595							
WG3415492-11	LCS							
Acidity (as CaCO3)			98.8		%		85-115	30-SEP-20
WG3415492-10	MB							
Acidity (as CaCO3)			1.6		mg/L		2	30-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5243429							
WG3416438-5	LCS							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	01-OCT-20
WG3416438-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5243946							
WG3416716-3	DUP	L2509804-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-OCT-20
WG3416716-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	01-OCT-20
WG3416716-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-OCT-20
WG3416716-4	MS	L2509804-2						
Beryllium (Be)-Dissolved			95.9		%		70-130	01-OCT-20
BIC-CL								
	Water							
Batch	R5243429							
WG3416438-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	01-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5242320							
WG3415170-11	DUP	L2509804-2						
Bromide (Br)		0.171	0.164		mg/L	4.2	20	29-SEP-20
WG3415170-10	LCS							
Bromide (Br)			100.1		%		85-115	29-SEP-20
WG3415170-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	29-SEP-20
WG3415170-12	MS	L2509804-2						
Bromide (Br)			101.7		%		75-125	29-SEP-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5244612							
WG3417754-7	DUP	L2509804-2						
Dissolved Organic Carbon		0.73	0.65		mg/L	11	20	02-OCT-20
WG3417754-6	LCS							
Dissolved Organic Carbon			98.9		%		80-120	02-OCT-20
WG3417754-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-OCT-20
WG3417754-8	MS	L2509804-2						
Dissolved Organic Carbon			112.4		%		70-130	02-OCT-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5244612							
WG3417754-7	DUP	L2509804-2						
Total Organic Carbon		0.75	0.59	J	mg/L	0.16	1	02-OCT-20
WG3417754-6	LCS							
Total Organic Carbon			100.4		%		80-120	02-OCT-20
WG3417754-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-OCT-20
WG3417754-8	MS	L2509804-2						
Total Organic Carbon			113.0		%		70-130	02-OCT-20
CL-L-IC-N-CL								
	Water							
Batch	R5242320							
WG3415170-11	DUP	L2509804-2						
Chloride (Cl)		36.9	36.9		mg/L	0.1	20	29-SEP-20
WG3415170-10	LCS							
Chloride (Cl)			99.8		%		85-115	29-SEP-20
WG3415170-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	29-SEP-20
WG3415170-12	MS	L2509804-2						
Chloride (Cl)			107.3		%		75-125	29-SEP-20
CO3-CL								
	Water							
Batch	R5243429							
WG3416438-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	01-OCT-20
EC-L-PCT-CL								
	Water							
Batch	R5243429							
WG3416438-5	LCS							
Conductivity (@ 25C)			95.1		%		90-110	01-OCT-20
WG3416438-4	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL		Water						
Batch	R5243429							
WG3416438-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-OCT-20
F-IC-N-CL		Water						
Batch	R5242320							
WG3415170-11	DUP	L2509804-2						
Fluoride (F)		0.179	0.179		mg/L	0.3	20	29-SEP-20
WG3415170-10	LCS							
Fluoride (F)			96.1		%		90-110	29-SEP-20
WG3415170-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	29-SEP-20
WG3415170-12	MS	L2509804-2						
Fluoride (F)			104.9		%		75-125	29-SEP-20
HG-D-CVAA-VA		Water						
Batch	R5244475							
WG3417636-6	LCS							
Mercury (Hg)-Dissolved			96.8		%		80-120	03-OCT-20
WG3417636-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-OCT-20
WG3417636-8	MS	L2509804-2						
Mercury (Hg)-Dissolved			99.0		%		70-130	03-OCT-20
MET-D-CCMS-VA		Water						
Batch	R5243946							
WG3416716-3	DUP	L2509804-1						
Aluminum (Al)-Dissolved		0.0399	0.0343		mg/L	15	20	01-OCT-20
Antimony (Sb)-Dissolved		0.00030	0.00031		mg/L	4.8	20	01-OCT-20
Arsenic (As)-Dissolved		0.00026	0.00025		mg/L	3.9	20	01-OCT-20
Barium (Ba)-Dissolved		0.461	0.454		mg/L	1.6	20	01-OCT-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-OCT-20
Boron (B)-Dissolved		0.032	0.030		mg/L	6.3	20	01-OCT-20
Cadmium (Cd)-Dissolved		0.0000250	0.0000203	J	mg/L	0.000004	0.00001	01-OCT-20
Calcium (Ca)-Dissolved		102	97.6		mg/L	4.7	20	01-OCT-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-20
Cobalt (Co)-Dissolved		0.00022	0.00024		mg/L	5.2	20	01-OCT-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-OCT-20
Iron (Fe)-Dissolved		0.083	0.076		mg/L	8.0	20	01-OCT-20
Lead (Pb)-Dissolved		0.000060	0.000056		mg/L	6.8	20	01-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5243946							
WG3416716-3	DUP	L2509804-1						
Lithium (Li)-Dissolved		0.0226	0.0213		mg/L	6.0	20	01-OCT-20
Magnesium (Mg)-Dissolved		36.3	36.1		mg/L	0.5	20	01-OCT-20
Manganese (Mn)-Dissolved		0.0433	0.0433		mg/L	0.0	20	01-OCT-20
Molybdenum (Mo)-Dissolved		0.00311	0.00296		mg/L	4.9	20	01-OCT-20
Nickel (Ni)-Dissolved		0.00150	0.00146		mg/L	3.1	20	01-OCT-20
Potassium (K)-Dissolved		2.25	2.21		mg/L	1.5	20	01-OCT-20
Selenium (Se)-Dissolved		0.00123	0.00126		mg/L	2.4	20	01-OCT-20
Silicon (Si)-Dissolved		5.06	4.96		mg/L	2.0	20	01-OCT-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-OCT-20
Sodium (Na)-Dissolved		14.0	14.0		mg/L	0.4	20	01-OCT-20
Strontium (Sr)-Dissolved		0.457	0.433		mg/L	5.4	20	01-OCT-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-OCT-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-OCT-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-OCT-20
Uranium (U)-Dissolved		0.000685	0.000669		mg/L	2.4	20	01-OCT-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-OCT-20
Zinc (Zn)-Dissolved		0.0023	0.0019	J	mg/L	0.0004	0.002	01-OCT-20
WG3416716-2								
LCS								
Aluminum (Al)-Dissolved			100.3		%		80-120	01-OCT-20
Antimony (Sb)-Dissolved			97.7		%		80-120	01-OCT-20
Arsenic (As)-Dissolved			98.1		%		80-120	01-OCT-20
Barium (Ba)-Dissolved			103.4		%		80-120	01-OCT-20
Bismuth (Bi)-Dissolved			109.5		%		80-120	01-OCT-20
Boron (B)-Dissolved			88.8		%		80-120	01-OCT-20
Cadmium (Cd)-Dissolved			98.2		%		80-120	01-OCT-20
Calcium (Ca)-Dissolved			98.5		%		80-120	01-OCT-20
Chromium (Cr)-Dissolved			103.6		%		80-120	01-OCT-20
Cobalt (Co)-Dissolved			99.0		%		80-120	01-OCT-20
Copper (Cu)-Dissolved			96.3		%		80-120	01-OCT-20
Iron (Fe)-Dissolved			93.9		%		80-120	01-OCT-20
Lead (Pb)-Dissolved			99.2		%		80-120	01-OCT-20
Lithium (Li)-Dissolved			97.6		%		80-120	01-OCT-20
Magnesium (Mg)-Dissolved			102.8		%		80-120	01-OCT-20
Manganese (Mn)-Dissolved			103.5		%		80-120	01-OCT-20



Quality Control Report

Workorder: L2509804

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5243946							
WG3416716-2	LCS							
Molybdenum (Mo)-Dissolved			95.8		%		80-120	01-OCT-20
Nickel (Ni)-Dissolved			99.0		%		80-120	01-OCT-20
Potassium (K)-Dissolved			102.6		%		80-120	01-OCT-20
Selenium (Se)-Dissolved			93.4		%		80-120	01-OCT-20
Silicon (Si)-Dissolved			96.6		%		60-140	01-OCT-20
Silver (Ag)-Dissolved			94.6		%		80-120	01-OCT-20
Sodium (Na)-Dissolved			99.8		%		80-120	01-OCT-20
Strontium (Sr)-Dissolved			99.8		%		80-120	01-OCT-20
Thallium (Tl)-Dissolved			100.6		%		80-120	01-OCT-20
Tin (Sn)-Dissolved			97.6		%		80-120	01-OCT-20
Titanium (Ti)-Dissolved			96.7		%		80-120	01-OCT-20
Uranium (U)-Dissolved			95.2		%		80-120	01-OCT-20
Vanadium (V)-Dissolved			101.6		%		80-120	01-OCT-20
Zinc (Zn)-Dissolved			100.4		%		80-120	01-OCT-20
WG3416716-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5243946							
WG3416716-1	MB	NP						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-OCT-20
WG3416716-4	MS	L2509804-2						
Aluminum (Al)-Dissolved			100.4		%		70-130	01-OCT-20
Antimony (Sb)-Dissolved			102.9		%		70-130	01-OCT-20
Arsenic (As)-Dissolved			107.4		%		70-130	01-OCT-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	01-OCT-20
Bismuth (Bi)-Dissolved			90.6		%		70-130	01-OCT-20
Boron (B)-Dissolved			82.5		%		70-130	01-OCT-20
Cadmium (Cd)-Dissolved			101.1		%		70-130	01-OCT-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	01-OCT-20
Chromium (Cr)-Dissolved			102.0		%		70-130	01-OCT-20
Cobalt (Co)-Dissolved			97.9		%		70-130	01-OCT-20
Copper (Cu)-Dissolved			95.0		%		70-130	01-OCT-20
Iron (Fe)-Dissolved			101.3		%		70-130	01-OCT-20
Lead (Pb)-Dissolved			95.9		%		70-130	01-OCT-20
Lithium (Li)-Dissolved			100.3		%		70-130	01-OCT-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	01-OCT-20
Manganese (Mn)-Dissolved			102.5		%		70-130	01-OCT-20
Molybdenum (Mo)-Dissolved			94.9		%		70-130	01-OCT-20
Nickel (Ni)-Dissolved			96.3		%		70-130	01-OCT-20
Potassium (K)-Dissolved			100.1		%		70-130	01-OCT-20
Selenium (Se)-Dissolved			109.7		%		70-130	01-OCT-20
Silicon (Si)-Dissolved			90.5		%		70-130	01-OCT-20
Silver (Ag)-Dissolved			96.2		%		70-130	01-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5243946							
WG3416716-4	MS	L2509804-2						
Sodium (Na)-Dissolved			N/A	MS-B	%		-	01-OCT-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	01-OCT-20
Thallium (Tl)-Dissolved			95.4		%		70-130	01-OCT-20
Tin (Sn)-Dissolved			99.7		%		70-130	01-OCT-20
Titanium (Ti)-Dissolved			101.7		%		70-130	01-OCT-20
Uranium (U)-Dissolved			96.1		%		70-130	01-OCT-20
Vanadium (V)-Dissolved			104.0		%		70-130	01-OCT-20
Zinc (Zn)-Dissolved			102.4		%		70-130	01-OCT-20
NH3-L-F-CL								
	Water							
Batch	R5243440							
WG3415781-19	DUP	L2509804-2						
Ammonia as N		0.251	0.255		mg/L	1.5	20	30-SEP-20
WG3415781-18	LCS							
Ammonia as N			101.7		%		85-115	30-SEP-20
WG3415781-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	30-SEP-20
WG3415781-20	MS	L2509804-2						
Ammonia as N			N/A	MS-B	%		-	30-SEP-20
NO2-L-IC-N-CL								
	Water							
Batch	R5242320							
WG3415170-11	DUP	L2509804-2						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-SEP-20
WG3415170-10	LCS							
Nitrite (as N)			101.3		%		90-110	29-SEP-20
WG3415170-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-SEP-20
WG3415170-12	MS	L2509804-2						
Nitrite (as N)			110.2		%		75-125	29-SEP-20
NO3-L-IC-N-CL								
	Water							
Batch	R5242320							
WG3415170-11	DUP	L2509804-2						
Nitrate (as N)		2.60	2.60		mg/L	0.2	20	29-SEP-20
WG3415170-10	LCS							
Nitrate (as N)			100.3		%		90-110	29-SEP-20
WG3415170-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	29-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch R5242320								
WG3415170-12 MS		L2509804-2						
Nitrate (as N)			N/A	MS-B	%		-	29-SEP-20
OH-CL	Water							
Batch R5243429								
WG3416438-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	01-OCT-20
ORP-CL	Water							
Batch R5242959								
WG3415797-4 CRM		CL-ORP						
ORP			219		mV		210-230	30-SEP-20
P-T-L-COL-CL	Water							
Batch R5245759								
WG3418434-18 LCS								
Phosphorus (P)-Total			94.5		%		80-120	05-OCT-20
WG3418434-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-20
P-TD-L-COL-CL	Water							
Batch R5245759								
WG3418434-18 LCS								
Phosphorus (P)-Total Dissolved			94.5		%		80-120	05-OCT-20
WG3418434-17 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	05-OCT-20
PH-CL	Water							
Batch R5243429								
WG3416438-5 LCS								
pH			6.98		pH		6.9-7.1	01-OCT-20
PO4-DO-L-COL-CL	Water							
Batch R5242732								
WG3414725-19 LCS								
Orthophosphate-Dissolved (as P)			107.0		%		80-120	29-SEP-20
WG3414725-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-SEP-20
WG3414725-21 MS		L2509804-1						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch	R5242732							
WG3414725-21	MS	L2509804-1	85.7		%		70-130	29-SEP-20
Orthophosphate-Dissolved (as P)								
SO4-IC-N-CL Water								
Batch	R5242320							
WG3415170-11	DUP	L2509804-2	38.0		mg/L	0.1	20	29-SEP-20
Sulfate (SO4)								
WG3415170-10	LCS		100.4		%		90-110	29-SEP-20
Sulfate (SO4)								
WG3415170-9	MB		<0.30		mg/L		0.3	29-SEP-20
Sulfate (SO4)								
WG3415170-12	MS	L2509804-2	106.6		%		75-125	29-SEP-20
Sulfate (SO4)								
SOLIDS-TDS-CL Water								
Batch	R5244262							
WG3416061-8	LCS		100.7		%		85-115	01-OCT-20
Total Dissolved Solids								
WG3416061-7	MB		<10		mg/L		10	01-OCT-20
Total Dissolved Solids								
TKN-L-F-CL Water								
Batch	R5243418							
WG3416195-10	LCS		96.9		%		75-125	01-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-16	LCS		92.8		%		75-125	02-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-2	LCS		93.7		%		75-125	01-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-22	LCS		82.1		%		75-125	02-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-24	LCS		80.6		%		75-125	02-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-4	LCS		93.7		%		75-125	01-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-6	LCS		100.7		%		75-125	01-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-8	LCS		96.7		%		75-125	01-OCT-20
Total Kjeldahl Nitrogen								
WG3416195-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5243418							
WG3416195-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-OCT-20
WG3416195-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3416195-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3416195-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3416195-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-OCT-20
WG3416195-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-OCT-20
WG3416195-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-OCT-20
WG3416195-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-OCT-20
TSS-L-CL		Water						
Batch	R5244199							
WG3415632-6	LCS							
Total Suspended Solids			98.3		%		85-115	01-OCT-20
WG3415632-5	MB							
Total Suspended Solids			<1.0		mg/L		1	01-OCT-20
TURBIDITY-CL		Water						
Batch	R5242951							
WG3415211-2	LCS							
Turbidity			97.5		%		85-115	30-SEP-20
WG3415211-1	MB							
Turbidity			<0.10		NTU		0.1	30-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	28-SEP-20 09:15	30-SEP-20 14:00	0.25	53	hours	EHTR-FM
	2	28-SEP-20 09:10	30-SEP-20 14:00	0.25	53	hours	EHTR-FM
pH	1	28-SEP-20 09:15	01-OCT-20 14:00	0.25	77	hours	EHTR-FM
	2	28-SEP-20 09:10	01-OCT-20 14:00	0.25	77	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2509804 were received on 29-SEP-20 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20200928Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	annie.lamvee@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESENCE	No	Yes	Yes	No	No	No	No	No	Yes	Yes		
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_MCGWA_WG_2020_Q3_NP	EV_MW_MCGWA	WG	N	9/28/2020	9:15	G	5		1	1	1	1					1			
EV_MW_MCGWB_WG_2020_Q3_NP	EV_MW_MCGWB	WG	N	9/28/2020	9:10	G	5		1	1	1	1					1			
							Total	10												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	28-Sep-20	<i>[Signature]</i>	9/29/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	September 28, 2020



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 30-SEP-20
Report Date: 22-JAN-21 16:27 (MT)
Version: FINAL REV. 3

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2510458
Project P.O. #: 672225
Job Reference: GREENHILLS OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510458-1 WG 29-SEP-20 14:25 GH_MW_BG1B_W G_2020_09_29_NP	L2510458-2 WG 29-SEP-20 11:00 GH_MW_BG1C_W G_2020_09_29_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	535	590		
	Hardness (as CaCO3) (mg/L)	291	274		
	pH (pH)	8.12	8.25		
	ORP (mV)	274	313		
	Total Suspended Solids (mg/L)	89.1	16.0		
	Total Dissolved Solids (mg/L)	329 ^{DLHC}	353 ^{DLHC}		
	Turbidity (NTU)	71.5	23.2		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.1	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	282	288		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	282	288		
	Ammonia as N (mg/L)	0.150	0.164		
	Bicarbonate (HCO3) (mg/L)	344	352		
	Bromide (Br) (mg/L)	<0.050	0.112		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	4.16	5.50		
	Fluoride (F) (mg/L)	0.353	0.367		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	105	103		
	Nitrate and Nitrite (as N) (mg/L)	0.0124	0.0068		
	Nitrate (as N) (mg/L)	0.0124	0.0068		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.391	0.339		
	Total Nitrogen (mg/L)	0.403	0.346		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0537	0.0130		
	Sulfate (SO4) (mg/L)	25.4	45.5		
	Anion Sum (meq/L)	6.30	6.89		
	Cation Sum (meq/L)	6.60	7.11		
	Cation - Anion Balance (%)	2.3	1.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.31	4.18		
	Total Organic Carbon (mg/L)	9.01	5.69		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0017	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510458-1 WG 29-SEP-20 14:25 GH_MW_BG1B_W G_2020_09_29_NP	L2510458-2 WG 29-SEP-20 11:00 GH_MW_BG1C_W G_2020_09_29_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00012	0.00015		
	Arsenic (As)-Dissolved (mg/L)	0.00078	0.00078		
	Barium (Ba)-Dissolved (mg/L)	0.212	0.200		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.013	0.015		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000451	0.0000325		
	Calcium (Ca)-Dissolved (mg/L)	71.4	67.9		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	0.00211	0.00172		
	Copper (Cu)-Dissolved (mg/L)	0.0161	0.0128		
	Iron (Fe)-Dissolved (mg/L)	1.61	1.44		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0049	0.0055		
	Magnesium (Mg)-Dissolved (mg/L)	27.3	25.4		
	Manganese (Mn)-Dissolved (mg/L)	0.191	0.194		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00380	0.00406		
	Nickel (Ni)-Dissolved (mg/L)	0.00426	0.00367		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.43	1.54		
	Selenium (Se)-Dissolved (mg/L)	0.000128	0.000113		
	Silicon (Si)-Dissolved (mg/L)	4.08	3.50		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	14.8	34.3		
	Strontium (Sr)-Dissolved (mg/L)	0.115	0.149		
	Sulfur (S)-Dissolved (mg/L)	10.3	16.1		
	Thallium (Tl)-Dissolved (mg/L)	0.000075	0.000046		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.000722	0.00167		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0327	0.0325		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2510458-1, -2
Matrix Spike	Sulfate (SO4)	MS-B	L2510458-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

Page 1 of 15

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5243419							
WG3416429-8	LCS							
Acidity (as CaCO3)			99.7		%		85-115	01-OCT-20
WG3416429-7	MB							
Acidity (as CaCO3)			1.6		mg/L		2	01-OCT-20
ALK-MAN-CL		Water						
Batch	R5244719							
WG3417953-8	LCS							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	03-OCT-20
WG3417953-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-OCT-20
BE-D-L-CCMS-CL		Water						
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Beryllium (Be)-Dissolved			106.1		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Beryllium (Be)-Dissolved			99.3		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Beryllium (Be)-Dissolved			98.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Beryllium (Be)-Dissolved			102.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-13	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
WG3418847-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-OCT-20
BIC-CL		Water						
Batch	R5244719							
WG3417953-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	03-OCT-20
BR-L-IC-N-CL		Water						
Batch	R5243407							
WG3416399-6	LCS							
Bromide (Br)			105.1		%		85-115	30-SEP-20
WG3416399-5	MB							



Quality Control Report

Workorder: L2510458

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5243407							
WG3416399-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-SEP-20
C-DIS-ORG-LOW-CL Water								
Batch	R5245228							
WG3418474-7	DUP	L2510458-2						
Dissolved Organic Carbon		4.18	4.15		mg/L	0.7	20	03-OCT-20
WG3418474-6	LCS							
Dissolved Organic Carbon			84.6		%		80-120	03-OCT-20
WG3418474-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-OCT-20
WG3418474-8	MS	L2510458-2						
Dissolved Organic Carbon			96.0		%		70-130	03-OCT-20
C-TOT-ORG-LOW-CL Water								
Batch	R5245228							
WG3418474-7	DUP	L2510458-2						
Total Organic Carbon		5.69	6.03		mg/L	5.8	20	03-OCT-20
WG3418474-6	LCS							
Total Organic Carbon			91.5		%		80-120	03-OCT-20
WG3418474-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	03-OCT-20
WG3418474-8	MS	L2510458-2						
Total Organic Carbon			104.0		%		70-130	03-OCT-20
CL-L-IC-N-CL Water								
Batch	R5243407							
WG3416399-6	LCS							
Chloride (Cl)			102.8		%		85-115	30-SEP-20
WG3416399-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	30-SEP-20
CO3-CL Water								
Batch	R5244719							
WG3417953-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-20
EC-L-PCT-CL Water								



Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch	R5244719							
WG3417953-8	LCS							
Conductivity (@ 25C)			97.8		%		90-110	03-OCT-20
WG3417953-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-20
F-IC-N-CL								
Batch	R5243407							
WG3416399-6	LCS							
Fluoride (F)			91.7		%		90-110	30-SEP-20
WG3416399-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-SEP-20
HG-D-CVAA-CL								
Batch	R5251014							
WG3420385-6	LCS							
Mercury (Hg)-Dissolved			109.0		%		80-120	07-OCT-20
WG3420385-5	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-OCT-20
MET-D-CCMS-CL								
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Aluminum (Al)-Dissolved			106.8		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.7		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.7		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			102.7		%		80-120	05-OCT-20
Boron (B)-Dissolved			101.3		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.0		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			102.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			100.8		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			100.2		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			102.2		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			109.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	05-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Nickel (Ni)-Dissolved			102.1		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			122.3		%		70-130	05-OCT-20
Potassium (K)-Dissolved			103.1		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.6		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.4		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			103.7		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			99.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			105.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.4		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.1		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			84.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			96.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			102.2		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Aluminum (Al)-Dissolved			103.0		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.1		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			101.1		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			103.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.8		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			94.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			103.6		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			100.7		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			99.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			99.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.3		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			93.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			108.1		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			99.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			104.3		%		80-120	05-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-14	LCS	TMRM						
Nickel (Ni)-Dissolved			98.8		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			108.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			102.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			99.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.6		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			102.4		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			98.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			100.6		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			102.9		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			102.4		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			87.4		%		80-120	05-OCT-20
Uranium (U)-Dissolved			103.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			102.2		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.7		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.9		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Aluminum (Al)-Dissolved			104.5		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			104.3		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			103.0		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.5		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			100.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			108.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			103.9		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			102.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			102.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			104.0		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			95.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			114.0		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			105.1		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.0		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			129.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			106.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			106.2		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			104.0		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			106.3		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			106.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			97.0		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			104.0		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			105.5		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			105.6		%		80-120	05-OCT-20
Uranium (U)-Dissolved			108.3		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			106.6		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.4		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			99.3		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			105.0		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			107.2		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			101.3		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			98.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			101.7		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			101.9		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			110.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.7		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-6	LCS	TMRM						
Nickel (Ni)-Dissolved			100.9		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			118.2		%		70-130	05-OCT-20
Potassium (K)-Dissolved			104.9		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			105.7		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			101.9		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			102.2		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.7		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.5		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.8		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			91.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.6		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			98.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-5 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch R5245977								
WG3418847-9 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
NH3-L-F-CL		Water						
Batch R5244225								
WG3417397-6 LCS								
Ammonia as N			103.5		%		85-115	02-OCT-20
WG3417397-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	02-OCT-20
NO2-L-IC-N-CL		Water						
Batch R5243407								
WG3416399-6 LCS								
Nitrite (as N)			101.6		%		90-110	30-SEP-20
WG3416399-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	30-SEP-20
NO3-L-IC-N-CL		Water						
Batch R5243407								
WG3416399-6 LCS								
Nitrate (as N)			100.3		%		90-110	30-SEP-20
WG3416399-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	30-SEP-20
OH-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5244719							
WG3417953-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-20
ORP-CL	Water							
Batch	R5243713							
WG3416588-5 CRM		CL-ORP						
ORP			221		mV		210-230	01-OCT-20
P-T-L-COL-CL	Water							
Batch	R5245759							
WG3418434-34 LCS								
Phosphorus (P)-Total			99.4		%		80-120	05-OCT-20
WG3418434-33 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-OCT-20
PH-CL	Water							
Batch	R5244719							
WG3417953-8 LCS								
pH			6.99		pH		6.9-7.1	03-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5242968							
WG3415705-19 LCS								
Orthophosphate-Dissolved (as P)			110.0		%		80-120	30-SEP-20
WG3415705-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-SEP-20
SO4-IC-N-CL	Water							
Batch	R5243407							
WG3416399-6 LCS								
Sulfate (SO4)			100.4		%		90-110	30-SEP-20
WG3416399-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5244632							
WG3416931-5 LCS								
Total Dissolved Solids			97.4		%		85-115	02-OCT-20
WG3416931-4 MB								
Total Dissolved Solids			<10		mg/L		10	02-OCT-20



Quality Control Report

Workorder: L2510458

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5244050							
WG3417095-13	LCS							
Total Kjeldahl Nitrogen			81.8		%		75-125	02-OCT-20
WG3417095-15	LCS							
Total Kjeldahl Nitrogen			83.8		%		75-125	02-OCT-20
WG3417095-16	LCS							
Total Kjeldahl Nitrogen			82.8		%		75-125	02-OCT-20
WG3417095-19	LCS							
Total Kjeldahl Nitrogen			83.6		%		75-125	02-OCT-20
WG3417095-2	LCS							
Total Kjeldahl Nitrogen			82.1		%		75-125	02-OCT-20
WG3417095-7	LCS							
Total Kjeldahl Nitrogen			80.6		%		75-125	02-OCT-20
WG3417095-9	LCS							
Total Kjeldahl Nitrogen			80.6		%		75-125	02-OCT-20
WG3417095-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
WG3417095-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-OCT-20
TSS-L-CL								
	Water							
Batch	R5244573							
WG3416063-6	LCS							
Total Suspended Solids			102.1		%		85-115	02-OCT-20
WG3416063-5	MB							
Total Suspended Solids			<1.0		mg/L		1	02-OCT-20
TURBIDITY-CL								
	Water							
Batch	R5243709							
WG3416493-6	DUP	L2510458-1						
Turbidity		71.5	70.3		NTU	1.7	15	01-OCT-20
WG3416493-5	LCS							
Turbidity			97.0		%		85-115	01-OCT-20
WG3416493-4	MB							
Turbidity			<0.10		NTU		0.1	01-OCT-20

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Workorder: L2510458

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2510458

Report Date: 22-JAN-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	29-SEP-20 14:25	01-OCT-20 12:00	0.25	46	hours	EHTR-FM
	2	29-SEP-20 11:00	01-OCT-20 12:00	0.25	49	hours	EHTR-FM
pH	1	29-SEP-20 14:25	03-OCT-20 11:00	0.25	93	hours	EHTR-FM
	2	29-SEP-20 11:00	03-OCT-20 11:00	0.25	96	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2510458 were received on 30-SEP-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																	
Company: SNC-Lavalin -Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Mark Newman		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Priority (Business Days)			Emergency														
Phone: Tel.:250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>														
Street: 520 Lake Street		Emails: SNC - 'Mark.Newman'		Date and Time Required for all E&P TATs:																	
City/Province: Nelson, BC		'Stefan.Humphries', 'Vicky.Lipinski@snciavalin.com'		For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code: V1L 4C6		Teck: 'Cam.Jaeger', 'Jennifer.DeWerk', 'Brendan.Peachey' @teck.com, teckcoal@equisonline.com		Analysis Request																	
Invoice To		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input checked="" type="checkbox"/> FAX		F/P P F/P P																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Mark.Newman@snciavalin.com		DOC (C-DIS-ORG-LOW-CL)																	
Company:		payables@snciavalin.com		TOC (C-TOT-ORG-LOW-CL)																	
Contact:		Oil and Gas Required Fields (client use)		BC MDG D-Met. + Hg (MET-D-BOMDGG-CL)																	
Project Information		AFE/Cost Center: PO#		Total N Calc. (N-T-CALC-CL)																	
ALS Account # / Quote #: MOR125 / Q78198		Major/Minor Code: Routing Code:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
Job #: GHO- Greenhills Operations		Requisitioner:		Teck Routine (TECKCOAL-ROUTINE-CL)																	
PO / AFE: 672225		Location:		TKN (TKN-L-F-CL)																	
LSD:		ALS Contact: Inayat Dhaliwal 403-407-1784		Bicarbonate (BIC-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Carbonate (CO3-CL)																	
ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB		Hydroxide (OH-CL)																	
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type											
GH_MW_ER2B		GH_MW_ER2B_WG_2020_09-29_NP		GH_MW_ER2B-A		29-Sep-20		11:25		WG											
GH_MW_ER2B		GH_MW_ER2B_WG_2020_09-29_NP		GH_MW_ER2B		29-Sep-20		11:00		WG											
GH_MW_MC10-A		GH_MW_MC10-A_WG_2020_09-29_NP		GH_MW_MC10-A						WG											
GH_MW_MC10-B		GH_MW_MC10-B_WG_2020_09-29_NP		GH_MW_MC10-B						WG											
GH_MW_MC10-C		GH_MW_MC10-C_WG_2020_09-29_NP		GH_MW_MC10-C						WG											
SHIPPING RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																	
Released by: Marc Beaton		Date: 29-Sep-20		Time: 1700		Received by:		Date: 29/9/20		Time: 1500											



L2510458-COFC



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 01-OCT-20
Report Date: 08-OCT-20 16:58 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2510856
Project P.O. #: NOT SUBMITTED
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2510856-1	L2510856-2	L2510856-3
		Description	WG	WG	WG
		Sampled Date	30-SEP-20	30-SEP-20	30-SEP-20
		Sampled Time	11:45	08:45	16:00
		Client ID	EV_MW_GV4B_W G_2020_09_30_NP	EV_MW_GC1A_W G_2020_09_30_NP	EV_MW_MC10C_ WG_2020_09_30_ NP
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	528	451	9.9	
	Hardness (as CaCO3) (mg/L)	296	230	0.92	
	pH (pH)	8.07	7.97	5.66	
	ORP (mV)	420	380	373	
	Total Suspended Solids (mg/L)	<1.0	1330	<1.0	
	Total Dissolved Solids (mg/L)	330 ^{DLHC}	378 ^{DLHC}	<10	
	Turbidity (NTU)	3.18	569	<0.10	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.8	3.9	1.8	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	229	230	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	229	230	<1.0	
	Ammonia as N (mg/L)	0.0055	0.106	<0.0050	
	Bicarbonate (HCO3) (mg/L)	280	280	<5.0	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.76	3.34	<0.10	
	Fluoride (F) (mg/L)	0.551	0.610	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	104	87.7	0.0	
	Nitrate and Nitrite (as N) (mg/L)	0.0470	0.0070	<0.0051	
	Nitrate (as N) (mg/L)	0.0470	0.0070	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.451	<0.050	
	Total Nitrogen (mg/L)	<0.050	0.458	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0044	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0076 ^{DLM}	1.17 ^{DLHC}	<0.0020	
	Sulfate (SO4) (mg/L)	58.9	51.8	<0.30	
	Anion Sum (meq/L)	5.86	5.79	<0.10	
	Cation Sum (meq/L)	6.09	5.08	<0.10	
Cation - Anion Balance (%)	1.9	-6.5	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.29	0.95	1.57 ^{RRV}	
	Total Organic Carbon (mg/L)	1.15	7.03	<0.50	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0053	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510856-1 WG 30-SEP-20 11:45 EV_MW_GV4B_W G_2020_09_30_NP	L2510856-2 WG 30-SEP-20 08:45 EV_MW_GC1A_W G_2020_09_30_NP	L2510856-3 WG 30-SEP-20 16:00 EV_MW_MC10C_ WG_2020_09_30_ NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00326	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00110	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0656	0.0880	0.00042	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.039	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000097	0.0000499	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	65.7	57.3	0.243	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00040	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00032	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000686	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0092	0.0101	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	32.1	21.2	0.0761	
	Manganese (Mn)-Dissolved (mg/L)	0.00107	0.0637	0.00037	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00176	0.00591	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00132	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	1.14	1.88	<0.10	
	Selenium (Se)-Dissolved (mg/L)	0.00372	0.00290	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	4.57	3.19	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.23	9.73	0.071	
	Strontium (Sr)-Dissolved (mg/L)	0.279	0.379	0.00211	
	Sulfur (S)-Dissolved (mg/L)	21.9	19.0	<0.50	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000057	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.00147	0.00727	0.000027	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0012	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2510856-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2510856

Report Date: 08-OCT-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244132							
WG3417297-6 DUP		L2510856-1						
Acidity (as CaCO3)		1.8	1.2	J	mg/L	0.6	2	02-OCT-20
WG3417297-5 LCS			102.4		%		85-115	02-OCT-20
Acidity (as CaCO3)								
WG3417297-4 MB			1.7		mg/L		2	02-OCT-20
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5244719							
WG3417953-14 LCS			100.2		%		85-115	03-OCT-20
Alkalinity, Total (as CaCO3)								
WG3417953-13 MB			<1.0		mg/L		1	03-OCT-20
Alkalinity, Total (as CaCO3)								
BE-D-L-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10 LCS		TMRM	106.1		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-14 LCS		TMRM	99.3		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-2 LCS		TMRM	98.9		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-6 LCS		TMRM	102.1		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-1 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-13 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-5 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-9 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
BIC-CL								
	Water							
Batch	R5244719							
WG3417953-13 MB			<5.0		mg/L		5	03-OCT-20
Bicarbonate (HCO3)								
BR-L-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5243877							
WG3417032-2	LCS							
Bromide (Br)			102.1		%		85-115	01-OCT-20
WG3417032-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	01-OCT-20
C-DIS-ORG-LOW-CL Water								
Batch	R5251793							
WG3420952-3	DUP	L2510856-3						
Dissolved Organic Carbon		1.57	1.57		mg/L	0.1	20	08-OCT-20
WG3420952-2	LCS							
Dissolved Organic Carbon			95.4		%		80-120	07-OCT-20
WG3420952-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-OCT-20
WG3420952-4	MS	L2510856-3						
Dissolved Organic Carbon			104.7		%		70-130	08-OCT-20
C-TOT-ORG-LOW-CL Water								
Batch	R5251793							
WG3420952-3	DUP	L2510856-3						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-OCT-20
WG3420952-2	LCS							
Total Organic Carbon			94.2		%		80-120	07-OCT-20
WG3420952-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-OCT-20
WG3420952-4	MS	L2510856-3						
Total Organic Carbon			102.2		%		70-130	07-OCT-20
CL-L-IC-N-CL Water								
Batch	R5243877							
WG3417032-2	LCS							
Chloride (Cl)			99.5		%		85-115	01-OCT-20
WG3417032-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	01-OCT-20
CO3-CL Water								
Batch	R5244719							
WG3417953-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch	R5244719							
WG3417953-14	LCS							
Conductivity (@ 25C)			97.8		%		90-110	03-OCT-20
WG3417953-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-20
F-IC-N-CL								
Batch	R5243877							
WG3417032-2	LCS							
Fluoride (F)			100.1		%		90-110	01-OCT-20
WG3417032-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	01-OCT-20
HG-D-CVAA-CL								
Batch	R5251758							
WG3421280-2	LCS							
Mercury (Hg)-Dissolved			106.0		%		80-120	08-OCT-20
WG3421280-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-OCT-20
MET-D-CCMS-CL								
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Aluminum (Al)-Dissolved			106.8		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.7		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.7		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			102.7		%		80-120	05-OCT-20
Boron (B)-Dissolved			101.3		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.0		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			102.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			100.8		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			100.2		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			102.2		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			109.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Nickel (Ni)-Dissolved			102.1		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			122.3		%		70-130	05-OCT-20
Potassium (K)-Dissolved			103.1		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.6		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.4		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			103.7		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			99.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			105.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.4		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.1		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			84.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			96.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			102.2		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Aluminum (Al)-Dissolved			103.0		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.1		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			101.1		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			103.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.8		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			94.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			103.6		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			100.7		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			99.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			99.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.3		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			93.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			108.1		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			99.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			104.3		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-14	LCS	TMRM						
Nickel (Ni)-Dissolved			98.8		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			108.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			102.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			99.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.6		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			102.4		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			98.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			100.6		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			102.9		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			102.4		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			87.4		%		80-120	05-OCT-20
Uranium (U)-Dissolved			103.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			102.2		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.7		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.9		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Aluminum (Al)-Dissolved			104.5		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			104.3		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			103.0		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.5		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			100.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			108.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			103.9		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			102.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			102.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			104.0		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			95.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			114.0		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			105.1		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.0		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			129.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			106.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			106.2		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			104.0		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			106.3		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			106.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			97.0		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			104.0		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			105.5		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			105.6		%		80-120	05-OCT-20
Uranium (U)-Dissolved			108.3		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			106.6		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.4		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			99.3		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			105.0		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			107.2		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			101.3		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			98.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			101.7		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			101.9		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			110.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.7		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-6	LCS	TMRM						
Nickel (Ni)-Dissolved			100.9		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			118.2		%		70-130	05-OCT-20
Potassium (K)-Dissolved			104.9		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			105.7		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			101.9		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			102.2		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.7		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.5		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.8		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			91.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.6		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			98.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Workorder: L2510856

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-5 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-9	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
NH3-L-F-CL		Water						
Batch	R5244812							
WG3417994-14	LCS							
Ammonia as N			103.5		%		85-115	03-OCT-20
WG3417994-18	LCS							
Ammonia as N			106.9		%		85-115	04-OCT-20
WG3417994-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	03-OCT-20
WG3417994-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5243877							
WG3417032-2	LCS							
Nitrite (as N)			100.7		%		90-110	01-OCT-20
WG3417032-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	01-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5243877							
WG3417032-2	LCS							
Nitrate (as N)			100.0		%		90-110	01-OCT-20
WG3417032-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	01-OCT-20
OH-CL	Water							
Batch	R5244719							
WG3417953-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-20
ORP-CL	Water							
Batch	R5243713							
WG3416588-7	CRM	CL-ORP						
ORP			222		mV		210-230	01-OCT-20
P-T-L-COL-CL	Water							
Batch	R5248520							
WG3419320-6	LCS							
Phosphorus (P)-Total			105.1		%		80-120	06-OCT-20
WG3419320-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-OCT-20
PH-CL	Water							
Batch	R5244719							
WG3417953-14	LCS							
pH			6.99		pH		6.9-7.1	03-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5243682							
WG3416516-2	LCS							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	01-OCT-20
WG3416516-6	LCS							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	01-OCT-20
WG3416516-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-OCT-20
WG3416516-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-OCT-20
SO4-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5243877							
WG3417032-2	LCS							
Sulfate (SO4)			100.9		%		90-110	01-OCT-20
WG3417032-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	01-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5250119							
WG3419005-2	LCS							
Total Dissolved Solids			95.7		%		85-115	06-OCT-20
WG3419005-1	MB							
Total Dissolved Solids			<10		mg/L		10	06-OCT-20
TKN-L-F-CL	Water							
Batch	R5244720							
WG3417749-10	LCS							
Total Kjeldahl Nitrogen			99.6		%		75-125	03-OCT-20
WG3417749-14	LCS							
Total Kjeldahl Nitrogen			101.6		%		75-125	03-OCT-20
WG3417749-2	LCS							
Total Kjeldahl Nitrogen			89.1		%		75-125	03-OCT-20
WG3417749-4	LCS							
Total Kjeldahl Nitrogen			90.5		%		75-125	03-OCT-20
WG3417749-6	LCS							
Total Kjeldahl Nitrogen			99.1		%		75-125	03-OCT-20
WG3417749-8	LCS							
Total Kjeldahl Nitrogen			109.6		%		75-125	04-OCT-20
WG3417749-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-OCT-20
WG3417749-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5250379							
WG3419008-2	LCS							
Total Suspended Solids			86.2		%		85-115	06-OCT-20
WG3419008-1	MB							
Total Suspended Solids			<1.0		mg/L		1	06-OCT-20
TURBIDITY-CL	Water							
Batch	R5243709							
WG3416493-9	DUP	L2510856-2						
Turbidity		569	603		NTU	5.8	15	01-OCT-20
WG3416493-8	LCS							
Turbidity			98.0		%		85-115	01-OCT-20
WG3416493-7	MB							
Turbidity			<0.10		NTU		0.1	01-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	30-SEP-20 11:45	01-OCT-20 15:00	0.25	27	hours	EHTR-FM
	2	30-SEP-20 08:45	01-OCT-20 15:00	0.25	30	hours	EHTR-FM
	3	30-SEP-20 16:00	01-OCT-20 15:00	0.25	23	hours	EHTR-FM
pH	1	30-SEP-20 11:45	03-OCT-20 11:00	0.25	71	hours	EHTR-FM
	2	30-SEP-20 08:45	03-OCT-20 11:00	0.25	74	hours	EHTR-FM
	3	30-SEP-20 16:00	03-OCT-20 11:00	0.25	67	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2510856 were received on 01-OCT-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																			
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																			
Contact: Mark Newman		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		PRIORITY (Business Days)		4 day [P4-20%] <input type="checkbox"/>						EMERGENCY																																											
Phone: Tel.: 250-464-5672		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>		1 Business day [E1 - 100%]						<input type="checkbox"/>																																											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]						<input type="checkbox"/>																																											
Street: 520 Lake Street		Emails: SNC - 'Mark Newman'		Date and Time Required for all E&P TATs:																																																			
City/Province: Nelson, BC		'Stefan.Humphries', Vicky.Lipinski@snc-lavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																																																			
Postal Code: V1L 4C6		Teck: SEE DIGITAL COC		Analysis Request																																																			
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																			
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<table border="1"> <tr> <th>F/P</th> <th>P</th> <th>F/P</th> <th></th> <th></th> <th></th> <th></th> <th>P</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>SAMPLES ON HOLD</th> <th>Sample is hazardous (please provide further details)</th> <th>NUMBER OF CONTAINERS</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>												F/P	P	F/P					P										SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																				
F/P	P	F/P					P										SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																																				
Company:		Emails: Mark.Newman@snc-lavalin.com																																																					
Contact:		payables@snc-lavalin.com																																																					
Project Information		Oil and Gas Required Fields (client use)																																																					
ALS Account # / Quote #: MOR125 / Q78198		AFE/Cost Center: PO#																																																					
Job #: ELKVIEW OPERATIONS		Major/Minor Code: Routing Code:																																																					
PO / AFE: 672225		Requisitioner:																																																					
LSD:		Location:																																																					
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhalwal 403-407-1784		Sampler: MTB																																																			
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BOMDGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)																																								
EV.MW.GV4B.WG.2020.09.30.NP	EV.MW.GV4B	EV.MW.GV4B	20-Sep-20	1145	WG	R	R	R	R	R	R	R	R	R	R						5																																		
EV.MW.GC1A.WG.2020.09.30.NP	EV.MW.GC1A	EV.MW.GC1A	30-Sep-20	945	WG	R	R	R	R	R	R	R	R	R	R						5																																		
EV.MW.MC10C.WG.2020.09.30.NP	EV.MW.MC10C	EV.MW.MC10C	30-Sep-20	1600	WG	R	R	R	R	R	R	R	R	R	R						5																																		
					WG	R	R	R	R	R	R	R	R	R	R						5																																		
					WG	R	R	R	R	R	R	R	R	R	R						5																																		
					WG	R	R	R	R	R	R	R	R	R	R						5																																		
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					WG	R	R	R	R	R	R	R	R	R	R						5																																		
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)																																																	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO						Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																	
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION PRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																	
						Cooling Initiated <input checked="" type="checkbox"/>																																																	
						INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C																																											
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)																																																	
Released by: Marc Beaton		Date: 30-Sep-20		Time:		Received by:		Date: 01/10/21		Time: 8:35		Received by:				Date:				Time:																																			





SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 02-OCT-20
Report Date: 09-OCT-20 16:31 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2511647
Project P.O. #: 672225
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2511647-1 WG 01-OCT-20 09:40 RG_MW-03- 04_WG_2020_10_ 01_NP	L2511647-2 WG 01-OCT-20 10:30 RG_MW_MC10A_ WG_2020_10_01_ NP	L2511647-3 WG 01-OCT-20 10:00 RG_MW_MC10B_ WG_2020_10_01_ NP	L2511647-4 WG 01-OCT-20 12:00 RG_MW_MC10C_ WG_2020_10_01_ NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	538	535	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	267	268	<0.50	<0.50
	pH (pH)	8.44	8.43	5.71	5.66
	ORP (mV)	495	429	476	472
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	340 ^{DLHC}	324 ^{DLHC}	<10	<10
	Turbidity (NTU)	0.32	0.28	<0.10	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	1.1	1.6	1.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	172	175	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.4	7.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	178	182	<1.0	<1.0
	Ammonia as N (mg/L)	0.0149	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	210	214	<5.0	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	5.58	5.56	<0.10	<0.10
	Fluoride (F) (mg/L)	0.121	0.119	<0.020	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.2	94.5	0.0	0.0
	Nitrate and Nitrite (as N) (mg/L)	1.12	1.11	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	1.12	1.11	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.090 ^{TKNI}	0.183	<0.050	<0.050
	Total Nitrogen (mg/L)	1.21	1.30	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0055	0.0058	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0046	0.0049	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	99.4	99.0	<0.30	<0.30
	Anion Sum (meq/L)	5.88	5.94	<0.10	<0.10
	Cation Sum (meq/L)	5.59	5.62	<0.10	<0.10
	Cation - Anion Balance (%)	-2.5	-2.8	0.0	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.59	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0013	0.0017	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2511647-1	L2511647-2	L2511647-3	L2511647-4
					L2511647-1 WG 01-OCT-20 09:40 RG_MW-03- 04_WG_2020_10_ 01_NP	L2511647-2 WG 01-OCT-20 10:30 RG_MW_MC10A_ WG_2020_10_01_ NP	L2511647-3 WG 01-OCT-20 10:00 RG_MW_MC10B_ WG_2020_10_01_ NP	L2511647-4 WG 01-OCT-20 12:00 RG_MW_MC10C_ WG_2020_10_01_ NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00014	0.00014	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00018	0.00019	<0.00010	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.129	0.128	<0.00010	<0.00010			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013	0.013	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000136	0.0000113	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	67.0	67.7	<0.050	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00014	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0107	0.0106	<0.0010	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	24.1	24.0	<0.0050	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	0.00558	0.00572	<0.00010	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.000025 ^{DLM}	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00112	0.00113	<0.000050	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.05	1.03	<0.10	<0.10			
	Selenium (Se)-Dissolved (mg/L)	0.00883	0.00898	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	2.62	2.54	<0.050	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.54	5.44	<0.050	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	0.181	0.186	<0.00020	<0.00020			
	Sulfur (S)-Dissolved (mg/L)	33.6	33.3	<0.50	<0.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00119	0.00119	<0.000010	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511647-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

Reference Information

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2511647

Report Date: 09-OCT-20

Page 1 of 20

Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244631							
WG3417844-3	DUP	L2511647-2						
Acidity (as CaCO3)		1.1	<1.0	RPD-NA	mg/L	N/A	20	03-OCT-20
WG3417844-2	LCS							
Acidity (as CaCO3)			100.3		%		85-115	03-OCT-20
WG3417844-1	MB							
Acidity (as CaCO3)			1.4		mg/L		2	03-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5251289							
WG3420756-11	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	07-OCT-20
WG3420756-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-OCT-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-19	DUP	L2511647-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-OCT-20
WG3419579-10	LCS	TMRM						
Beryllium (Be)-Dissolved			99.6		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Beryllium (Be)-Dissolved			100.3		%		80-120	06-OCT-20
WG3419579-18	LCS	TMRM						
Beryllium (Be)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Beryllium (Be)-Dissolved			100.7		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Beryllium (Be)-Dissolved			99.1		%		80-120	06-OCT-20
WG3419579-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-13	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-17	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-20	MS	L2511647-4						
Beryllium (Be)-Dissolved			104.9		%		70-130	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL	Water							
Batch	R5251289							
WG3420756-10 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	07-OCT-20
BR-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-10 LCS								
Bromide (Br)			99.6		%		85-115	02-OCT-20
WG3417695-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	02-OCT-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-2 LCS								
Dissolved Organic Carbon			98.0		%		80-120	08-OCT-20
WG3421624-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
Batch	R5252529							
WG3422182-2 LCS								
Dissolved Organic Carbon			92.0		%		80-120	09-OCT-20
WG3422182-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-2 LCS								
Total Organic Carbon			99.1		%		80-120	08-OCT-20
WG3421624-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-10 LCS								
Chloride (Cl)			92.1		%		85-115	02-OCT-20
WG3417695-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-OCT-20
CO3-CL	Water							
Batch	R5251289							
WG3420756-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	07-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch R5251289								
WG3420756-11 LCS								
Conductivity (@ 25C)			98.6		%		90-110	07-OCT-20
WG3420756-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-OCT-20
F-IC-N-CL								
Batch R5244476								
WG3417695-10 LCS								
Fluoride (F)			92.8		%		90-110	02-OCT-20
WG3417695-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-OCT-20
HG-D-CVAA-CL								
Batch R5251758								
WG3421280-14 LCS								
Mercury (Hg)-Dissolved			107.0		%		80-120	08-OCT-20
WG3421280-13 MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
MET-D-CCMS-CL								
Batch R5248645								
WG3419579-19 DUP		L2511647-4						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-OCT-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-OCT-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-OCT-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-OCT-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-19	DUP	L2511647-4						
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-OCT-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	06-OCT-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-OCT-20
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-OCT-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-OCT-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-OCT-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-OCT-20
WG3419579-10	LCS	TMRM						
Aluminum (Al)-Dissolved			100.9		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.3		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			101.9		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.1		%		80-120	06-OCT-20
Boron (B)-Dissolved			90.6		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			103.1		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			96.2		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			100.6		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			100.6		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.9		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			103.0		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			99.5		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			92.9		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			96.3		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			103.4		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-10	LCS	TMRM						
Nickel (Ni)-Dissolved			100.4		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			104.1		%		70-130	06-OCT-20
Potassium (K)-Dissolved			100.7		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			100.9		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			101.3		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			97.0		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			102.5		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			98.3		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			103.9		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			101.8		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			97.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			102.9		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.7		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.1		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.2		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			104.3		%		80-120	06-OCT-20
Boron (B)-Dissolved			88.4		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			97.3		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.6		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.4		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			101.8		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.4		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.7		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			101.6		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-14	LCS	TMRM						
Nickel (Ni)-Dissolved			101.6		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			108.2		%		70-130	06-OCT-20
Potassium (K)-Dissolved			101.9		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			96.1		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.4		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			99.8		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			95.9		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			101.1		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			101.3		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.7		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			95.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.7		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.5		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.6		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-18	LCS	TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.9		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			103.2		%		80-120	06-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.9		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			100.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			101.3		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			96.7		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.9		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			101.3		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			102.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			105.7		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-18	LCS	TMRM						
Nickel (Ni)-Dissolved			102.4		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			100.4		%		70-130	06-OCT-20
Potassium (K)-Dissolved			104.0		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			97.4		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			101.9		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			102.5		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			105.2		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			108.3		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			98.2		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.3		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.6		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			91.0		%		80-120	06-OCT-20
Uranium (U)-Dissolved			106.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.0		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			105.2		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Aluminum (Al)-Dissolved			101.1		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			102.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.4		%		80-120	06-OCT-20
Boron (B)-Dissolved			98.3		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.4		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			98.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.9		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			102.1		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			101.2		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			101.9		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			102.7		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.3		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.4		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.5		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			101.5		%		70-130	06-OCT-20
Potassium (K)-Dissolved			104.3		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			98.2		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			100.4		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			106.4		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			104.5		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			96.0		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			99.8		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			105.2		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			102.5		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			101.1		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.6		%		80-120	08-OCT-20
Antimony (Sb)-Dissolved			104.7		%		80-120	08-OCT-20
Arsenic (As)-Dissolved			105.6		%		80-120	08-OCT-20
Barium (Ba)-Dissolved			104.2		%		80-120	08-OCT-20
Bismuth (Bi)-Dissolved			99.6		%		80-120	08-OCT-20
Boron (B)-Dissolved			100.3		%		80-120	08-OCT-20
Cadmium (Cd)-Dissolved			103.2		%		80-120	08-OCT-20
Calcium (Ca)-Dissolved			102.7		%		80-120	08-OCT-20
Chromium (Cr)-Dissolved			104.4		%		80-120	08-OCT-20
Cobalt (Co)-Dissolved			102.8		%		80-120	08-OCT-20
Copper (Cu)-Dissolved			102.7		%		80-120	08-OCT-20
Iron (Fe)-Dissolved			100.7		%		80-120	08-OCT-20
Lead (Pb)-Dissolved			99.98		%		80-120	08-OCT-20
Lithium (Li)-Dissolved			100.6		%		80-120	08-OCT-20
Magnesium (Mg)-Dissolved			109.2		%		80-120	08-OCT-20
Manganese (Mn)-Dissolved			104.9		%		80-120	08-OCT-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-6	LCS	TMRM						
Nickel (Ni)-Dissolved			102.3		%		80-120	08-OCT-20
Phosphorus (P)-Dissolved			109.6		%		70-130	08-OCT-20
Potassium (K)-Dissolved			107.3		%		80-120	08-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	08-OCT-20
Silicon (Si)-Dissolved			99.3		%		60-140	08-OCT-20
Silver (Ag)-Dissolved			98.0		%		80-120	08-OCT-20
Sodium (Na)-Dissolved			104.7		%		80-120	08-OCT-20
Strontium (Sr)-Dissolved			102.4		%		80-120	08-OCT-20
Sulfur (S)-Dissolved			100.8		%		80-120	08-OCT-20
Thallium (Tl)-Dissolved			98.8		%		80-120	08-OCT-20
Tin (Sn)-Dissolved			102.8		%		80-120	08-OCT-20
Titanium (Ti)-Dissolved			90.4		%		80-120	08-OCT-20
Uranium (U)-Dissolved			98.6		%		80-120	08-OCT-20
Vanadium (V)-Dissolved			106.0		%		80-120	08-OCT-20
Zinc (Zn)-Dissolved			99.6		%		80-120	08-OCT-20
Zirconium (Zr)-Dissolved			98.3		%		80-120	08-OCT-20
WG3419579-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-1	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
WG3419579-13	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5248645							
WG3419579-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-17 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5248645							
WG3419579-17 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-5	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
WG3419579-9	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-9 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-20 MS		L2511647-4						
Aluminum (Al)-Dissolved			104.2		%		70-130	06-OCT-20
Antimony (Sb)-Dissolved			102.9		%		70-130	06-OCT-20
Arsenic (As)-Dissolved			106.5		%		70-130	06-OCT-20
Barium (Ba)-Dissolved			108.5		%		70-130	06-OCT-20
Bismuth (Bi)-Dissolved			106.0		%		70-130	06-OCT-20
Boron (B)-Dissolved			101.5		%		70-130	06-OCT-20
Cadmium (Cd)-Dissolved			108.2		%		70-130	06-OCT-20
Calcium (Ca)-Dissolved			104.8		%		70-130	06-OCT-20
Chromium (Cr)-Dissolved			106.7		%		70-130	06-OCT-20
Cobalt (Co)-Dissolved			106.2		%		70-130	06-OCT-20
Copper (Cu)-Dissolved			106.6		%		70-130	06-OCT-20
Iron (Fe)-Dissolved			104.5		%		70-130	06-OCT-20
Lead (Pb)-Dissolved			104.5		%		70-130	06-OCT-20
Lithium (Li)-Dissolved			101.7		%		70-130	06-OCT-20
Magnesium (Mg)-Dissolved			97.9		%		70-130	06-OCT-20
Manganese (Mn)-Dissolved			104.5		%		70-130	06-OCT-20
Molybdenum (Mo)-Dissolved			105.0		%		70-130	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-20 MS		L2511647-4						
Nickel (Ni)-Dissolved			106.5		%		70-130	06-OCT-20
Phosphorus (P)-Dissolved			100.5		%		70-130	06-OCT-20
Potassium (K)-Dissolved			99.7		%		70-130	06-OCT-20
Selenium (Se)-Dissolved			103.2		%		70-130	06-OCT-20
Silicon (Si)-Dissolved			99.3		%		70-130	06-OCT-20
Silver (Ag)-Dissolved			105.5		%		70-130	06-OCT-20
Sodium (Na)-Dissolved			109.8		%		70-130	06-OCT-20
Strontium (Sr)-Dissolved			108.4		%		70-130	06-OCT-20
Thallium (Tl)-Dissolved			105.9		%		70-130	06-OCT-20
Tin (Sn)-Dissolved			104.1		%		70-130	06-OCT-20
Titanium (Ti)-Dissolved			93.5		%		70-130	06-OCT-20
Uranium (U)-Dissolved			106.8		%		70-130	06-OCT-20
Vanadium (V)-Dissolved			103.7		%		70-130	06-OCT-20
Zinc (Zn)-Dissolved			110.0		%		70-130	06-OCT-20
Zirconium (Zr)-Dissolved			106.6		%		70-130	06-OCT-20
NH3-L-F-CL								
	Water							
Batch	R5250485							
WG3419701-18 LCS								
Ammonia as N			104.0		%		85-115	06-OCT-20
WG3419701-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-20
NO2-L-IC-N-CL								
	Water							
Batch	R5244476							
WG3417695-10 LCS								
Nitrite (as N)			93.2		%		90-110	02-OCT-20
WG3417695-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-OCT-20
NO3-L-IC-N-CL								
	Water							
Batch	R5244476							
WG3417695-10 LCS								
Nitrate (as N)			93.7		%		90-110	02-OCT-20
WG3417695-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-OCT-20
OH-CL	Water							



Quality Control Report

Workorder: L2511647

Report Date: 09-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5244476							
WG3417695-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5251382							
WG3419850-2 LCS								
Total Dissolved Solids			98.0		%		85-115	07-OCT-20
WG3419850-1 MB								
Total Dissolved Solids			<10		mg/L		10	07-OCT-20
TKN-L-F-CL	Water							
Batch	R5251563							
WG3420874-12 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	08-OCT-20
WG3420874-14 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	08-OCT-20
WG3420874-16 LCS								
Total Kjeldahl Nitrogen			92.3		%		75-125	08-OCT-20
WG3420874-2 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	07-OCT-20
WG3420874-4 LCS								
Total Kjeldahl Nitrogen			93.0		%		75-125	08-OCT-20
WG3420874-6 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	08-OCT-20
WG3420874-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3420874-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-15 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
TSS-L-CL	Water							



Quality Control Report

Workorder: L2511647

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5251420							
WG3419847-2	LCS							
Total Suspended Solids			94.9		%		85-115	07-OCT-20
WG3419847-1	MB							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-20
TURBIDITY-CL	Water							
Batch	R5244431							
WG3417280-2	LCS							
Turbidity			98.4		%		85-115	02-OCT-20
WG3417280-1	MB							
Turbidity			<0.10		NTU		0.1	02-OCT-20

Quality Control Report

Workorder: L2511647

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	01-OCT-20 09:40	02-OCT-20 15:15	0.25	30	hours	EHTR-FM
	2	01-OCT-20 10:30	02-OCT-20 15:15	0.25	29	hours	EHTR-FM
	3	01-OCT-20 10:00	02-OCT-20 15:15	0.25	29	hours	EHTR-FM
	4	01-OCT-20 12:00	02-OCT-20 15:15	0.25	27	hours	EHTR-FM
pH							
	1	01-OCT-20 09:40	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	2	01-OCT-20 10:30	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	3	01-OCT-20 10:00	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	4	01-OCT-20 12:00	07-OCT-20 14:00	0.25	146	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2511647 were received on 02-OCT-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2511647-COFC

COC Number: 19 -

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Report To: SNC-Lavalin ~Nelson; Report Format / Distribution: Select Report Format: EXCEL; Select Service Level Below: Regular [R]; ALS Account # / Quote #: MOR125 / Q78198; Job #: REP - Regional; Analysis Request table with 13 columns and 10 rows of data; Shipping and Receiving information.

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FROM1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 01-OCT-20
Report Date: 08-OCT-20 16:58 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2510856
Project P.O. #: NOT SUBMITTED
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2510856-1	L2510856-2	L2510856-3
		Description	WG	WG	WG
		Sampled Date	30-SEP-20	30-SEP-20	30-SEP-20
		Sampled Time	11:45	08:45	16:00
		Client ID	EV_MW_GV4B_W G_2020_09_30_NP	EV_MW_GC1A_W G_2020_09_30_NP	EV_MW_MC10C_ WG_2020_09_30_ NP
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	528	451	9.9	
	Hardness (as CaCO3) (mg/L)	296	230	0.92	
	pH (pH)	8.07	7.97	5.66	
	ORP (mV)	420	380	373	
	Total Suspended Solids (mg/L)	<1.0	1330	<1.0	
	Total Dissolved Solids (mg/L)	330 ^{DLHC}	378 ^{DLHC}	<10	
	Turbidity (NTU)	3.18	569	<0.10	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.8	3.9	1.8	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	229	230	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	229	230	<1.0	
	Ammonia as N (mg/L)	0.0055	0.106	<0.0050	
	Bicarbonate (HCO3) (mg/L)	280	280	<5.0	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	0.76	3.34	<0.10	
	Fluoride (F) (mg/L)	0.551	0.610	<0.020	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Ion Balance (%)	104	87.7	0.0	
	Nitrate and Nitrite (as N) (mg/L)	0.0470	0.0070	<0.0051	
	Nitrate (as N) (mg/L)	0.0470	0.0070	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.451	<0.050	
	Total Nitrogen (mg/L)	<0.050	0.458	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0044	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0076 ^{DLM}	1.17 ^{DLHC}	<0.0020	
	Sulfate (SO4) (mg/L)	58.9	51.8	<0.30	
	Anion Sum (meq/L)	5.86	5.79	<0.10	
	Cation Sum (meq/L)	6.09	5.08	<0.10	
Cation - Anion Balance (%)	1.9	-6.5	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.29	0.95	1.57 ^{RRV}	
	Total Organic Carbon (mg/L)	1.15	7.03	<0.50	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0053	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2510856-1 WG 30-SEP-20 11:45 EV_MW_GV4B_W G_2020_09_30_NP	L2510856-2 WG 30-SEP-20 08:45 EV_MW_GC1A_W G_2020_09_30_NP	L2510856-3 WG 30-SEP-20 16:00 EV_MW_MC10C_ WG_2020_09_30_ NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00326	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00110	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0656	0.0880	0.00042	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.039	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000097	0.0000499	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	65.7	57.3	0.243	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00040	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00032	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000686	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0092	0.0101	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	32.1	21.2	0.0761	
	Manganese (Mn)-Dissolved (mg/L)	0.00107	0.0637	0.00037	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00176	0.00591	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00132	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	1.14	1.88	<0.10	
	Selenium (Se)-Dissolved (mg/L)	0.00372	0.00290	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	4.57	3.19	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.23	9.73	0.071	
	Strontium (Sr)-Dissolved (mg/L)	0.279	0.379	0.00211	
	Sulfur (S)-Dissolved (mg/L)	21.9	19.0	<0.50	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000057	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.00147	0.00727	0.000027	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0012	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2510856-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2510856

Report Date: 08-OCT-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244132							
WG3417297-6 DUP		L2510856-1						
Acidity (as CaCO3)		1.8	1.2	J	mg/L	0.6	2	02-OCT-20
WG3417297-5 LCS			102.4		%		85-115	02-OCT-20
Acidity (as CaCO3)								
WG3417297-4 MB			1.7		mg/L		2	02-OCT-20
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5244719							
WG3417953-14 LCS			100.2		%		85-115	03-OCT-20
Alkalinity, Total (as CaCO3)								
WG3417953-13 MB			<1.0		mg/L		1	03-OCT-20
Alkalinity, Total (as CaCO3)								
BE-D-L-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10 LCS		TMRM	106.1		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-14 LCS		TMRM	99.3		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-2 LCS		TMRM	98.9		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-6 LCS		TMRM	102.1		%		80-120	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-1 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-13 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-5 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
WG3418847-9 MB			<0.000020		mg/L		0.00002	05-OCT-20
Beryllium (Be)-Dissolved								
BIC-CL								
	Water							
Batch	R5244719							
WG3417953-13 MB			<5.0		mg/L		5	03-OCT-20
Bicarbonate (HCO3)								
BR-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5243877							
WG3417032-2	LCS							
Bromide (Br)			102.1		%		85-115	01-OCT-20
WG3417032-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	01-OCT-20
C-DIS-ORG-LOW-CL Water								
Batch	R5251793							
WG3420952-3	DUP	L2510856-3						
Dissolved Organic Carbon		1.57	1.57		mg/L	0.1	20	08-OCT-20
WG3420952-2	LCS							
Dissolved Organic Carbon			95.4		%		80-120	07-OCT-20
WG3420952-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-OCT-20
WG3420952-4	MS	L2510856-3						
Dissolved Organic Carbon			104.7		%		70-130	08-OCT-20
C-TOT-ORG-LOW-CL Water								
Batch	R5251793							
WG3420952-3	DUP	L2510856-3						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-OCT-20
WG3420952-2	LCS							
Total Organic Carbon			94.2		%		80-120	07-OCT-20
WG3420952-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-OCT-20
WG3420952-4	MS	L2510856-3						
Total Organic Carbon			102.2		%		70-130	07-OCT-20
CL-L-IC-N-CL Water								
Batch	R5243877							
WG3417032-2	LCS							
Chloride (Cl)			99.5		%		85-115	01-OCT-20
WG3417032-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	01-OCT-20
CO3-CL Water								
Batch	R5244719							
WG3417953-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	03-OCT-20
EC-L-PCT-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch	R5244719							
WG3417953-14	LCS							
Conductivity (@ 25C)			97.8		%		90-110	03-OCT-20
Batch	R5244719							
WG3417953-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-OCT-20
F-IC-N-CL								
Water								
Batch	R5243877							
WG3417032-2	LCS							
Fluoride (F)			100.1		%		90-110	01-OCT-20
Batch	R5243877							
WG3417032-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	01-OCT-20
HG-D-CVAA-CL								
Water								
Batch	R5251758							
WG3421280-2	LCS							
Mercury (Hg)-Dissolved			106.0		%		80-120	08-OCT-20
Batch	R5251758							
WG3421280-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-OCT-20
MET-D-CCMS-CL								
Water								
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Aluminum (Al)-Dissolved			106.8		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.7		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.7		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			102.7		%		80-120	05-OCT-20
Boron (B)-Dissolved			101.3		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.0		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			102.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			100.8		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			100.2		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			102.2		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			109.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-10	LCS	TMRM						
Nickel (Ni)-Dissolved			102.1		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			122.3		%		70-130	05-OCT-20
Potassium (K)-Dissolved			103.1		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.6		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.4		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			103.7		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			99.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			105.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.4		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.1		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			84.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			96.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			102.2		%		80-120	05-OCT-20
WG3418847-14	LCS	TMRM						
Aluminum (Al)-Dissolved			103.0		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			101.1		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			101.1		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			103.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			100.8		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.8		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			94.4		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			103.6		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			100.7		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			99.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			99.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.3		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			93.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			108.1		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			99.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			104.3		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-14	LCS	TMRM						
Nickel (Ni)-Dissolved			98.8		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			108.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			102.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			99.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			104.6		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			102.4		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			98.4		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			100.6		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			102.9		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			102.4		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			87.4		%		80-120	05-OCT-20
Uranium (U)-Dissolved			103.9		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			102.2		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.7		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.9		%		80-120	05-OCT-20
WG3418847-2	LCS	TMRM						
Aluminum (Al)-Dissolved			104.5		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			104.3		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			103.0		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.5		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			106.1		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			100.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			108.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			103.9		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			102.0		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			102.6		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			104.0		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			95.5		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			114.0		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.4		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			105.1		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.0		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			129.6		%		70-130	05-OCT-20
Potassium (K)-Dissolved			106.3		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.5		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			106.2		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			104.0		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			106.3		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			106.0		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			97.0		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			104.0		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			105.5		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			105.6		%		80-120	05-OCT-20
Uranium (U)-Dissolved			108.3		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			106.6		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	05-OCT-20
WG3418847-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.4		%		80-120	05-OCT-20
Antimony (Sb)-Dissolved			99.3		%		80-120	05-OCT-20
Arsenic (As)-Dissolved			105.0		%		80-120	05-OCT-20
Barium (Ba)-Dissolved			107.2		%		80-120	05-OCT-20
Bismuth (Bi)-Dissolved			101.3		%		80-120	05-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	05-OCT-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	05-OCT-20
Calcium (Ca)-Dissolved			98.7		%		80-120	05-OCT-20
Chromium (Cr)-Dissolved			106.2		%		80-120	05-OCT-20
Cobalt (Co)-Dissolved			102.1		%		80-120	05-OCT-20
Copper (Cu)-Dissolved			101.7		%		80-120	05-OCT-20
Iron (Fe)-Dissolved			101.9		%		80-120	05-OCT-20
Lead (Pb)-Dissolved			102.5		%		80-120	05-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	05-OCT-20
Magnesium (Mg)-Dissolved			110.4		%		80-120	05-OCT-20
Manganese (Mn)-Dissolved			103.7		%		80-120	05-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-6	LCS	TMRM						
Nickel (Ni)-Dissolved			100.9		%		80-120	05-OCT-20
Phosphorus (P)-Dissolved			118.2		%		70-130	05-OCT-20
Potassium (K)-Dissolved			104.9		%		80-120	05-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	05-OCT-20
Silicon (Si)-Dissolved			105.7		%		60-140	05-OCT-20
Silver (Ag)-Dissolved			101.9		%		80-120	05-OCT-20
Sodium (Na)-Dissolved			102.2		%		80-120	05-OCT-20
Strontium (Sr)-Dissolved			103.5		%		80-120	05-OCT-20
Sulfur (S)-Dissolved			103.7		%		80-120	05-OCT-20
Thallium (Tl)-Dissolved			101.5		%		80-120	05-OCT-20
Tin (Sn)-Dissolved			103.8		%		80-120	05-OCT-20
Titanium (Ti)-Dissolved			91.8		%		80-120	05-OCT-20
Uranium (U)-Dissolved			105.6		%		80-120	05-OCT-20
Vanadium (V)-Dissolved			104.4		%		80-120	05-OCT-20
Zinc (Zn)-Dissolved			98.8		%		80-120	05-OCT-20
Zirconium (Zr)-Dissolved			100.1		%		80-120	05-OCT-20
WG3418847-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5245977							
WG3418847-5 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
WG3418847-9 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20



Quality Control Report

Workorder: L2510856

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5245977							
WG3418847-9	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-OCT-20
NH3-L-F-CL		Water						
Batch	R5244812							
WG3417994-14	LCS							
Ammonia as N			103.5		%		85-115	03-OCT-20
WG3417994-18	LCS							
Ammonia as N			106.9		%		85-115	04-OCT-20
WG3417994-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	03-OCT-20
WG3417994-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5243877							
WG3417032-2	LCS							
Nitrite (as N)			100.7		%		90-110	01-OCT-20
WG3417032-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	01-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5243877							
WG3417032-2	LCS							
Nitrate (as N)			100.0		%		90-110	01-OCT-20
WG3417032-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	01-OCT-20
OH-CL	Water							
Batch	R5244719							
WG3417953-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	03-OCT-20
ORP-CL	Water							
Batch	R5243713							
WG3416588-7	CRM	CL-ORP						
ORP			222		mV		210-230	01-OCT-20
P-T-L-COL-CL	Water							
Batch	R5248520							
WG3419320-6	LCS							
Phosphorus (P)-Total			105.1		%		80-120	06-OCT-20
WG3419320-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-OCT-20
PH-CL	Water							
Batch	R5244719							
WG3417953-14	LCS							
pH			6.99		pH		6.9-7.1	03-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5243682							
WG3416516-2	LCS							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	01-OCT-20
WG3416516-6	LCS							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	01-OCT-20
WG3416516-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-OCT-20
WG3416516-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-OCT-20
SO4-IC-N-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5243877							
WG3417032-2 LCS								
Sulfate (SO4)			100.9		%		90-110	01-OCT-20
WG3417032-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	01-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5250119							
WG3419005-2 LCS								
Total Dissolved Solids			95.7		%		85-115	06-OCT-20
WG3419005-1 MB								
Total Dissolved Solids			<10		mg/L		10	06-OCT-20
TKN-L-F-CL	Water							
Batch	R5244720							
WG3417749-10 LCS								
Total Kjeldahl Nitrogen			99.6		%		75-125	03-OCT-20
WG3417749-14 LCS								
Total Kjeldahl Nitrogen			101.6		%		75-125	03-OCT-20
WG3417749-2 LCS								
Total Kjeldahl Nitrogen			89.1		%		75-125	03-OCT-20
WG3417749-4 LCS								
Total Kjeldahl Nitrogen			90.5		%		75-125	03-OCT-20
WG3417749-6 LCS								
Total Kjeldahl Nitrogen			99.1		%		75-125	03-OCT-20
WG3417749-8 LCS								
Total Kjeldahl Nitrogen			109.6		%		75-125	04-OCT-20
WG3417749-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
WG3417749-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-OCT-20
WG3417749-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-OCT-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5250379							
WG3419008-2	LCS							
Total Suspended Solids			86.2		%		85-115	06-OCT-20
WG3419008-1	MB							
Total Suspended Solids			<1.0		mg/L		1	06-OCT-20
TURBIDITY-CL	Water							
Batch	R5243709							
WG3416493-9	DUP	L2510856-2						
Turbidity		569	603		NTU	5.8	15	01-OCT-20
WG3416493-8	LCS							
Turbidity			98.0		%		85-115	01-OCT-20
WG3416493-7	MB							
Turbidity			<0.10		NTU		0.1	01-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	30-SEP-20 11:45	01-OCT-20 15:00	0.25	27	hours	EHTR-FM
	2	30-SEP-20 08:45	01-OCT-20 15:00	0.25	30	hours	EHTR-FM
	3	30-SEP-20 16:00	01-OCT-20 15:00	0.25	23	hours	EHTR-FM
pH	1	30-SEP-20 11:45	03-OCT-20 11:00	0.25	71	hours	EHTR-FM
	2	30-SEP-20 08:45	03-OCT-20 11:00	0.25	74	hours	EHTR-FM
	3	30-SEP-20 16:00	03-OCT-20 11:00	0.25	67	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2510856 were received on 01-OCT-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Report To Contact and company name below will appear on the final report		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																		
Company:	SNC-Lavalin ~Nelson	Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																		
Contact:	Mark Newman	Quality Control (QC) Report with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			PRIORITY (Business Days)			EMERGENCY															
Phone:	Tel.:250-464-5672	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>															
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>															
Street:	520 Lake Street	Emails: SNC - 'Mark Newman'			Date and Time Required for all E&P TATs:																		
City/Province:	Nelson, BC	'Stefan.Humphries', Vicky.Lipinski@snc.lavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																		
Postal Code:	V1L 4C6	Teck: SEE DIGITAL COC			Analysis Request																		
Invoice To	Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P					P											
Company:		Emails: Mark.Newman@snc.lavalin.com			DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BOMDGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)									
Contact:		payables@snc.lavalin.com																					
Project Information		Oil and Gas Required Fields (client use)																					
ALS Account # / Quote #:	MOR125 / Q78198	AFE/Cost Center:			PO#																		
Job #:	72000 ELKVIEW OPERATIONS	Major/Minor Code:			Routing Code:																		
PO / AFE:	672225	Requisitioner:																					
LSD:		Location:																					
ALS Lab Work Order # (lab use only):		ALS Contact: Inayat Dhaliwal 403-407-1784		Sampler: MTB																			
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide								
EV-MW-GV4B-WG-2020-09-30-NP	EV-MW-GV4B	20-Sep-20	1145	WG	R	R	R	R	R	R	R	R	R	R	R							5	
EV-MW-GCIA-WG-2020-09-30-NP	EV-MW-GCIA	30-Sep-20	945	WG	R	R	R	R	R	R	R	R	R	R	R							5	
EV-MW-MCIOC-WG-2020-09-30-NP	EV-MW-MCIOC	30-Sep-20	1600	WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
				WG	R	R	R	R	R	R	R	R	R	R	R							5	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																		
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> NO					Frozen <input type="checkbox"/>			SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION PRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input checked="" type="checkbox"/>			INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C												
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																		
Released by: Marc Beaton	Date: 30-Sep-20	Time:	Received by:	Date: 01/10/21	Time: 08:35	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:





SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 02-OCT-20
Report Date: 09-OCT-20 16:31 (MT)
Version: FINAL

Client Phone: 250-354-1664

Certificate of Analysis

Lab Work Order #: L2511647
Project P.O. #: 672225
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2511647-1	L2511647-2	L2511647-3	L2511647-4
					L2511647-1 WG 01-OCT-20 09:40 RG_MW-03- 04_WG_2020_10_ 01_NP	L2511647-2 WG 01-OCT-20 10:30 RG_MW_MC10A_ WG_2020_10_01_ NP	L2511647-3 WG 01-OCT-20 10:00 RG_MW_MC10B_ WG_2020_10_01_ NP	L2511647-4 WG 01-OCT-20 12:00 RG_MW_MC10C_ WG_2020_10_01_ NP
Grouping	Analyte							
WATER								
Physical Tests	Conductivity (@ 25C) (uS/cm)	538	535	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	267	268	<0.50	<0.50			
	pH (pH)	8.44	8.43	5.71	5.66			
	ORP (mV)	495	429	476	472			
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	340 ^{DLHC}	324 ^{DLHC}	<10	<10			
	Turbidity (NTU)	0.32	0.28	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	1.1	1.6	1.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	172	175	<1.0	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.4	7.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	178	182	<1.0	<1.0			
	Ammonia as N (mg/L)	0.0149	<0.0050	<0.0050	<0.0050			
	Bicarbonate (HCO3) (mg/L)	210	214	<5.0	<5.0			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	5.58	5.56	<0.10	<0.10			
	Fluoride (F) (mg/L)	0.121	0.119	<0.020	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	95.2	94.5	0.0	0.0			
	Nitrate and Nitrite (as N) (mg/L)	1.12	1.11	<0.0051	<0.0051			
	Nitrate (as N) (mg/L)	1.12	1.11	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.090 ^{TKNI}	0.183	<0.050	<0.050			
	Total Nitrogen (mg/L)	1.21	1.30	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0055	0.0058	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0046	0.0049	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	99.4	99.0	<0.30	<0.30			
	Anion Sum (meq/L)	5.88	5.94	<0.10	<0.10			
	Cation Sum (meq/L)	5.59	5.62	<0.10	<0.10			
	Cation - Anion Balance (%)	-2.5	-2.8	0.0	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	0.59	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0013	0.0017	<0.0010	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2511647-1	L2511647-2	L2511647-3	L2511647-4
					L2511647-1 WG 01-OCT-20 09:40 RG_MW-03- 04_WG_2020_10_ 01_NP	L2511647-2 WG 01-OCT-20 10:30 RG_MW_MC10A_ WG_2020_10_01_ NP	L2511647-3 WG 01-OCT-20 10:00 RG_MW_MC10B_ WG_2020_10_01_ NP	L2511647-4 WG 01-OCT-20 12:00 RG_MW_MC10C_ WG_2020_10_01_ NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00014	0.00014	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00018	0.00019	<0.00010	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.129	0.128	<0.00010	<0.00010			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013	0.013	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000136	0.0000113	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	67.0	67.7	<0.050	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00014	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0107	0.0106	<0.0010	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	24.1	24.0	<0.0050	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	0.00558	0.00572	<0.00010	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.000025 ^{DLM}	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00112	0.00113	<0.000050	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.05	1.03	<0.10	<0.10			
	Selenium (Se)-Dissolved (mg/L)	0.00883	0.00898	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	2.62	2.54	<0.050	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.54	5.44	<0.050	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	0.181	0.186	<0.00020	<0.00020			
	Sulfur (S)-Dissolved (mg/L)	33.6	33.3	<0.50	<0.50			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00119	0.00119	<0.000010	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511647-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511647-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-CL Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-CL Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-CL Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

Reference Information

PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2511647

Report Date: 09-OCT-20

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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244631							
WG3417844-3	DUP	L2511647-2						
Acidity (as CaCO3)		1.1	<1.0	RPD-NA	mg/L	N/A	20	03-OCT-20
WG3417844-2	LCS							
Acidity (as CaCO3)			100.3		%		85-115	03-OCT-20
WG3417844-1	MB							
Acidity (as CaCO3)			1.4		mg/L		2	03-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5251289							
WG3420756-11	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	07-OCT-20
WG3420756-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-OCT-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-19	DUP	L2511647-4						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-OCT-20
WG3419579-10	LCS	TMRM						
Beryllium (Be)-Dissolved			99.6		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Beryllium (Be)-Dissolved			100.3		%		80-120	06-OCT-20
WG3419579-18	LCS	TMRM						
Beryllium (Be)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Beryllium (Be)-Dissolved			100.7		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Beryllium (Be)-Dissolved			99.1		%		80-120	06-OCT-20
WG3419579-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-13	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-17	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-5	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-9	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-OCT-20
WG3419579-20	MS	L2511647-4						
Beryllium (Be)-Dissolved			104.9		%		70-130	06-OCT-20



Quality Control Report

Workorder: L2511647

Report Date: 09-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BIC-CL	Water							
Batch	R5251289							
WG3420756-10 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	07-OCT-20
BR-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-10 LCS								
Bromide (Br)			99.6		%		85-115	02-OCT-20
WG3417695-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	02-OCT-20
C-DIS-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-2 LCS								
Dissolved Organic Carbon			98.0		%		80-120	08-OCT-20
WG3421624-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
Batch	R5252529							
WG3422182-2 LCS								
Dissolved Organic Carbon			92.0		%		80-120	09-OCT-20
WG3422182-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-2 LCS								
Total Organic Carbon			99.1		%		80-120	08-OCT-20
WG3421624-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5244476							
WG3417695-10 LCS								
Chloride (Cl)			92.1		%		85-115	02-OCT-20
WG3417695-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-OCT-20
CO3-CL	Water							
Batch	R5251289							
WG3420756-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	07-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Batch R5251289								
WG3420756-11 LCS								
Conductivity (@ 25C)			98.6		%		90-110	07-OCT-20
WG3420756-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-OCT-20
F-IC-N-CL								
Batch R5244476								
WG3417695-10 LCS								
Fluoride (F)			92.8		%		90-110	02-OCT-20
WG3417695-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-OCT-20
HG-D-CVAA-CL								
Batch R5251758								
WG3421280-14 LCS								
Mercury (Hg)-Dissolved			107.0		%		80-120	08-OCT-20
WG3421280-13 MB								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
MET-D-CCMS-CL								
Batch R5248645								
WG3419579-19 DUP		L2511647-4						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-OCT-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-OCT-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-OCT-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-OCT-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-19	DUP	L2511647-4						
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-OCT-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Potassium (K)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	06-OCT-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-OCT-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-OCT-20
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-OCT-20
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-OCT-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-OCT-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-OCT-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-OCT-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-OCT-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	06-OCT-20
WG3419579-10	LCS	TMRM						
Aluminum (Al)-Dissolved			100.9		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.3		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			101.9		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.1		%		80-120	06-OCT-20
Boron (B)-Dissolved			90.6		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			103.1		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			96.2		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			100.6		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			100.6		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.9		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			103.0		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			99.5		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			92.9		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			96.3		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			103.4		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-10	LCS	TMRM						
Nickel (Ni)-Dissolved			100.4		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			104.1		%		70-130	06-OCT-20
Potassium (K)-Dissolved			100.7		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			100.9		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			101.3		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			97.0		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			102.5		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			98.3		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			103.9		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			101.8		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			97.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			102.9		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.7		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.1		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-14	LCS	TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.2		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			104.3		%		80-120	06-OCT-20
Boron (B)-Dissolved			88.4		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			102.8		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			97.3		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			102.6		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.4		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			101.8		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			97.4		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.7		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			101.6		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			103.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-14	LCS	TMRM						
Nickel (Ni)-Dissolved			101.6		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			108.2		%		70-130	06-OCT-20
Potassium (K)-Dissolved			101.9		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			96.1		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.4		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			99.8		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			95.9		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			101.1		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			101.3		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.7		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			95.5		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.7		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.5		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			103.6		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			99.4		%		80-120	06-OCT-20
WG3419579-18	LCS	TMRM						
Aluminum (Al)-Dissolved			104.6		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			101.9		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			103.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			104.4		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			103.2		%		80-120	06-OCT-20
Boron (B)-Dissolved			97.1		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.9		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			100.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.0		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			101.3		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			96.7		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			102.9		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			101.3		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			102.9		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			105.7		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-18	LCS	TMRM						
Nickel (Ni)-Dissolved			102.4		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			100.4		%		70-130	06-OCT-20
Potassium (K)-Dissolved			104.0		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			97.4		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			101.9		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			102.5		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			105.2		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			108.3		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			98.2		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			104.3		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.6		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			91.0		%		80-120	06-OCT-20
Uranium (U)-Dissolved			106.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			102.0		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			105.2		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			101.9		%		80-120	06-OCT-20
WG3419579-2	LCS	TMRM						
Aluminum (Al)-Dissolved			101.1		%		80-120	06-OCT-20
Antimony (Sb)-Dissolved			100.8		%		80-120	06-OCT-20
Arsenic (As)-Dissolved			104.8		%		80-120	06-OCT-20
Barium (Ba)-Dissolved			102.1		%		80-120	06-OCT-20
Bismuth (Bi)-Dissolved			101.4		%		80-120	06-OCT-20
Boron (B)-Dissolved			98.3		%		80-120	06-OCT-20
Cadmium (Cd)-Dissolved			104.4		%		80-120	06-OCT-20
Calcium (Ca)-Dissolved			98.6		%		80-120	06-OCT-20
Chromium (Cr)-Dissolved			103.9		%		80-120	06-OCT-20
Cobalt (Co)-Dissolved			101.9		%		80-120	06-OCT-20
Copper (Cu)-Dissolved			102.1		%		80-120	06-OCT-20
Iron (Fe)-Dissolved			101.2		%		80-120	06-OCT-20
Lead (Pb)-Dissolved			101.9		%		80-120	06-OCT-20
Lithium (Li)-Dissolved			102.7		%		80-120	06-OCT-20
Magnesium (Mg)-Dissolved			99.3		%		80-120	06-OCT-20
Manganese (Mn)-Dissolved			100.4		%		80-120	06-OCT-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-2	LCS	TMRM						
Nickel (Ni)-Dissolved			103.5		%		80-120	06-OCT-20
Phosphorus (P)-Dissolved			101.5		%		70-130	06-OCT-20
Potassium (K)-Dissolved			104.3		%		80-120	06-OCT-20
Selenium (Se)-Dissolved			98.2		%		80-120	06-OCT-20
Silicon (Si)-Dissolved			99.1		%		60-140	06-OCT-20
Silver (Ag)-Dissolved			100.4		%		80-120	06-OCT-20
Sodium (Na)-Dissolved			106.4		%		80-120	06-OCT-20
Strontium (Sr)-Dissolved			104.5		%		80-120	06-OCT-20
Sulfur (S)-Dissolved			96.0		%		80-120	06-OCT-20
Thallium (Tl)-Dissolved			101.8		%		80-120	06-OCT-20
Tin (Sn)-Dissolved			103.3		%		80-120	06-OCT-20
Titanium (Ti)-Dissolved			99.8		%		80-120	06-OCT-20
Uranium (U)-Dissolved			104.3		%		80-120	06-OCT-20
Vanadium (V)-Dissolved			105.2		%		80-120	06-OCT-20
Zinc (Zn)-Dissolved			102.5		%		80-120	06-OCT-20
Zirconium (Zr)-Dissolved			101.1		%		80-120	06-OCT-20
WG3419579-6	LCS	TMRM						
Aluminum (Al)-Dissolved			103.6		%		80-120	08-OCT-20
Antimony (Sb)-Dissolved			104.7		%		80-120	08-OCT-20
Arsenic (As)-Dissolved			105.6		%		80-120	08-OCT-20
Barium (Ba)-Dissolved			104.2		%		80-120	08-OCT-20
Bismuth (Bi)-Dissolved			99.6		%		80-120	08-OCT-20
Boron (B)-Dissolved			100.3		%		80-120	08-OCT-20
Cadmium (Cd)-Dissolved			103.2		%		80-120	08-OCT-20
Calcium (Ca)-Dissolved			102.7		%		80-120	08-OCT-20
Chromium (Cr)-Dissolved			104.4		%		80-120	08-OCT-20
Cobalt (Co)-Dissolved			102.8		%		80-120	08-OCT-20
Copper (Cu)-Dissolved			102.7		%		80-120	08-OCT-20
Iron (Fe)-Dissolved			100.7		%		80-120	08-OCT-20
Lead (Pb)-Dissolved			99.98		%		80-120	08-OCT-20
Lithium (Li)-Dissolved			100.6		%		80-120	08-OCT-20
Magnesium (Mg)-Dissolved			109.2		%		80-120	08-OCT-20
Manganese (Mn)-Dissolved			104.9		%		80-120	08-OCT-20
Molybdenum (Mo)-Dissolved			103.5		%		80-120	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-6	LCS	TMRM						
Nickel (Ni)-Dissolved			102.3		%		80-120	08-OCT-20
Phosphorus (P)-Dissolved			109.6		%		70-130	08-OCT-20
Potassium (K)-Dissolved			107.3		%		80-120	08-OCT-20
Selenium (Se)-Dissolved			101.9		%		80-120	08-OCT-20
Silicon (Si)-Dissolved			99.3		%		60-140	08-OCT-20
Silver (Ag)-Dissolved			98.0		%		80-120	08-OCT-20
Sodium (Na)-Dissolved			104.7		%		80-120	08-OCT-20
Strontium (Sr)-Dissolved			102.4		%		80-120	08-OCT-20
Sulfur (S)-Dissolved			100.8		%		80-120	08-OCT-20
Thallium (Tl)-Dissolved			98.8		%		80-120	08-OCT-20
Tin (Sn)-Dissolved			102.8		%		80-120	08-OCT-20
Titanium (Ti)-Dissolved			90.4		%		80-120	08-OCT-20
Uranium (U)-Dissolved			98.6		%		80-120	08-OCT-20
Vanadium (V)-Dissolved			106.0		%		80-120	08-OCT-20
Zinc (Zn)-Dissolved			99.6		%		80-120	08-OCT-20
Zirconium (Zr)-Dissolved			98.3		%		80-120	08-OCT-20
WG3419579-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL		Water						
Batch	R5248645							
WG3419579-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
WG3419579-13 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-13 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-17 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-17 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-5	MB							
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-OCT-20
WG3419579-9	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-9 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
WG3419579-20 MS		L2511647-4						
Aluminum (Al)-Dissolved			104.2		%		70-130	06-OCT-20
Antimony (Sb)-Dissolved			102.9		%		70-130	06-OCT-20
Arsenic (As)-Dissolved			106.5		%		70-130	06-OCT-20
Barium (Ba)-Dissolved			108.5		%		70-130	06-OCT-20
Bismuth (Bi)-Dissolved			106.0		%		70-130	06-OCT-20
Boron (B)-Dissolved			101.5		%		70-130	06-OCT-20
Cadmium (Cd)-Dissolved			108.2		%		70-130	06-OCT-20
Calcium (Ca)-Dissolved			104.8		%		70-130	06-OCT-20
Chromium (Cr)-Dissolved			106.7		%		70-130	06-OCT-20
Cobalt (Co)-Dissolved			106.2		%		70-130	06-OCT-20
Copper (Cu)-Dissolved			106.6		%		70-130	06-OCT-20
Iron (Fe)-Dissolved			104.5		%		70-130	06-OCT-20
Lead (Pb)-Dissolved			104.5		%		70-130	06-OCT-20
Lithium (Li)-Dissolved			101.7		%		70-130	06-OCT-20
Magnesium (Mg)-Dissolved			97.9		%		70-130	06-OCT-20
Manganese (Mn)-Dissolved			104.5		%		70-130	06-OCT-20
Molybdenum (Mo)-Dissolved			105.0		%		70-130	06-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5248645							
WG3419579-20 MS		L2511647-4						
Nickel (Ni)-Dissolved			106.5		%		70-130	06-OCT-20
Phosphorus (P)-Dissolved			100.5		%		70-130	06-OCT-20
Potassium (K)-Dissolved			99.7		%		70-130	06-OCT-20
Selenium (Se)-Dissolved			103.2		%		70-130	06-OCT-20
Silicon (Si)-Dissolved			99.3		%		70-130	06-OCT-20
Silver (Ag)-Dissolved			105.5		%		70-130	06-OCT-20
Sodium (Na)-Dissolved			109.8		%		70-130	06-OCT-20
Strontium (Sr)-Dissolved			108.4		%		70-130	06-OCT-20
Thallium (Tl)-Dissolved			105.9		%		70-130	06-OCT-20
Tin (Sn)-Dissolved			104.1		%		70-130	06-OCT-20
Titanium (Ti)-Dissolved			93.5		%		70-130	06-OCT-20
Uranium (U)-Dissolved			106.8		%		70-130	06-OCT-20
Vanadium (V)-Dissolved			103.7		%		70-130	06-OCT-20
Zinc (Zn)-Dissolved			110.0		%		70-130	06-OCT-20
Zirconium (Zr)-Dissolved			106.6		%		70-130	06-OCT-20
NH3-L-F-CL								
	Water							
Batch	R5250485							
WG3419701-18 LCS								
Ammonia as N			104.0		%		85-115	06-OCT-20
WG3419701-17 MB								
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-20
NO2-L-IC-N-CL								
	Water							
Batch	R5244476							
WG3417695-10 LCS								
Nitrite (as N)			93.2		%		90-110	02-OCT-20
WG3417695-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-OCT-20
NO3-L-IC-N-CL								
	Water							
Batch	R5244476							
WG3417695-10 LCS								
Nitrate (as N)			93.7		%		90-110	02-OCT-20
WG3417695-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-OCT-20
OH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5244476							
WG3417695-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5251382							
WG3419850-2 LCS								
Total Dissolved Solids			98.0		%		85-115	07-OCT-20
WG3419850-1 MB								
Total Dissolved Solids			<10		mg/L		10	07-OCT-20
TKN-L-F-CL	Water							
Batch	R5251563							
WG3420874-12 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	08-OCT-20
WG3420874-14 LCS								
Total Kjeldahl Nitrogen			94.7		%		75-125	08-OCT-20
WG3420874-16 LCS								
Total Kjeldahl Nitrogen			92.3		%		75-125	08-OCT-20
WG3420874-2 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	07-OCT-20
WG3420874-4 LCS								
Total Kjeldahl Nitrogen			93.0		%		75-125	08-OCT-20
WG3420874-6 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	08-OCT-20
WG3420874-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3420874-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-15 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5251420							
WG3419847-2	LCS							
Total Suspended Solids			94.9		%		85-115	07-OCT-20
WG3419847-1	MB							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-20
TURBIDITY-CL	Water							
Batch	R5244431							
WG3417280-2	LCS							
Turbidity			98.4		%		85-115	02-OCT-20
WG3417280-1	MB							
Turbidity			<0.10		NTU		0.1	02-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	01-OCT-20 09:40	02-OCT-20 15:15	0.25	30	hours	EHTR-FM
	2	01-OCT-20 10:30	02-OCT-20 15:15	0.25	29	hours	EHTR-FM
	3	01-OCT-20 10:00	02-OCT-20 15:15	0.25	29	hours	EHTR-FM
	4	01-OCT-20 12:00	02-OCT-20 15:15	0.25	27	hours	EHTR-FM
pH							
	1	01-OCT-20 09:40	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	2	01-OCT-20 10:30	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	3	01-OCT-20 10:00	07-OCT-20 14:00	0.25	148	hours	EHTR-FM
	4	01-OCT-20 12:00	07-OCT-20 14:00	0.25	146	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2511647 were received on 02-OCT-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2511647-COFC

Report To			Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																	
Contact and company name below will appear on the final report			Select Report Format: <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Company: SNC-Lavalin ~Nelson			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>					EMERGENCY			1 Business day [E1 - 100%]									
Contact: Mark Newman			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>								Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]									
Phone: Tel..250-464-5672			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>																	
Company address below will appear on the final report			Emails: SNC - 'Mark.Newman'			Date and Time Required for all E&P TATs:																	
Street: 520 Lake Street			'Stefan.Humphries', Vicky.Lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																	
City/Province: Nelson, BC			Teck: <i>SEE Digital COC</i>			Analysis Request																	
Postal Code: V1L 4C6			Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																				
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Emails: Mark.Newman@sncclavalin.com																				
Company:			payables@sncclavalin.com																				
Contact:			Oil and Gas Required Fields (client use)																				
Project Information			AFE/Cost Center: PO#																				
ALS Account # / Quote #: MOR125 / Q78198			Major/Minor Code: Routing Code:																				
Job #: <i>REP - Regional</i>			Requisitioner:																				
PO / AFE: 672225			Location:																				
LSD:			ALS Lab Work Order # (lab use only):																				
			ALS Contact: Inayat Dhaliwal 403-407-1784			Sampler: <i>MTB</i>								SAMPLES ON HOLD			Sample is hazardous (please provide further details)		NUMBER OF CONTAINERS				
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)						
RG	MW-03-04-WG-2020-10-01-NP		RG-MW-03-04		01-Oct-20	9:40	WG	R	R	R	R	R	R	R	R	R	R						5
RG	MW-MC10A-WG-2020-10-01-NP		RG-MW-MC10A		01-Oct-20	10:30	WG	R	R	R	R	R	R	R	R	R	R						5
RG	MW-MC10B-WG-2020-10-01-NP		RG-MW-MC10B		31-Oct-20	10:00	WG	R	R	R	R	R	R	R	R	R	R						5
RG	MW-MC10C-WG-2020-10-01-NP		RG-MW-MC10C		01-Oct-20	12:00	WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
							WG	R	R	R	R	R	R	R	R	R	R						5
Drinking Water (DW) Samples ¹ (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System?			Teck Facility Name: (please select the applicable Facility)			Frozen <input type="checkbox"/>			SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/>			Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			Cooling Initiated <input type="checkbox"/>					
Are samples for human consumption/ use?			<i>REP - Regional</i>			INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C														
GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS																							
SHIPMENT RELEASE (client use)						INITIAL SHIPMENT RECEPTION (lab use only)						FINAL SHIPMENT RECEPTION (lab use only)											
Released by: Marc Beaton		Date: 01-Oct-20		Time: 1300		Received by: [Signature]		Date: 2020		Time: [Signature]		Received by: [Signature]		Date: [Signature]		Time: [Signature]							



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 02-OCT-20
Report Date: 09-OCT-20 16:41 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2511693
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: RG_F-Q4-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2511693-1 WP 01-OCT-20 09:24 RG_DW- F_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	6.01			
	ORP (mV)	431			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2511693-1 WP 01-OCT-20 09:24 RG_DW- F_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2511693-1 WP 01-OCT-20 09:24 RG_DW- F_WP_Q4- 2020_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2511693-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2511693-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2511693-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2511693-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2511693-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2511693-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2511693-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2511693-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2511693-1
Matrix Spike	Lithium (Li)-Total	MS-B	L2511693-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2511693-1
Matrix Spike	Nickel (Ni)-Total	MS-B	L2511693-1
Matrix Spike	Potassium (K)-Total	MS-B	L2511693-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2511693-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2511693-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2511693-1
Matrix Spike	Uranium (U)-Total	MS-B	L2511693-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon			

Reference Information

and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

RG_F-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2511693

Report Date: 09-OCT-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5244631							
WG3417844-5	LCS							
Acidity (as CaCO3)			98.3		%		85-115	03-OCT-20
WG3417844-4	MB							
Acidity (as CaCO3)			1.7		mg/L		2	03-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5251289							
WG3420756-11	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	07-OCT-20
WG3420756-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5251425							
WG3420503-2	LCS							
Beryllium (Be)-Dissolved			99.97		%		80-120	08-OCT-20
WG3420503-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5251425							
WG3420527-2	LCS							
Beryllium (Be)-Total			103.2		%		80-120	08-OCT-20
WG3420527-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	08-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5244650							
WG3417870-15	DUP	L2511693-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14	LCS							
Bromide (Br)			107.9		%		85-115	02-OCT-20
WG3417870-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	02-OCT-20
WG3417870-16	MS	L2511693-1						
Bromide (Br)			112.5		%		75-125	02-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5252004							
WG3421624-2	LCS							
Dissolved Organic Carbon			98.0		%		80-120	08-OCT-20
WG3421624-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5252004							
WG3421624-2 LCS								
Total Organic Carbon			99.1		%		80-120	08-OCT-20
WG3421624-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5244650							
WG3417870-15 DUP		L2511693-1						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14 LCS								
Chloride (Cl)			103.6		%		85-115	02-OCT-20
WG3417870-13 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-OCT-20
WG3417870-16 MS		L2511693-1						
Chloride (Cl)			107.7		%		75-125	02-OCT-20
EC-L-PCT-CL	Water							
Batch	R5251289							
WG3420756-11 LCS								
Conductivity (@ 25C)			98.6		%		90-110	07-OCT-20
WG3420756-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-OCT-20
F-IC-N-CL	Water							
Batch	R5244650							
WG3417870-15 DUP		L2511693-1						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14 LCS								
Fluoride (F)			96.4		%		90-110	02-OCT-20
WG3417870-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-OCT-20
WG3417870-16 MS		L2511693-1						
Fluoride (F)			105.6		%		75-125	02-OCT-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5251270							
WG3420648-2	LCS							
Mercury (Hg)-Dissolved			99.2		%		80-120	08-OCT-20
WG3420648-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-OCT-20
HG-T-CVAA-VA								
	Water							
Batch	R5251270							
WG3420726-2	LCS							
Mercury (Hg)-Total			98.6		%		80-120	08-OCT-20
WG3420726-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	08-OCT-20
MET-D-CCMS-VA								
	Water							
Batch	R5251425							
WG3420503-2	LCS							
Aluminum (Al)-Dissolved			97.7		%		80-120	08-OCT-20
Antimony (Sb)-Dissolved			100.7		%		80-120	08-OCT-20
Arsenic (As)-Dissolved			98.4		%		80-120	08-OCT-20
Barium (Ba)-Dissolved			101.6		%		80-120	08-OCT-20
Bismuth (Bi)-Dissolved			108.6		%		80-120	08-OCT-20
Boron (B)-Dissolved			93.1		%		80-120	08-OCT-20
Cadmium (Cd)-Dissolved			99.8		%		80-120	08-OCT-20
Calcium (Ca)-Dissolved			102.0		%		80-120	08-OCT-20
Chromium (Cr)-Dissolved			95.1		%		80-120	08-OCT-20
Cobalt (Co)-Dissolved			95.9		%		80-120	08-OCT-20
Copper (Cu)-Dissolved			97.1		%		80-120	08-OCT-20
Iron (Fe)-Dissolved			93.9		%		80-120	08-OCT-20
Lead (Pb)-Dissolved			103.9		%		80-120	08-OCT-20
Lithium (Li)-Dissolved			99.4		%		80-120	08-OCT-20
Magnesium (Mg)-Dissolved			97.3		%		80-120	08-OCT-20
Manganese (Mn)-Dissolved			99.8		%		80-120	08-OCT-20
Molybdenum (Mo)-Dissolved			102.0		%		80-120	08-OCT-20
Nickel (Ni)-Dissolved			97.2		%		80-120	08-OCT-20
Potassium (K)-Dissolved			105.6		%		80-120	08-OCT-20
Selenium (Se)-Dissolved			102.0		%		80-120	08-OCT-20
Silicon (Si)-Dissolved			101.3		%		60-140	08-OCT-20
Silver (Ag)-Dissolved			102.3		%		80-120	08-OCT-20
Sodium (Na)-Dissolved			102.2		%		80-120	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5251425							
WG3420503-2	LCS							
Strontium (Sr)-Dissolved			106.0		%		80-120	08-OCT-20
Thallium (Tl)-Dissolved			103.5		%		80-120	08-OCT-20
Tin (Sn)-Dissolved			101.4		%		80-120	08-OCT-20
Titanium (Ti)-Dissolved			97.8		%		80-120	08-OCT-20
Uranium (U)-Dissolved			106.3		%		80-120	08-OCT-20
Vanadium (V)-Dissolved			99.6		%		80-120	08-OCT-20
Zinc (Zn)-Dissolved			97.5		%		80-120	08-OCT-20
WG3420503-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5251425							
WG3420503-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5251425							
WG3420527-2	LCS							
Aluminum (Al)-Total			98.7		%		80-120	08-OCT-20
Antimony (Sb)-Total			105.8		%		80-120	08-OCT-20
Arsenic (As)-Total			98.1		%		80-120	08-OCT-20
Barium (Ba)-Total			106.0		%		80-120	08-OCT-20
Bismuth (Bi)-Total			111.6		%		80-120	08-OCT-20
Boron (B)-Total			94.1		%		80-120	08-OCT-20
Cadmium (Cd)-Total			103.6		%		80-120	08-OCT-20
Calcium (Ca)-Total			106.2		%		80-120	08-OCT-20
Chromium (Cr)-Total			96.0		%		80-120	08-OCT-20
Cobalt (Co)-Total			95.1		%		80-120	08-OCT-20
Copper (Cu)-Total			99.0		%		80-120	08-OCT-20
Iron (Fe)-Total			94.1		%		80-120	08-OCT-20
Lead (Pb)-Total			104.7		%		80-120	08-OCT-20
Lithium (Li)-Total			103.6		%		80-120	08-OCT-20
Magnesium (Mg)-Total			97.5		%		80-120	08-OCT-20
Manganese (Mn)-Total			100.6		%		80-120	08-OCT-20
Molybdenum (Mo)-Total			103.6		%		80-120	08-OCT-20
Nickel (Ni)-Total			97.9		%		80-120	08-OCT-20
Potassium (K)-Total			108.4		%		80-120	08-OCT-20
Selenium (Se)-Total			104.5		%		80-120	08-OCT-20
Silicon (Si)-Total			105.3		%		80-120	08-OCT-20
Silver (Ag)-Total			103.5		%		80-120	08-OCT-20
Sodium (Na)-Total			102.9		%		80-120	08-OCT-20
Strontium (Sr)-Total			109.4		%		80-120	08-OCT-20
Thallium (Tl)-Total			104.4		%		80-120	08-OCT-20
Tin (Sn)-Total			104.2		%		80-120	08-OCT-20
Titanium (Ti)-Total			97.3		%		80-120	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5251425							
WG3420527-2	LCS							
Uranium (U)-Total			114.2		%		80-120	08-OCT-20
Vanadium (V)-Total			102.2		%		80-120	08-OCT-20
Zinc (Zn)-Total			102.4		%		80-120	08-OCT-20
WG3420527-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	08-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	08-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-OCT-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	08-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	08-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	08-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	08-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5250485								
WG3419701-22	LCS							
Ammonia as N			104.0		%		85-115	06-OCT-20
WG3419701-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-OCT-20
NO2-L-IC-N-CL								
Water								
Batch R5244650								
WG3417870-15	DUP	L2511693-1						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14	LCS							
Nitrite (as N)			101.0		%		90-110	02-OCT-20
WG3417870-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-OCT-20
WG3417870-16	MS	L2511693-1						
Nitrite (as N)			106.1		%		75-125	02-OCT-20
NO3-L-IC-N-CL								
Water								
Batch R5244650								
WG3417870-15	DUP	L2511693-1						
Nitrate (as N)			<0.0050	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14	LCS							
Nitrate (as N)			100.3		%		90-110	02-OCT-20
WG3417870-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-OCT-20
WG3417870-16	MS	L2511693-1						
Nitrate (as N)			104.6		%		75-125	02-OCT-20
ORP-CL								
Water								
Batch R5249576								
WG3419641-6	CRM	CL-ORP						
ORP			222		mV		210-230	06-OCT-20
P-T-L-COL-CL								
Water								
Batch R5251703								
WG3421132-14	LCS							
Phosphorus (P)-Total			101.6		%		80-120	08-OCT-20
WG3421132-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-OCT-20
PH-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5251289							
WG3420756-11	LCS							
pH			6.99		pH		6.9-7.1	07-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5244229							
WG3417340-6	LCS							
Orthophosphate-Dissolved (as P)			106.9		%		80-120	02-OCT-20
WG3417340-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-OCT-20
SO4-IC-N-CL	Water							
Batch	R5244650							
WG3417870-15	DUP	L2511693-1						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417870-14	LCS							
Sulfate (SO4)			101.8		%		90-110	02-OCT-20
WG3417870-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	02-OCT-20
WG3417870-16	MS	L2511693-1						
Sulfate (SO4)			106.1		%		75-125	02-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5251382							
WG3419850-5	LCS							
Total Dissolved Solids			98.4		%		85-115	07-OCT-20
WG3419850-4	MB							
Total Dissolved Solids			<10		mg/L		10	07-OCT-20
TKN-L-F-CL	Water							
Batch	R5251563							
WG3420874-12	LCS							
Total Kjeldahl Nitrogen			91.5		%		75-125	08-OCT-20
WG3420874-14	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	08-OCT-20
WG3420874-16	LCS							
Total Kjeldahl Nitrogen			92.3		%		75-125	08-OCT-20
WG3420874-2	LCS							
Total Kjeldahl Nitrogen			92.1		%		75-125	07-OCT-20
WG3420874-4	LCS							
Total Kjeldahl Nitrogen			93.0		%		75-125	08-OCT-20
WG3420874-6	LCS							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5251563							
WG3420874-6	LCS							
Total Kjeldahl Nitrogen			91.8		%		75-125	08-OCT-20
WG3420874-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-20
WG3420874-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
WG3420874-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-OCT-20
TSS-L-CL		Water						
Batch	R5251420							
WG3419847-2	LCS							
Total Suspended Solids			94.9		%		85-115	07-OCT-20
WG3419847-1	MB							
Total Suspended Solids			<1.0		mg/L		1	07-OCT-20
TURBIDITY-CL		Water						
Batch	R5244665							
WG3417716-2	LCS							
Turbidity			97.4		%		85-115	03-OCT-20
WG3417716-1	MB							
Turbidity			<0.10		NTU		0.1	03-OCT-20

Quality Control Report

Workorder: L2511693

Report Date: 09-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2511693

Report Date: 09-OCT-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	01-OCT-20 09:24	06-OCT-20 13:00	0.25	124	hours	EHTR-FM
pH	1	01-OCT-20 09:24	07-OCT-20 14:00	0.25	149	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2511693 were received on 02-OCT-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **RG_F-Q4-2020**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered F: Field; L: Lab; FL: Field & Lab; N: None



L2511693-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED						
								F	N	F	N	F	N	N
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-F_WP_Q4-2020_NP	RG_DW-F	WP	N	Oct 1, 20	9:24	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	<i>Oct 1, 20</i>

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	<i>Oct 1, 20</i>
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

[Handwritten notes and signatures]



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 08-OCT-20
Report Date: 18-MAR-21 10:33 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2514513
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-20-Q4-2020
Legal Site Desc:

Comments: ADDITIONAL 04-MAR-21 14:24

18-MAR-2021 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2514513-1.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514513-1 WP 07-OCT-20 09:34 RG_DW-02- 20_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	411			
	Hardness (as CaCO3) (mg/L)	220			
	pH (pH)	8.48			
	ORP (mV)	455			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	251	DLHC		
	Turbidity (NTU)	0.77			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	167			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	7.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	175			
	Ammonia as N (mg/L)	0.0088			
	Bicarbonate (HCO3) (mg/L)	204			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.85			
	Fluoride (F) (mg/L)	0.197			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	90.8			
	Nitrate (as N) (mg/L)	2.20			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.127			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	60.5			
	Anion Sum (meq/L)	4.97			
	Cation Sum (meq/L)	4.51			
	Cation - Anion Balance (%)	-4.8			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.0805			
	Beryllium (Be)-Total (ug/L)	<0.020			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514513-1 WP 07-OCT-20 09:34 RG_DW-02- 20_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0086			
	Calcium (Ca)-Total (mg/L)	69.3			
	Chromium (Cr)-Total (mg/L)	0.00020			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00819			
	Iron (Fe)-Total (mg/L)	0.044			
	Lead (Pb)-Total (mg/L)	0.000350			
	Lithium (Li)-Total (mg/L)	0.0069			
	Magnesium (Mg)-Total (mg/L)	18.9			
	Manganese (Mn)-Total (mg/L)	0.00149			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00113			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.563			
	Selenium (Se)-Total (ug/L)	9.52			
	Silicon (Si)-Total (mg/L)	2.20			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.25			
	Strontium (Sr)-Total (mg/L)	0.246			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000931			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0217			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0790			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0053			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2514513-1 WP 07-OCT-20 09:34 RG_DW-02- 20_WP_Q4- 2020_NP				
Grouping	Analyte				
WATER					
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	57.1			
	Chromium (Cr)-Dissolved (mg/L)	0.00022			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00319			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000102			
	Lithium (Li)-Dissolved (mg/L)	0.0065			
	Magnesium (Mg)-Dissolved (mg/L)	18.7			
	Manganese (Mn)-Dissolved (mg/L)	0.00082			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00108			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.599			
	Selenium (Se)-Dissolved (ug/L)	10.2			
	Silicon (Si)-Dissolved (mg/L)	2.27			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.45			
	Strontium (Sr)-Dissolved (mg/L)	0.218			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000969			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0087			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Total	MS-B	L2514513-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

Reference Information

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-20-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2514513

Report Date: 18-MAR-21

Page 1 of 12

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5252670							
WG3422367-17	LCS							
Acidity (as CaCO3)			103.9		%		85-115	09-OCT-20
WG3422367-16	MB							
Acidity (as CaCO3)			1.5		mg/L		2	09-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5253860							
WG3423809-14	LCS							
Alkalinity, Total (as CaCO3)			103.9		%		85-115	13-OCT-20
WG3423809-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255884							
WG3425090-2	LCS							
Beryllium (Be)-Dissolved			96.2		%		80-120	16-OCT-20
WG3425090-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-3	DUP	L2514513-1						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	13-OCT-20
WG3423444-2	LCS							
Beryllium (Be)-Total			103.6		%		80-120	13-OCT-20
WG3423444-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-OCT-20
BIC-CL								
	Water							
Batch	R5253860							
WG3423809-14	LCS							
Bicarbonate (HCO3)			106.8		%		85-115	13-OCT-20
WG3423809-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5252854							
WG3422577-2	LCS							
Bromide (Br)			102.4		%		85-115	09-OCT-20
WG3422577-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5256182							
WG3426616-6	LCS							
Dissolved Organic Carbon			97.8		%		80-120	16-OCT-20
WG3426616-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5256182							
WG3426616-6	LCS							
Total Organic Carbon			95.9		%		80-120	16-OCT-20
WG3426616-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-2	LCS							
Chloride (Cl)			101.0		%		85-115	09-OCT-20
WG3422577-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-OCT-20
CO3-CL	Water							
Batch	R5253860							
WG3423809-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	13-OCT-20
EC-L-PCT-CL	Water							
Batch	R5253860							
WG3423809-14	LCS							
Conductivity (@ 25C)			93.7		%		90-110	13-OCT-20
WG3423809-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-OCT-20
F-IC-N-CL	Water							
Batch	R5252854							
WG3422577-2	LCS							
Fluoride (F)			94.1		%		90-110	09-OCT-20
WG3422577-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Batch R5254665								
WG3424657-14 LCS								
	Mercury (Hg)-Dissolved		92.7		%		80-120	15-OCT-20
WG3424657-13 MB		NP						
	Mercury (Hg)-Dissolved		<0.000005C		mg/L		0.000005	15-OCT-20
HG-T-CVAA-VA								
Batch R5253792								
WG3423770-2 LCS								
	Mercury (Hg)-Total		95.6		%		80-120	14-OCT-20
WG3423770-1 MB								
	Mercury (Hg)-Total		<0.000005C		mg/L		0.000005	14-OCT-20
MET-D-CCMS-VA								
Batch R5255884								
WG3425090-2 LCS								
	Aluminum (Al)-Dissolved		102.9		%		80-120	16-OCT-20
	Antimony (Sb)-Dissolved		102.1		%		80-120	16-OCT-20
	Arsenic (As)-Dissolved		101.3		%		80-120	16-OCT-20
	Barium (Ba)-Dissolved		101.0		%		80-120	16-OCT-20
	Bismuth (Bi)-Dissolved		104.0		%		80-120	16-OCT-20
	Boron (B)-Dissolved		92.9		%		80-120	16-OCT-20
	Cadmium (Cd)-Dissolved		107.0		%		80-120	16-OCT-20
	Calcium (Ca)-Dissolved		96.6		%		80-120	16-OCT-20
	Chromium (Cr)-Dissolved		100.9		%		80-120	16-OCT-20
	Cobalt (Co)-Dissolved		102.6		%		80-120	16-OCT-20
	Copper (Cu)-Dissolved		103.1		%		80-120	16-OCT-20
	Iron (Fe)-Dissolved		102.5		%		80-120	16-OCT-20
	Lead (Pb)-Dissolved		102.4		%		80-120	16-OCT-20
	Lithium (Li)-Dissolved		94.3		%		80-120	16-OCT-20
	Magnesium (Mg)-Dissolved		101.5		%		80-120	16-OCT-20
	Manganese (Mn)-Dissolved		100.1		%		80-120	16-OCT-20
	Molybdenum (Mo)-Dissolved		99.5		%		80-120	16-OCT-20
	Nickel (Ni)-Dissolved		102.3		%		80-120	16-OCT-20
	Potassium (K)-Dissolved		101.1		%		80-120	16-OCT-20
	Selenium (Se)-Dissolved		102.1		%		80-120	16-OCT-20
	Silicon (Si)-Dissolved		98.8		%		60-140	16-OCT-20
	Silver (Ag)-Dissolved		103.8		%		80-120	16-OCT-20
	Sodium (Na)-Dissolved		106.1		%		80-120	16-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255884							
WG3425090-2	LCS							
Strontium (Sr)-Dissolved			101.4		%		80-120	16-OCT-20
Thallium (Tl)-Dissolved			100.3		%		80-120	16-OCT-20
Tin (Sn)-Dissolved			101.8		%		80-120	16-OCT-20
Titanium (Ti)-Dissolved			100.9		%		80-120	16-OCT-20
Uranium (U)-Dissolved			106.8		%		80-120	16-OCT-20
Vanadium (V)-Dissolved			101.0		%		80-120	16-OCT-20
Zinc (Zn)-Dissolved			104.4		%		80-120	16-OCT-20
WG3425090-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255884							
WG3425090-1	MB	NP						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-3	DUP	L2514513-1						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	13-OCT-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-OCT-20
Arsenic (As)-Total		0.00011	0.00011		mg/L	4.6	20	13-OCT-20
Barium (Ba)-Total		0.0805	0.0791		mg/L	1.8	20	13-OCT-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-OCT-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	13-OCT-20
Cadmium (Cd)-Total		0.0000086	0.0000069	J	mg/L	0.000001	0.00001	13-OCT-20
Calcium (Ca)-Total		69.3	68.2		mg/L	1.7	20	13-OCT-20
Chromium (Cr)-Total		0.00020	0.00021		mg/L	6.2	20	13-OCT-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-OCT-20
Copper (Cu)-Total		0.00819	0.00824		mg/L	0.6	20	13-OCT-20
Iron (Fe)-Total		0.044	0.047		mg/L	6.2	20	13-OCT-20
Lead (Pb)-Total		0.000350	0.000351		mg/L	0.3	20	13-OCT-20
Lithium (Li)-Total		0.0069	0.0070		mg/L	2.0	20	13-OCT-20
Magnesium (Mg)-Total		18.9	19.0		mg/L	0.7	20	13-OCT-20
Manganese (Mn)-Total		0.00149	0.00154		mg/L	3.0	20	13-OCT-20
Molybdenum (Mo)-Total		0.00113	0.00108		mg/L	3.8	20	13-OCT-20
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-OCT-20
Potassium (K)-Total		0.563	0.591		mg/L	4.8	20	13-OCT-20
Selenium (Se)-Total		0.00952	0.00953		mg/L	0.1	20	13-OCT-20
Silicon (Si)-Total		2.20	2.25		mg/L	2.2	20	13-OCT-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-OCT-20
Sodium (Na)-Total		2.25	2.30		mg/L	2.4	20	13-OCT-20
Strontium (Sr)-Total		0.246	0.246		mg/L	0.0	20	13-OCT-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-OCT-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-OCT-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-3	DUP	L2514513-1						
Uranium (U)-Total		0.000931	0.000928		mg/L	0.4	20	13-OCT-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-OCT-20
Zinc (Zn)-Total		0.0217	0.0225		mg/L	3.6	20	13-OCT-20
WG3423444-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	13-OCT-20
Antimony (Sb)-Total			106.5		%		80-120	13-OCT-20
Arsenic (As)-Total			101.3		%		80-120	13-OCT-20
Barium (Ba)-Total			99.3		%		80-120	13-OCT-20
Bismuth (Bi)-Total			117.7		%		80-120	13-OCT-20
Boron (B)-Total			93.5		%		80-120	13-OCT-20
Cadmium (Cd)-Total			101.3		%		80-120	13-OCT-20
Calcium (Ca)-Total			106.8		%		80-120	13-OCT-20
Chromium (Cr)-Total			107.8		%		80-120	13-OCT-20
Cobalt (Co)-Total			107.4		%		80-120	13-OCT-20
Copper (Cu)-Total			102.2		%		80-120	13-OCT-20
Iron (Fe)-Total			94.3		%		80-120	13-OCT-20
Lead (Pb)-Total			97.8		%		80-120	13-OCT-20
Lithium (Li)-Total			100.5		%		80-120	13-OCT-20
Magnesium (Mg)-Total			101.1		%		80-120	13-OCT-20
Manganese (Mn)-Total			101.1		%		80-120	13-OCT-20
Molybdenum (Mo)-Total			101.0		%		80-120	13-OCT-20
Nickel (Ni)-Total			101.2		%		80-120	13-OCT-20
Potassium (K)-Total			105.2		%		80-120	13-OCT-20
Selenium (Se)-Total			99.8		%		80-120	13-OCT-20
Silicon (Si)-Total			104.6		%		80-120	13-OCT-20
Silver (Ag)-Total			103.3		%		80-120	13-OCT-20
Sodium (Na)-Total			105.0		%		80-120	13-OCT-20
Strontium (Sr)-Total			107.1		%		80-120	13-OCT-20
Thallium (Tl)-Total			101.5		%		80-120	13-OCT-20
Tin (Sn)-Total			104.1		%		80-120	13-OCT-20
Titanium (Ti)-Total			107.2		%		80-120	13-OCT-20
Uranium (U)-Total			98.9		%		80-120	13-OCT-20
Vanadium (V)-Total			107.4		%		80-120	13-OCT-20
Zinc (Zn)-Total			105.8		%		80-120	13-OCT-20
WG3423444-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	13-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-OCT-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-OCT-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5256114							
WG3426131-10	LCS							
Ammonia as N			99.5		%		85-115	16-OCT-20
WG3426131-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-20
NO2-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-2	LCS							
Nitrite (as N)			102.2		%		90-110	09-OCT-20
WG3422577-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-20
NO3-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-2	LCS							
Nitrate (as N)			101.7		%		90-110	09-OCT-20
WG3422577-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-20
OH-CL	Water							
Batch	R5253860							
WG3423809-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-OCT-20
ORP-CL	Water							
Batch	R5254517							
WG3424351-13	CRM	CL-ORP						
ORP			223		mV		210-230	14-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255264							
WG3425452-18	LCS							
Phosphorus (P)-Total			91.8		%		80-120	15-OCT-20
WG3425452-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-OCT-20
PH-CL	Water							
Batch	R5253860							
WG3423809-14	LCS							
pH			7.01		pH		6.9-7.1	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5252370							
WG3421209-34 LCS								
Orthophosphate-Dissolved (as P)			105.8		%		80-120	08-OCT-20
WG3421209-33 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-OCT-20
SO4-IC-N-CL	Water							
Batch	R5252854							
WG3422577-2 LCS								
Sulfate (SO4)			99.2		%		90-110	09-OCT-20
WG3422577-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-14 LCS								
Total Dissolved Solids			95.0		%		85-115	14-OCT-20
WG3423754-13 MB								
Total Dissolved Solids			<10		mg/L		10	14-OCT-20
TKN-L-F-CL	Water							
Batch	R5253899							
WG3423621-10 LCS								
Total Kjeldahl Nitrogen			85.5		%		75-125	13-OCT-20
WG3423621-14 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-18 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	13-OCT-20
WG3423621-2 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-22 LCS								
Total Kjeldahl Nitrogen			84.3		%		75-125	13-OCT-20
WG3423621-28 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-32 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-34 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	13-OCT-20
WG3423621-36 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	13-OCT-20
WG3423621-4 LCS								
Total Kjeldahl Nitrogen			80.6		%		75-125	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5253899							
WG3423621-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-33 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
TSS-L-CL		Water						
Batch	R5255043							
WG3423757-10 LCS								
Total Suspended Solids			89.6		%		85-115	14-OCT-20
WG3423757-9 MB								
Total Suspended Solids			<1.0		mg/L		1	14-OCT-20
TURBIDITY-CL		Water						
Batch	R5252648							
WG3422084-9 LCS								
Turbidity			96.9		%		85-115	09-OCT-20
WG3422084-8 MB								
Turbidity			<0.10		NTU		0.1	09-OCT-20

Quality Control Report

Workorder: L2514513

Report Date: 18-MAR-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2514513

Report Date: 18-MAR-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-OCT-20 09:34	14-OCT-20 12:30	0.25	171	hours	EHTR-FM
pH	1	07-OCT-20 09:34	13-OCT-20 14:00	0.25	148	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2514513 were received on 08-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-20-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-02-20_WP_Q4-2020_NP	RG_DW-02-20	WP	N	Oct 7, 20	9:34	G	7	1	1	1	1	1	1	1



L2514513-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/7/20 8:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jennifer deWerk	250-910-7287
Priority (2-3 business days) - 50% surcharge	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge		Oct 7, 20
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 08-OCT-20
Report Date: 18-OCT-20 10:10 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2514519
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 02-40-Q4-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514519-1 WP 07-OCT-20 09:34 RG_DW-02- 40_WP_Q4- 2020_NP-09-05			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	413			
	Hardness (as CaCO3) (mg/L)	240			
	pH (pH)	8.46			
	ORP (mV)	446			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	270	DLHC		
	Turbidity (NTU)	3.42			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	163			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	7.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	170			
	Ammonia as N (mg/L)	0.0074			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.59			
	Fluoride (F) (mg/L)	0.167			
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	2.04			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	55.8			
	Anion Sum (meq/L)	4.77			
	Cation Sum (meq/L)	4.91			
	Cation - Anion Balance (%)	1.5			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0814			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0109			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514519-1 WP 07-OCT-20 09:34 RG_DW-02- 40_WP_Q4- 2020_NP-09-05			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	69.2			
	Chromium (Cr)-Total (mg/L)	0.00023			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00437			
	Iron (Fe)-Total (mg/L)	0.033			
	Lead (Pb)-Total (mg/L)	0.000197			
	Lithium (Li)-Total (mg/L)	0.0070			
	Magnesium (Mg)-Total (mg/L)	18.5			
	Manganese (Mn)-Total (mg/L)	0.00141			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00111			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.600			
	Selenium (Se)-Total (ug/L)	9.47			
	Silicon (Si)-Total (mg/L)	2.26			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.30			
	Strontium (Sr)-Total (mg/L)	0.247			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000913			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0141			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0836			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0069			
	Calcium (Ca)-Dissolved (mg/L)	65.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00015			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514519-1 WP 07-OCT-20 09:34 RG_DW-02- 40_WP_Q4- 2020_NP-09-05			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00273			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000078			
	Lithium (Li)-Dissolved (mg/L)	0.0073			
	Magnesium (Mg)-Dissolved (mg/L)	18.7			
	Manganese (Mn)-Dissolved (mg/L)	0.00077			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00112			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.616			
	Selenium (Se)-Dissolved (ug/L)	9.42			
	Silicon (Si)-Dissolved (mg/L)	2.15			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.46			
	Strontium (Sr)-Dissolved (mg/L)	0.224			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000986			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0065			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2514519-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2514519-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2514519-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2514519-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2514519-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2514519-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

02-40-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2514519

Report Date: 18-OCT-20

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5252670							
WG3422367-20	LCS							
Acidity (as CaCO3)			103.7		%		85-115	09-OCT-20
WG3422367-19	MB							
Acidity (as CaCO3)			1.4		mg/L		2	09-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5253860							
WG3423809-17	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	13-OCT-20
WG3423809-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Beryllium (Be)-Dissolved			104.2		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Beryllium (Be)-Total			103.6		%		80-120	13-OCT-20
WG3423444-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5252919							
WG3422650-2	LCS							
Bromide (Br)			103.3		%		85-115	09-OCT-20
WG3422650-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5256176							
WG3426602-2	LCS							
Dissolved Organic Carbon			107.4		%		80-120	16-OCT-20
WG3426602-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5256176							
WG3426602-2	LCS							
Total Organic Carbon			109.2		%		80-120	16-OCT-20
WG3426602-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Chloride (Cl)			99.4		%		85-115	09-OCT-20
WG3422650-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-OCT-20
EC-L-PCT-CL	Water							
Batch	R5253860							
WG3423809-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-OCT-20
F-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Fluoride (F)			95.7		%		90-110	09-OCT-20
WG3422650-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-20
HG-D-CVAA-VA	Water							
Batch	R5254665							
WG3424657-18	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	15-OCT-20
WG3424657-17	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-OCT-20
HG-T-CVAA-VA	Water							
Batch	R5253792							
WG3423770-2	LCS							
Mercury (Hg)-Total			95.6		%		80-120	14-OCT-20
WG3423770-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-OCT-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Aluminum (Al)-Dissolved			108.1		%		80-120	15-OCT-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-OCT-20
Arsenic (As)-Dissolved			103.1		%		80-120	15-OCT-20
Barium (Ba)-Dissolved			113.2		%		80-120	15-OCT-20
Bismuth (Bi)-Dissolved			107.6		%		80-120	15-OCT-20
Boron (B)-Dissolved			101.1		%		80-120	15-OCT-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	15-OCT-20
Calcium (Ca)-Dissolved			106.5		%		80-120	15-OCT-20
Chromium (Cr)-Dissolved			102.9		%		80-120	15-OCT-20
Cobalt (Co)-Dissolved			102.9		%		80-120	15-OCT-20
Copper (Cu)-Dissolved			104.0		%		80-120	15-OCT-20
Iron (Fe)-Dissolved			103.1		%		80-120	15-OCT-20
Lead (Pb)-Dissolved			108.0		%		80-120	15-OCT-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	15-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	15-OCT-20
Molybdenum (Mo)-Dissolved			110.8		%		80-120	15-OCT-20
Nickel (Ni)-Dissolved			105.0		%		80-120	15-OCT-20
Potassium (K)-Dissolved			106.2		%		80-120	15-OCT-20
Selenium (Se)-Dissolved			108.8		%		80-120	15-OCT-20
Silicon (Si)-Dissolved			103.0		%		60-140	15-OCT-20
Silver (Ag)-Dissolved			104.8		%		80-120	15-OCT-20
Sodium (Na)-Dissolved			103.4		%		80-120	15-OCT-20
Strontium (Sr)-Dissolved			109.3		%		80-120	15-OCT-20
Thallium (Tl)-Dissolved			106.6		%		80-120	15-OCT-20
Tin (Sn)-Dissolved			104.8		%		80-120	15-OCT-20
Titanium (Ti)-Dissolved			99.6		%		80-120	15-OCT-20
Uranium (U)-Dissolved			117.3		%		80-120	15-OCT-20
Vanadium (V)-Dissolved			107.1		%		80-120	15-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20



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MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-1	MB	NP						
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	13-OCT-20
Antimony (Sb)-Total			106.5		%		80-120	13-OCT-20
Arsenic (As)-Total			101.3		%		80-120	13-OCT-20
Barium (Ba)-Total			99.3		%		80-120	13-OCT-20
Bismuth (Bi)-Total			117.7		%		80-120	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-2	LCS							
Boron (B)-Total			93.5		%		80-120	13-OCT-20
Cadmium (Cd)-Total			101.3		%		80-120	13-OCT-20
Calcium (Ca)-Total			106.8		%		80-120	13-OCT-20
Chromium (Cr)-Total			107.8		%		80-120	13-OCT-20
Cobalt (Co)-Total			107.4		%		80-120	13-OCT-20
Copper (Cu)-Total			102.2		%		80-120	13-OCT-20
Iron (Fe)-Total			94.3		%		80-120	13-OCT-20
Lead (Pb)-Total			97.8		%		80-120	13-OCT-20
Lithium (Li)-Total			100.5		%		80-120	13-OCT-20
Magnesium (Mg)-Total			101.1		%		80-120	13-OCT-20
Manganese (Mn)-Total			101.1		%		80-120	13-OCT-20
Molybdenum (Mo)-Total			101.0		%		80-120	13-OCT-20
Nickel (Ni)-Total			101.2		%		80-120	13-OCT-20
Potassium (K)-Total			105.2		%		80-120	13-OCT-20
Selenium (Se)-Total			99.8		%		80-120	13-OCT-20
Silicon (Si)-Total			104.6		%		80-120	13-OCT-20
Silver (Ag)-Total			103.3		%		80-120	13-OCT-20
Sodium (Na)-Total			105.0		%		80-120	13-OCT-20
Strontium (Sr)-Total			107.1		%		80-120	13-OCT-20
Thallium (Tl)-Total			101.5		%		80-120	13-OCT-20
Tin (Sn)-Total			104.1		%		80-120	13-OCT-20
Titanium (Ti)-Total			107.2		%		80-120	13-OCT-20
Uranium (U)-Total			98.9		%		80-120	13-OCT-20
Vanadium (V)-Total			107.4		%		80-120	13-OCT-20
Zinc (Zn)-Total			105.8		%		80-120	13-OCT-20
WG3423444-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	13-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-1	MB							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-OCT-20
NH3-L-F-CL		Water						
Batch	R5256114							
WG3426131-10	LCS							
Ammonia as N			99.5		%		85-115	16-OCT-20
WG3426131-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5252919							
WG3422650-2	LCS							
Nitrite (as N)			100.9		%		90-110	09-OCT-20
WG3422650-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Nitrate (as N)			99.96		%		90-110	09-OCT-20
WG3422650-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-20
ORP-CL	Water							
Batch	R5254517							
WG3424351-13	CRM	CL-ORP						
ORP			223		mV		210-230	14-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255264							
WG3425452-22	LCS							
Phosphorus (P)-Total			92.5		%		80-120	15-OCT-20
WG3425452-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-OCT-20
PH-CL	Water							
Batch	R5253860							
WG3423809-17	LCS							
pH			7.01		pH		6.9-7.1	13-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5252370							
WG3421209-38	LCS							
Orthophosphate-Dissolved (as P)			106.0		%		80-120	08-OCT-20
WG3421209-37	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-OCT-20
SO4-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Sulfate (SO4)			99.8		%		90-110	09-OCT-20
WG3422650-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-17	LCS							
Total Dissolved Solids			97.5		%		85-115	14-OCT-20
WG3423754-16	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-16 MB								
Total Dissolved Solids			<10		mg/L		10	14-OCT-20
TKN-L-F-CL	Water							
Batch	R5253899							
WG3423621-10 LCS								
Total Kjeldahl Nitrogen			85.5		%		75-125	13-OCT-20
WG3423621-14 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-18 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	13-OCT-20
WG3423621-2 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-22 LCS								
Total Kjeldahl Nitrogen			84.3		%		75-125	13-OCT-20
WG3423621-28 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-32 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-34 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	13-OCT-20
WG3423621-36 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	13-OCT-20
WG3423621-4 LCS								
Total Kjeldahl Nitrogen			80.6		%		75-125	13-OCT-20
WG3423621-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5253899							
WG3423621-33	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
TSS-L-CL		Water						
Batch	R5255043							
WG3423757-10	LCS							
Total Suspended Solids			89.6		%		85-115	14-OCT-20
WG3423757-9	MB							
Total Suspended Solids			<1.0		mg/L		1	14-OCT-20
TURBIDITY-CL		Water						
Batch	R5252648							
WG3422084-9	LCS							
Turbidity			96.9		%		85-115	09-OCT-20
WG3422084-8	MB							
Turbidity			<0.10		NTU		0.1	09-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-OCT-20 09:34	14-OCT-20 11:30	0.25	170	hours	EHTR-FM
pH	1	07-OCT-20 09:34	13-OCT-20 14:00	0.25	148	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2514519 were received on 08-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-40-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-02-40_WP_Q4-2020_NP - 09-05	RG_DW-02-40	WP	N	Oct 7, 20	9:34	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



L2514519-COFC

Jennifer de Werk

10/8/20

Oct 7, 2020



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 08-OCT-20
Report Date: 18-OCT-20 10:06 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2514520
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-04-Q4-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514520-1 WP 07-OCT-20 13:06 RG_DW-03-04_WP_Q4-2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	479			
	Hardness (as CaCO3) (mg/L)	270			
	pH (pH)	8.47			
	ORP (mV)	393			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	305	DLHC		
	Turbidity (NTU)	0.23			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	171			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	6.8			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	178			
	Ammonia as N (mg/L)	0.0071			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	8.89			
	Fluoride (F) (mg/L)	0.135			
	Ion Balance (%)	102			
	Nitrate (as N) (mg/L)	0.992			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.233			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027	RRV		
	Phosphorus (P)-Total (mg/L)	<0.0020	RRV		
	Sulfate (SO4) (mg/L)	84.5			
	Anion Sum (meq/L)	5.64			
	Cation Sum (meq/L)	5.75			
	Cation - Anion Balance (%)	1.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.53			
	Total Organic Carbon (mg/L)	0.78			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.126			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.010			
	Cadmium (Cd)-Total (ug/L)	0.0113			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514520-1 WP 07-OCT-20 13:06 RG_DW-03-04_WP_Q4-2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	70.7			
	Chromium (Cr)-Total (mg/L)	0.00017			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0089			
	Magnesium (Mg)-Total (mg/L)	21.1			
	Manganese (Mn)-Total (mg/L)	0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00105			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.806			
	Selenium (Se)-Total (ug/L)	7.33			
	Silicon (Si)-Total (mg/L)	2.35			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	7.46			
	Strontium (Sr)-Total (mg/L)	0.161			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000951			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0039			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00012			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.136			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.011			
	Cadmium (Cd)-Dissolved (ug/L)	0.0145			
	Calcium (Ca)-Dissolved (mg/L)	69.7			
	Chromium (Cr)-Dissolved (mg/L)	0.00011			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514520-1 WP 07-OCT-20 13:06 RG_DW-03- 04_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00044			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0094			
	Magnesium (Mg)-Dissolved (mg/L)	23.2			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00114			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.927			
	Selenium (Se)-Dissolved (ug/L)	8.08			
	Silicon (Si)-Dissolved (mg/L)	2.37			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.90			
	Strontium (Sr)-Dissolved (mg/L)	0.155			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00102			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2514520-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2514520-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2514520-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2514520-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2514520-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2514520-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			

Reference Information

electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-04-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2514520

Report Date: 18-OCT-20

Page 1 of 11

Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5252670							
WG3422367-20	LCS							
Acidity (as CaCO3)			103.7		%		85-115	09-OCT-20
WG3422367-19	MB							
Acidity (as CaCO3)			1.4		mg/L		2	09-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5253860							
WG3423809-17	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	13-OCT-20
WG3423809-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Beryllium (Be)-Dissolved			104.2		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Beryllium (Be)-Total			103.6		%		80-120	13-OCT-20
WG3423444-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5252919							
WG3422650-2	LCS							
Bromide (Br)			103.3		%		85-115	09-OCT-20
WG3422650-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5256176							
WG3426602-2	LCS							
Dissolved Organic Carbon			107.4		%		80-120	16-OCT-20
WG3426602-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2514520

Report Date: 18-OCT-20

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5256176							
WG3426602-2	LCS							
Total Organic Carbon			109.2		%		80-120	16-OCT-20
WG3426602-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Chloride (Cl)			99.4		%		85-115	09-OCT-20
WG3422650-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-OCT-20
EC-L-PCT-CL	Water							
Batch	R5253860							
WG3423809-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-OCT-20
F-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Fluoride (F)			95.7		%		90-110	09-OCT-20
WG3422650-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-20
HG-D-CVAA-VA	Water							
Batch	R5254665							
WG3424657-18	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	15-OCT-20
WG3424657-17	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-OCT-20
HG-T-CVAA-VA	Water							
Batch	R5253792							
WG3423770-2	LCS							
Mercury (Hg)-Total			95.6		%		80-120	14-OCT-20
WG3423770-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-OCT-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2514520

Report Date: 18-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Aluminum (Al)-Dissolved			108.1		%		80-120	15-OCT-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-OCT-20
Arsenic (As)-Dissolved			103.1		%		80-120	15-OCT-20
Barium (Ba)-Dissolved			113.2		%		80-120	15-OCT-20
Bismuth (Bi)-Dissolved			107.6		%		80-120	15-OCT-20
Boron (B)-Dissolved			101.1		%		80-120	15-OCT-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	15-OCT-20
Calcium (Ca)-Dissolved			106.5		%		80-120	15-OCT-20
Chromium (Cr)-Dissolved			102.9		%		80-120	15-OCT-20
Cobalt (Co)-Dissolved			102.9		%		80-120	15-OCT-20
Copper (Cu)-Dissolved			104.0		%		80-120	15-OCT-20
Iron (Fe)-Dissolved			103.1		%		80-120	15-OCT-20
Lead (Pb)-Dissolved			108.0		%		80-120	15-OCT-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	15-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	15-OCT-20
Molybdenum (Mo)-Dissolved			110.8		%		80-120	15-OCT-20
Nickel (Ni)-Dissolved			105.0		%		80-120	15-OCT-20
Potassium (K)-Dissolved			106.2		%		80-120	15-OCT-20
Selenium (Se)-Dissolved			108.8		%		80-120	15-OCT-20
Silicon (Si)-Dissolved			103.0		%		60-140	15-OCT-20
Silver (Ag)-Dissolved			104.8		%		80-120	15-OCT-20
Sodium (Na)-Dissolved			103.4		%		80-120	15-OCT-20
Strontium (Sr)-Dissolved			109.3		%		80-120	15-OCT-20
Thallium (Tl)-Dissolved			106.6		%		80-120	15-OCT-20
Tin (Sn)-Dissolved			104.8		%		80-120	15-OCT-20
Titanium (Ti)-Dissolved			99.6		%		80-120	15-OCT-20
Uranium (U)-Dissolved			117.3		%		80-120	15-OCT-20
Vanadium (V)-Dissolved			107.1		%		80-120	15-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-1	MB	NP						
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	13-OCT-20
Antimony (Sb)-Total			106.5		%		80-120	13-OCT-20
Arsenic (As)-Total			101.3		%		80-120	13-OCT-20
Barium (Ba)-Total			99.3		%		80-120	13-OCT-20
Bismuth (Bi)-Total			117.7		%		80-120	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Boron (B)-Total			93.5		%		80-120	13-OCT-20
Cadmium (Cd)-Total			101.3		%		80-120	13-OCT-20
Calcium (Ca)-Total			106.8		%		80-120	13-OCT-20
Chromium (Cr)-Total			107.8		%		80-120	13-OCT-20
Cobalt (Co)-Total			107.4		%		80-120	13-OCT-20
Copper (Cu)-Total			102.2		%		80-120	13-OCT-20
Iron (Fe)-Total			94.3		%		80-120	13-OCT-20
Lead (Pb)-Total			97.8		%		80-120	13-OCT-20
Lithium (Li)-Total			100.5		%		80-120	13-OCT-20
Magnesium (Mg)-Total			101.1		%		80-120	13-OCT-20
Manganese (Mn)-Total			101.1		%		80-120	13-OCT-20
Molybdenum (Mo)-Total			101.0		%		80-120	13-OCT-20
Nickel (Ni)-Total			101.2		%		80-120	13-OCT-20
Potassium (K)-Total			105.2		%		80-120	13-OCT-20
Selenium (Se)-Total			99.8		%		80-120	13-OCT-20
Silicon (Si)-Total			104.6		%		80-120	13-OCT-20
Silver (Ag)-Total			103.3		%		80-120	13-OCT-20
Sodium (Na)-Total			105.0		%		80-120	13-OCT-20
Strontium (Sr)-Total			107.1		%		80-120	13-OCT-20
Thallium (Tl)-Total			101.5		%		80-120	13-OCT-20
Tin (Sn)-Total			104.1		%		80-120	13-OCT-20
Titanium (Ti)-Total			107.2		%		80-120	13-OCT-20
Uranium (U)-Total			98.9		%		80-120	13-OCT-20
Vanadium (V)-Total			107.4		%		80-120	13-OCT-20
Zinc (Zn)-Total			105.8		%		80-120	13-OCT-20
WG3423444-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	13-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-1	MB							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-OCT-20
NH3-L-F-CL		Water						
Batch	R5256114							
WG3426131-10	LCS							
Ammonia as N			99.5		%		85-115	16-OCT-20
WG3426131-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5252919							
WG3422650-2	LCS							
Nitrite (as N)			100.9		%		90-110	09-OCT-20
WG3422650-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Nitrate (as N)			99.96		%		90-110	09-OCT-20
WG3422650-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-20
ORP-CL	Water							
Batch	R5253698							
WG3423587-5	CRM	CL-ORP						
ORP			226		mV		210-230	13-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255264							
WG3425452-22	LCS							
Phosphorus (P)-Total			92.5		%		80-120	15-OCT-20
WG3425452-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-OCT-20
PH-CL	Water							
Batch	R5253860							
WG3423809-17	LCS							
pH			7.01		pH		6.9-7.1	13-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5252370							
WG3421209-38	LCS							
Orthophosphate-Dissolved (as P)			106.0		%		80-120	08-OCT-20
WG3421209-37	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-OCT-20
SO4-IC-N-CL	Water							
Batch	R5252919							
WG3422650-2	LCS							
Sulfate (SO4)			99.8		%		90-110	09-OCT-20
WG3422650-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-17	LCS							
Total Dissolved Solids			97.5		%		85-115	14-OCT-20
WG3423754-16	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-16 MB								
Total Dissolved Solids			<10		mg/L		10	14-OCT-20
TKN-L-F-CL	Water							
Batch	R5253899							
WG3423621-10 LCS								
Total Kjeldahl Nitrogen			85.5		%		75-125	13-OCT-20
WG3423621-14 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-18 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	13-OCT-20
WG3423621-2 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-22 LCS								
Total Kjeldahl Nitrogen			84.3		%		75-125	13-OCT-20
WG3423621-28 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-32 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-34 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	13-OCT-20
WG3423621-36 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	13-OCT-20
WG3423621-4 LCS								
Total Kjeldahl Nitrogen			80.6		%		75-125	13-OCT-20
WG3423621-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5253899							
WG3423621-33	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
TSS-L-CL		Water						
Batch	R5255043							
WG3423757-10	LCS							
Total Suspended Solids			89.6		%		85-115	14-OCT-20
WG3423757-9	MB							
Total Suspended Solids			<1.0		mg/L		1	14-OCT-20
TURBIDITY-CL		Water						
Batch	R5252648							
WG3422084-9	LCS							
Turbidity			96.9		%		85-115	09-OCT-20
WG3422084-8	MB							
Turbidity			<0.10		NTU		0.1	09-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-OCT-20 13:06	13-OCT-20 16:45	0.25	148	hours	EHTR-FM
pH	1	07-OCT-20 13:06	13-OCT-20 14:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2514520 were received on 08-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-04-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-03-04_WP_Q4-2020_NP	RG_DW-03-04	WP	N	Oct 7, 20	15:00	G	7	1	1	1	1	1	1	1



L2514520-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Jennifer de Werk</i>	10/7/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge	<i>Jennifer de Werk</i>	
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

Jennifer de Werk

Oct 7, 20



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 08-OCT-20
Report Date: 18-OCT-20 10:19 (MT)
Version: FINAL

Client Phone: 250-425-8048

Certificate of Analysis

Lab Work Order #: L2514525
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: 03-10-Q4-2020
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514525-1 WP 07-OCT-20 13:38 RG_DW-03-10_WP_Q4-2020_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	418			
	Hardness (as CaCO3) (mg/L)	265			
	pH (pH)	8.29			
	ORP (mV)	453			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	263	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	203			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	1.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	204			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	10.0			
	Fluoride (F) (mg/L)	0.212			
	Ion Balance (%)	113			
	Nitrate (as N) (mg/L)	0.461			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.072			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	23.2			
	Anion Sum (meq/L)	4.89			
	Cation Sum (meq/L)	5.53			
	Cation - Anion Balance (%)	6.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.131			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514525-1 WP 07-OCT-20 13:38 RG_DW-03- 10_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	78.6			
	Chromium (Cr)-Total (mg/L)	0.00064			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00356			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000092			
	Lithium (Li)-Total (mg/L)	0.0074			
	Magnesium (Mg)-Total (mg/L)	21.6			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00142			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.802			
	Selenium (Se)-Total (ug/L)	1.08			
	Silicon (Si)-Total (mg/L)	3.48			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	5.31			
	Strontium (Sr)-Total (mg/L)	0.211			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00137			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0074			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.137			
	Beryllium (Be)-Dissolved (ug/L)	0.055			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0452 ^{DTMF}			
	Calcium (Ca)-Dissolved (mg/L)	72.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00060			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2514525-1 WP 07-OCT-20 13:38 RG_DW-03- 10_WP_Q4- 2020_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	0.00333			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000082			
	Lithium (Li)-Dissolved (mg/L)	0.0075			
	Magnesium (Mg)-Dissolved (mg/L)	20.5			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00145			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.828			
	Selenium (Se)-Dissolved (ug/L)	1.08			
	Silicon (Si)-Dissolved (mg/L)	3.60			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.97			
	Strontium (Sr)-Dissolved (mg/L)	0.194			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00147			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0061			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2514525-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2514525-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2514525-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2514525-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2514525-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2514525-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

03-10-Q4-2020

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2514525

Report Date: 18-OCT-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5252670							
WG3422367-20	LCS							
Acidity (as CaCO3)			103.7		%		85-115	09-OCT-20
WG3422367-19	MB							
Acidity (as CaCO3)			1.4		mg/L		2	09-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5253860							
WG3423809-17	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	13-OCT-20
WG3423809-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Beryllium (Be)-Dissolved			104.2		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Beryllium (Be)-Total			103.6		%		80-120	13-OCT-20
WG3423444-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	13-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5252854							
WG3422577-6	LCS							
Bromide (Br)			101.5		%		85-115	09-OCT-20
WG3422577-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5256176							
WG3426602-2	LCS							
Dissolved Organic Carbon			107.4		%		80-120	16-OCT-20
WG3426602-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2514525

Report Date: 18-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5256176							
WG3426602-2	LCS							
Total Organic Carbon			109.2		%		80-120	16-OCT-20
WG3426602-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Chloride (Cl)			104.8		%		85-115	09-OCT-20
WG3422577-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	09-OCT-20
EC-L-PCT-CL	Water							
Batch	R5253860							
WG3423809-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-OCT-20
F-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Fluoride (F)			99.7		%		90-110	09-OCT-20
WG3422577-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-20
HG-D-CVAA-VA	Water							
Batch	R5254665							
WG3424657-18	LCS							
Mercury (Hg)-Dissolved			93.1		%		80-120	15-OCT-20
WG3424657-17	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-OCT-20
HG-T-CVAA-VA	Water							
Batch	R5253792							
WG3423770-2	LCS							
Mercury (Hg)-Total			95.6		%		80-120	14-OCT-20
WG3423770-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-OCT-20
WG3423770-6	MS	L2514525-1						
Mercury (Hg)-Total			92.2		%		70-130	14-OCT-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2514525

Report Date: 18-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-2	LCS							
Aluminum (Al)-Dissolved			108.1		%		80-120	15-OCT-20
Antimony (Sb)-Dissolved			106.8		%		80-120	15-OCT-20
Arsenic (As)-Dissolved			103.1		%		80-120	15-OCT-20
Barium (Ba)-Dissolved			113.2		%		80-120	15-OCT-20
Bismuth (Bi)-Dissolved			107.6		%		80-120	15-OCT-20
Boron (B)-Dissolved			101.1		%		80-120	15-OCT-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	15-OCT-20
Calcium (Ca)-Dissolved			106.5		%		80-120	15-OCT-20
Chromium (Cr)-Dissolved			102.9		%		80-120	15-OCT-20
Cobalt (Co)-Dissolved			102.9		%		80-120	15-OCT-20
Copper (Cu)-Dissolved			104.0		%		80-120	15-OCT-20
Iron (Fe)-Dissolved			103.1		%		80-120	15-OCT-20
Lead (Pb)-Dissolved			108.0		%		80-120	15-OCT-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	15-OCT-20
Manganese (Mn)-Dissolved			104.1		%		80-120	15-OCT-20
Molybdenum (Mo)-Dissolved			110.8		%		80-120	15-OCT-20
Nickel (Ni)-Dissolved			105.0		%		80-120	15-OCT-20
Potassium (K)-Dissolved			106.2		%		80-120	15-OCT-20
Selenium (Se)-Dissolved			108.8		%		80-120	15-OCT-20
Silicon (Si)-Dissolved			103.0		%		60-140	15-OCT-20
Silver (Ag)-Dissolved			104.8		%		80-120	15-OCT-20
Sodium (Na)-Dissolved			103.4		%		80-120	15-OCT-20
Strontium (Sr)-Dissolved			109.3		%		80-120	15-OCT-20
Thallium (Tl)-Dissolved			106.6		%		80-120	15-OCT-20
Tin (Sn)-Dissolved			104.8		%		80-120	15-OCT-20
Titanium (Ti)-Dissolved			99.6		%		80-120	15-OCT-20
Uranium (U)-Dissolved			117.3		%		80-120	15-OCT-20
Vanadium (V)-Dissolved			107.1		%		80-120	15-OCT-20
Zinc (Zn)-Dissolved			97.9		%		80-120	15-OCT-20
WG3425096-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20



Quality Control Report

Workorder: L2514525

Report Date: 18-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255352							
WG3425096-1	MB	NP						
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Aluminum (Al)-Total			105.4		%		80-120	13-OCT-20
Antimony (Sb)-Total			106.5		%		80-120	13-OCT-20
Arsenic (As)-Total			101.3		%		80-120	13-OCT-20
Barium (Ba)-Total			99.3		%		80-120	13-OCT-20
Bismuth (Bi)-Total			117.7		%		80-120	13-OCT-20



Quality Control Report

Workorder: L2514525

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R5253636							
WG3423444-2	LCS							
Boron (B)-Total			93.5		%		80-120	13-OCT-20
Cadmium (Cd)-Total			101.3		%		80-120	13-OCT-20
Calcium (Ca)-Total			106.8		%		80-120	13-OCT-20
Chromium (Cr)-Total			107.8		%		80-120	13-OCT-20
Cobalt (Co)-Total			107.4		%		80-120	13-OCT-20
Copper (Cu)-Total			102.2		%		80-120	13-OCT-20
Iron (Fe)-Total			94.3		%		80-120	13-OCT-20
Lead (Pb)-Total			97.8		%		80-120	13-OCT-20
Lithium (Li)-Total			100.5		%		80-120	13-OCT-20
Magnesium (Mg)-Total			101.1		%		80-120	13-OCT-20
Manganese (Mn)-Total			101.1		%		80-120	13-OCT-20
Molybdenum (Mo)-Total			101.0		%		80-120	13-OCT-20
Nickel (Ni)-Total			101.2		%		80-120	13-OCT-20
Potassium (K)-Total			105.2		%		80-120	13-OCT-20
Selenium (Se)-Total			99.8		%		80-120	13-OCT-20
Silicon (Si)-Total			104.6		%		80-120	13-OCT-20
Silver (Ag)-Total			103.3		%		80-120	13-OCT-20
Sodium (Na)-Total			105.0		%		80-120	13-OCT-20
Strontium (Sr)-Total			107.1		%		80-120	13-OCT-20
Thallium (Tl)-Total			101.5		%		80-120	13-OCT-20
Tin (Sn)-Total			104.1		%		80-120	13-OCT-20
Titanium (Ti)-Total			107.2		%		80-120	13-OCT-20
Uranium (U)-Total			98.9		%		80-120	13-OCT-20
Vanadium (V)-Total			107.4		%		80-120	13-OCT-20
Zinc (Zn)-Total			105.8		%		80-120	13-OCT-20
WG3423444-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	13-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	13-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5253636							
WG3423444-1	MB							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	13-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	13-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-OCT-20
NH3-L-F-CL		Water						
Batch	R5256114							
WG3426131-10	LCS							
Ammonia as N			99.5		%		85-115	16-OCT-20
WG3426131-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5252854							
WG3422577-6	LCS							
Nitrite (as N)			106.4		%		90-110	09-OCT-20
WG3422577-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-20
NO3-L-IC-N-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Nitrate (as N)			106.1		%		90-110	09-OCT-20
WG3422577-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-20
ORP-CL	Water							
Batch	R5254517							
WG3424351-13	CRM	CL-ORP						
ORP			223		mV		210-230	14-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255264							
WG3425452-22	LCS							
Phosphorus (P)-Total			92.5		%		80-120	15-OCT-20
WG3425452-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-OCT-20
PH-CL	Water							
Batch	R5253860							
WG3423809-17	LCS							
pH			7.01		pH		6.9-7.1	13-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5253455							
WG3422076-2	LCS							
Orthophosphate-Dissolved (as P)			105.9		%		80-120	09-OCT-20
WG3422076-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-OCT-20
SO4-IC-N-CL	Water							
Batch	R5252854							
WG3422577-6	LCS							
Sulfate (SO4)			103.6		%		90-110	09-OCT-20
WG3422577-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-20
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-17	LCS							
Total Dissolved Solids			97.5		%		85-115	14-OCT-20
WG3423754-16	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL	Water							
Batch	R5255169							
WG3423754-16 MB								
Total Dissolved Solids			<10		mg/L		10	14-OCT-20
TKN-L-F-CL	Water							
Batch	R5253899							
WG3423621-10 LCS								
Total Kjeldahl Nitrogen			85.5		%		75-125	13-OCT-20
WG3423621-14 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-18 LCS								
Total Kjeldahl Nitrogen			83.0		%		75-125	13-OCT-20
WG3423621-2 LCS								
Total Kjeldahl Nitrogen			85.3		%		75-125	13-OCT-20
WG3423621-22 LCS								
Total Kjeldahl Nitrogen			84.3		%		75-125	13-OCT-20
WG3423621-28 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-32 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	13-OCT-20
WG3423621-34 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	13-OCT-20
WG3423621-36 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	13-OCT-20
WG3423621-4 LCS								
Total Kjeldahl Nitrogen			80.6		%		75-125	13-OCT-20
WG3423621-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5253899							
WG3423621-33	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-35	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
WG3423621-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-OCT-20
TSS-L-CL		Water						
Batch	R5255043							
WG3423757-12	LCS							
Total Suspended Solids			97.0		%		85-115	14-OCT-20
WG3423757-11	MB							
Total Suspended Solids			<1.0		mg/L		1	14-OCT-20
TURBIDITY-CL		Water						
Batch	R5252648							
WG3422084-9	LCS							
Turbidity			96.9		%		85-115	09-OCT-20
WG3422084-8	MB							
Turbidity			<0.10		NTU		0.1	09-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	07-OCT-20 13:38	14-OCT-20 11:30	0.25	166	hours	EHTR-FM
pH	1	07-OCT-20 13:38	13-OCT-20 14:00	0.25	144	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2514525 were received on 08-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-10-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F: Field; L: Lab; PL: Field & Lab; N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED											
								F	N	F	N	F	N	N					
								H2SO4	H2SO4	HCL	HCL	HNO3	HNO3						
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA					
RG_DW-03-10_WP_Q4-2020_NP	RG_DW-03-10	WP	N	Oct 7, 20	13:38	G	7	1	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/18/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	Oct 7, 20





Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Ave
Sparwood BC V0B 2G0

Date Received: 09-OCT-20
Report Date: 22-OCT-20 10:57 (MT)
Version: FINAL

Client Phone: 250-425-8449

Certificate of Analysis

Lab Work Order #: L2515072
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515072-1 WP 08-OCT-20 09:30 RG_DW- F_WP_Q4- 2020_NP-09-07			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	6.27			
	ORP (mV)	352			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	0.0395 ^{RRV}			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050 ^{HTD}			
	Nitrite (as N) (mg/L)	<0.0010 ^{HTD}			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515072-1 WP 08-OCT-20 09:30 RG_DW- F_WP_Q4- 2020_NP-09-07			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515072-1 WP 08-OCT-20 09:30 RG_DW- F_WP_Q4- 2020_NP-09-07			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2515072-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2515072-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2515072-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2515072-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2515072-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2515072-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2515072-1
Matrix Spike	Selenium (Se)-Total	MS-B	L2515072-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2515072-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2515072-1
Matrix Spike	Uranium (U)-Total	MS-B	L2515072-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

Reference Information

CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2515072

Report Date: 22-OCT-20

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Client: Teck Coal Ltd.
 421 Pine Ave
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5253122							
WG3422923-17	LCS							
Acidity (as CaCO3)			97.2		%		85-115	10-OCT-20
WG3422923-16	MB							
Acidity (as CaCO3)			1.4		mg/L		2	10-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5254639							
WG3424758-11	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	14-OCT-20
WG3424758-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255987							
WG3424543-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-OCT-20
Batch	R5256049							
WG3424543-2	LCS							
Beryllium (Be)-Dissolved			105.2		%		80-120	16-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5256049							
WG3424483-2	LCS							
Beryllium (Be)-Total			101.5		%		80-120	16-OCT-20
WG3424483-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5254945							
WG3425083-3	DUP	L2515072-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2	LCS							
Bromide (Br)			100.7		%		85-115	10-OCT-20
WG3425083-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	10-OCT-20
WG3425083-4	MS	L2515072-1						
Bromide (Br)			106.5		%		75-125	10-OCT-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5256708							
WG3427206-10 LCS								
Dissolved Organic Carbon			88.2		%		80-120	18-OCT-20
WG3427206-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-OCT-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5256708							
WG3427206-10 LCS								
Total Organic Carbon			89.8		%		80-120	18-OCT-20
WG3427206-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	18-OCT-20
CL-L-IC-N-CL	Water							
Batch	R5254945							
WG3425083-3 DUP		L2515072-1						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2 LCS								
Chloride (Cl)			99.7		%		85-115	10-OCT-20
WG3425083-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	10-OCT-20
WG3425083-4 MS		L2515072-1						
Chloride (Cl)			101.6		%		75-125	10-OCT-20
EC-L-PCT-CL	Water							
Batch	R5254639							
WG3424758-11 LCS								
Conductivity (@ 25C)			95.2		%		90-110	14-OCT-20
WG3424758-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-OCT-20
F-IC-N-CL	Water							
Batch	R5254945							
WG3425083-3 DUP		L2515072-1						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2 LCS								
Fluoride (F)			103.3		%		90-110	10-OCT-20
WG3425083-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	10-OCT-20
WG3425083-4 MS		L2515072-1						
Fluoride (F)			99.97		%		75-125	10-OCT-20
HG-D-CVAA-VA	Water							



Quality Control Report

Workorder: L2515072

Report Date: 22-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5255476							
WG3425645-14	LCS							
Mercury (Hg)-Dissolved			98.2		%		80-120	16-OCT-20
WG3425645-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-OCT-20
HG-T-CVAA-VA								
	Water							
Batch	R5254665							
WG3424815-2	LCS							
Mercury (Hg)-Total			94.5		%		80-120	15-OCT-20
WG3424815-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	15-OCT-20
WG3424815-4	MS	L2515072-1						
Mercury (Hg)-Total			95.6		%		70-130	15-OCT-20
MET-D-CCMS-VA								
	Water							
Batch	R5255987							
WG3424543-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	16-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20



Quality Control Report

Workorder: L2515072

Report Date: 22-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255987							
WG3424543-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Batch	R5256069							
WG3426416-2	LCS							
Aluminum (Al)-Dissolved			101.6		%		80-120	16-OCT-20
Antimony (Sb)-Dissolved			94.9		%		80-120	16-OCT-20
Arsenic (As)-Dissolved			94.0		%		80-120	16-OCT-20
Barium (Ba)-Dissolved			103.7		%		80-120	16-OCT-20
Bismuth (Bi)-Dissolved			108.6		%		80-120	16-OCT-20
Boron (B)-Dissolved			89.4		%		80-120	16-OCT-20
Cadmium (Cd)-Dissolved			98.8		%		80-120	16-OCT-20
Calcium (Ca)-Dissolved			102.0		%		80-120	16-OCT-20
Chromium (Cr)-Dissolved			98.6		%		80-120	16-OCT-20
Cobalt (Co)-Dissolved			101.1		%		80-120	16-OCT-20
Copper (Cu)-Dissolved			99.4		%		80-120	16-OCT-20
Iron (Fe)-Dissolved			102.2		%		80-120	16-OCT-20
Lead (Pb)-Dissolved			109.5		%		80-120	16-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	16-OCT-20
Magnesium (Mg)-Dissolved			94.2		%		80-120	16-OCT-20
Manganese (Mn)-Dissolved			101.6		%		80-120	16-OCT-20
Molybdenum (Mo)-Dissolved			95.8		%		80-120	16-OCT-20
Nickel (Ni)-Dissolved			100.2		%		80-120	16-OCT-20
Potassium (K)-Dissolved			103.7		%		80-120	16-OCT-20
Selenium (Se)-Dissolved			98.3		%		80-120	16-OCT-20
Silicon (Si)-Dissolved			96.4		%		60-140	16-OCT-20
Silver (Ag)-Dissolved			105.9		%		80-120	16-OCT-20
Sodium (Na)-Dissolved			99.1		%		80-120	16-OCT-20
Strontium (Sr)-Dissolved			111.8		%		80-120	16-OCT-20
Thallium (Tl)-Dissolved			105.6		%		80-120	16-OCT-20
Tin (Sn)-Dissolved			94.9		%		80-120	16-OCT-20



Quality Control Report

Workorder: L2515072

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5256069							
WG3426416-2	LCS							
Titanium (Ti)-Dissolved			91.6		%		80-120	16-OCT-20
Uranium (U)-Dissolved			110.1		%		80-120	16-OCT-20
Vanadium (V)-Dissolved			103.0		%		80-120	16-OCT-20
Zinc (Zn)-Dissolved			93.4		%		80-120	16-OCT-20
WG3426416-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20



Quality Control Report

Workorder: L2515072

Report Date: 22-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5256069							
WG3426416-1 MB		NP						
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
MET-T-CCMS-VA								
	Water							
Batch	R5256049							
WG3424483-2 LCS								
Aluminum (Al)-Total			98.6		%		80-120	16-OCT-20
Antimony (Sb)-Total			110.3		%		80-120	16-OCT-20
Arsenic (As)-Total			97.7		%		80-120	16-OCT-20
Barium (Ba)-Total			103.1		%		80-120	16-OCT-20
Bismuth (Bi)-Total			102.5		%		80-120	16-OCT-20
Boron (B)-Total			101.0		%		80-120	16-OCT-20
Cadmium (Cd)-Total			99.7		%		80-120	16-OCT-20
Calcium (Ca)-Total			105.7		%		80-120	16-OCT-20
Chromium (Cr)-Total			101.7		%		80-120	16-OCT-20
Cobalt (Co)-Total			99.6		%		80-120	16-OCT-20
Copper (Cu)-Total			97.9		%		80-120	16-OCT-20
Iron (Fe)-Total			95.3		%		80-120	16-OCT-20
Lead (Pb)-Total			99.7		%		80-120	16-OCT-20
Lithium (Li)-Total			99.4		%		80-120	16-OCT-20
Magnesium (Mg)-Total			92.5		%		80-120	16-OCT-20
Manganese (Mn)-Total			105.7		%		80-120	16-OCT-20
Molybdenum (Mo)-Total			105.8		%		80-120	16-OCT-20
Nickel (Ni)-Total			95.5		%		80-120	16-OCT-20
Potassium (K)-Total			99.2		%		80-120	16-OCT-20
Selenium (Se)-Total			96.2		%		80-120	16-OCT-20
Silicon (Si)-Total			98.3		%		80-120	16-OCT-20
Silver (Ag)-Total			102.2		%		80-120	16-OCT-20
Sodium (Na)-Total			99.8		%		80-120	16-OCT-20
Strontium (Sr)-Total			101.6		%		80-120	16-OCT-20
Thallium (Tl)-Total			104.5		%		80-120	16-OCT-20
Tin (Sn)-Total			100.6		%		80-120	16-OCT-20
Titanium (Ti)-Total			114.0		%		80-120	16-OCT-20
Uranium (U)-Total			101.6		%		80-120	16-OCT-20
Vanadium (V)-Total			103.4		%		80-120	16-OCT-20



Quality Control Report

Workorder: L2515072

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5256049							
WG3424483-2	LCS							
Zinc (Zn)-Total			96.7		%		80-120	16-OCT-20
WG3424483-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	16-OCT-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-OCT-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-OCT-20
Batch	R5256069							
WG3424483-1	MB							
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-OCT-20



Quality Control Report

Workorder: L2515072

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL		Water						
Batch	R5256416							
WG3426810-19	DUP	L2515072-1						
Ammonia as N		0.0395	0.0396		mg/L	0.3	20	17-OCT-20
WG3426810-18	LCS							
Ammonia as N			95.7		%		85-115	17-OCT-20
WG3426810-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-OCT-20
WG3426810-20	MS	L2515072-1						
Ammonia as N			75.9		%		75-125	17-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5254945							
WG3425083-3	DUP	L2515072-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2	LCS							
Nitrite (as N)			101.5		%		90-110	10-OCT-20
WG3425083-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	10-OCT-20
WG3425083-4	MS	L2515072-1						
Nitrite (as N)			103.4		%		75-125	10-OCT-20
NO3-L-IC-N-CL		Water						
Batch	R5254945							
WG3425083-3	DUP	L2515072-1						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2	LCS							
Nitrate (as N)			100.1		%		90-110	10-OCT-20
WG3425083-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	10-OCT-20
WG3425083-4	MS	L2515072-1						
Nitrate (as N)			102.8		%		75-125	10-OCT-20
ORP-CL		Water						
Batch	R5255337							
WG3425419-5	CRM	CL-ORP						
ORP			228		mV		210-230	15-OCT-20
P-T-L-COL-CL		Water						
Batch	R5255955							
WG3426195-22	LCS							
Phosphorus (P)-Total			85.0		%		80-120	16-OCT-20
WG3426195-21	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R5255955							
WG3426195-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-OCT-20
PH-CL Water								
Batch	R5254639							
WG3424758-11	LCS							
pH			6.99		pH		6.9-7.1	14-OCT-20
PO4-DO-L-COL-CL Water								
Batch	R5253455							
WG3422076-18	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	09-OCT-20
WG3422076-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-OCT-20
SO4-IC-N-CL Water								
Batch	R5254945							
WG3425083-3	DUP	L2515072-1						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	14-OCT-20
WG3425083-2	LCS							
Sulfate (SO4)			99.8		%		90-110	10-OCT-20
WG3425083-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-OCT-20
WG3425083-4	MS	L2515072-1						
Sulfate (SO4)			102.1		%		75-125	10-OCT-20
SOLIDS-TDS-CL Water								
Batch	R5255982							
WG3424744-8	LCS							
Total Dissolved Solids			99.6		%		85-115	15-OCT-20
WG3424744-7	MB							
Total Dissolved Solids			<10		mg/L		10	15-OCT-20
TKN-L-F-CL Water								
Batch	R5255115							
WG3424828-10	LCS							
Total Kjeldahl Nitrogen			89.6		%		75-125	15-OCT-20
WG3424828-14	LCS							
Total Kjeldahl Nitrogen			90.9		%		75-125	15-OCT-20
WG3424828-18	LCS							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5255115							
WG3424828-18	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	15-OCT-20
WG3424828-2	LCS							
Total Kjeldahl Nitrogen			86.5		%		75-125	15-OCT-20
WG3424828-22	LCS							
Total Kjeldahl Nitrogen			96.3		%		75-125	15-OCT-20
WG3424828-4	LCS							
Total Kjeldahl Nitrogen			83.9		%		75-125	15-OCT-20
WG3424828-8	LCS							
Total Kjeldahl Nitrogen			85.4		%		75-125	15-OCT-20
WG3424828-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
TSS-L-CL		Water						
Batch	R5255889							
WG3424743-6	LCS							
Total Suspended Solids			93.0		%		85-115	15-OCT-20
WG3424743-5	MB							
Total Suspended Solids			<1.0		mg/L		1	15-OCT-20
TURBIDITY-CL		Water						
Batch	R5252876							
WG3422422-5	LCS							
Turbidity			96.4		%		85-115	10-OCT-20
WG3422422-4	MB							
Turbidity			<0.10		NTU		0.1	10-OCT-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	08-OCT-20 09:30	15-OCT-20 15:00	0.25	174	hours	EHTR-FM
pH	1	08-OCT-20 09:30	14-OCT-20 14:00	0.25	149	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	08-OCT-20 09:30	14-OCT-20 10:15	3	6	days	EHT
Nitrite in Water by IC (Low Level)	1	08-OCT-20 09:30	14-OCT-20 10:15	3	6	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2515072 were received on 09-OCT-20 08:45.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

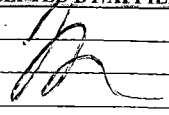
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

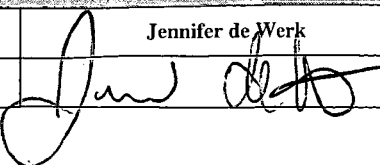
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **RG_F-Q4-2020** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	690772			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
 L2515072-COFC														
RG_DW-F_WP_Q4-2020_NP -09-01	RG_DW-F	WP	N	Oct 8, 20	9:50	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				Oct 8, 20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jennifer de Werk	250-910-7287		Oct 8, 20



Teck Coal Ltd.
ATTN: Cam Jaeger
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 09-OCT-20
Report Date: 21-OCT-20 16:29 (MT)
Version: FINAL

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2515107
Project P.O. #: VPO00690772
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515107-1 WP 08-OCT-20 12:00 RG_DW- T_WP_Q4- 2020_NP-09-08			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	6.33			
	ORP (mV)	381			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.00010			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	<0.0050			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515107-1 WP 08-OCT-20 12:00 RG_DW- T_WP_Q4- 2020_NP-09-08			
Grouping	Analyte				
WATER					
Total Metals	Calcium (Ca)-Total (mg/L)	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	<0.050			
	Selenium (Se)-Total (ug/L)	<0.050			
	Silicon (Si)-Total (mg/L)	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050			
	Strontium (Sr)-Total (mg/L)	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2515107-1 WP 08-OCT-20 12:00 RG_DW- T_WP_Q4- 2020_NP-09-08			
Grouping	Analyte				
WATER					
Dissolved Metals	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2515107-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2515107-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2515107-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2515107-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2515107-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2515107-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2515107-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2515107-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2515107-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2515107-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2515107-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2515107

Report Date: 21-OCT-20

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Client: Teck Coal Ltd.
 421 Pine Avenue
 Sparwood BC V0B 2G0
 Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5253122							
WG3422923-17	LCS							
Acidity (as CaCO3)			97.2		%		85-115	10-OCT-20
WG3422923-16	MB							
Acidity (as CaCO3)			1.4		mg/L		2	10-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5254639							
WG3424758-11	LCS							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	14-OCT-20
WG3424758-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5255543							
WG3424545-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-OCT-20
Batch	R5255987							
WG3424545-2	LCS							
Beryllium (Be)-Dissolved			97.9		%		80-120	16-OCT-20
BE-T-L-CCMS-VA								
	Water							
Batch	R5256049							
WG3424497-2	LCS							
Beryllium (Be)-Total			94.1		%		80-120	16-OCT-20
WG3424497-1	MB							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5253443							
WG3423306-10	LCS							
Bromide (Br)			99.6		%		85-115	10-OCT-20
WG3423306-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	10-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5256668							
WG3427143-10	LCS							
Dissolved Organic Carbon			90.8		%		80-120	18-OCT-20
WG3427143-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-OCT-20



Quality Control Report

Workorder: L2515107

Report Date: 21-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R5256668							
WG3427143-10	LCS							
Total Organic Carbon			101.7		%		80-120	18-OCT-20
WG3427143-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-OCT-20
CL-L-IC-N-CL Water								
Batch	R5253443							
WG3423306-10	LCS							
Chloride (Cl)			100.3		%		85-115	10-OCT-20
WG3423306-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	10-OCT-20
EC-L-PCT-CL Water								
Batch	R5254639							
WG3424758-11	LCS							
Conductivity (@ 25C)			95.2		%		90-110	14-OCT-20
WG3424758-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-OCT-20
F-IC-N-CL Water								
Batch	R5253443							
WG3423306-10	LCS							
Fluoride (F)			102.0		%		90-110	10-OCT-20
WG3423306-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	10-OCT-20
HG-D-CVAA-VA Water								
Batch	R5255476							
WG3425645-15	DUP	L2515107-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	16-OCT-20
WG3425645-14	LCS							
Mercury (Hg)-Dissolved			98.2		%		80-120	16-OCT-20
WG3425645-13	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-20
HG-T-CVAA-VA Water								
Batch	R5254665							
WG3424815-2	LCS							
Mercury (Hg)-Total			94.5		%		80-120	15-OCT-20
WG3424815-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	15-OCT-20
MET-D-CCMS-VA Water								



Quality Control Report

Workorder: L2515107

Report Date: 21-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5255543							
WG3424545-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-OCT-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-20
Batch	R5255987							
WG3424545-2	LCS							
Aluminum (Al)-Dissolved			103.4		%		80-120	16-OCT-20
Antimony (Sb)-Dissolved			93.4		%		80-120	16-OCT-20



Quality Control Report

Workorder: L2515107

Report Date: 21-OCT-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5255987							
WG3424545-2	LCS							
Arsenic (As)-Dissolved			98.8		%		80-120	16-OCT-20
Barium (Ba)-Dissolved			97.3		%		80-120	16-OCT-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	16-OCT-20
Boron (B)-Dissolved			99.8		%		80-120	16-OCT-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	16-OCT-20
Calcium (Ca)-Dissolved			102.8		%		80-120	16-OCT-20
Chromium (Cr)-Dissolved			102.4		%		80-120	16-OCT-20
Cobalt (Co)-Dissolved			98.7		%		80-120	16-OCT-20
Copper (Cu)-Dissolved			97.2		%		80-120	16-OCT-20
Iron (Fe)-Dissolved			97.8		%		80-120	16-OCT-20
Lead (Pb)-Dissolved			100.4		%		80-120	16-OCT-20
Lithium (Li)-Dissolved			94.1		%		80-120	16-OCT-20
Magnesium (Mg)-Dissolved			98.2		%		80-120	16-OCT-20
Manganese (Mn)-Dissolved			106.5		%		80-120	16-OCT-20
Molybdenum (Mo)-Dissolved			95.8		%		80-120	16-OCT-20
Nickel (Ni)-Dissolved			101.8		%		80-120	16-OCT-20
Potassium (K)-Dissolved			97.8		%		80-120	16-OCT-20
Selenium (Se)-Dissolved			101.2		%		80-120	16-OCT-20
Silicon (Si)-Dissolved			104.4		%		60-140	16-OCT-20
Silver (Ag)-Dissolved			97.9		%		80-120	16-OCT-20
Sodium (Na)-Dissolved			98.7		%		80-120	16-OCT-20
Strontium (Sr)-Dissolved			100.4		%		80-120	16-OCT-20
Thallium (Tl)-Dissolved			97.4		%		80-120	16-OCT-20
Tin (Sn)-Dissolved			98.2		%		80-120	16-OCT-20
Titanium (Ti)-Dissolved			99.8		%		80-120	16-OCT-20
Uranium (U)-Dissolved			105.7		%		80-120	16-OCT-20
Vanadium (V)-Dissolved			99.5		%		80-120	16-OCT-20
Zinc (Zn)-Dissolved			88.2		%		80-120	16-OCT-20
MET-T-CCMS-VA		Water						
Batch	R5256049							
WG3424497-2	LCS							
Aluminum (Al)-Total			88.2		%		80-120	16-OCT-20
Antimony (Sb)-Total			106.0		%		80-120	16-OCT-20
Arsenic (As)-Total			94.6		%		80-120	16-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5256049							
WG3424497-2	LCS							
Barium (Ba)-Total			106.3		%		80-120	16-OCT-20
Bismuth (Bi)-Total			99.0		%		80-120	16-OCT-20
Boron (B)-Total			95.3		%		80-120	16-OCT-20
Cadmium (Cd)-Total			97.3		%		80-120	16-OCT-20
Calcium (Ca)-Total			96.1		%		80-120	16-OCT-20
Chromium (Cr)-Total			95.7		%		80-120	16-OCT-20
Cobalt (Co)-Total			95.0		%		80-120	16-OCT-20
Copper (Cu)-Total			93.6		%		80-120	16-OCT-20
Iron (Fe)-Total			92.4		%		80-120	16-OCT-20
Lead (Pb)-Total			94.4		%		80-120	16-OCT-20
Lithium (Li)-Total			94.9		%		80-120	16-OCT-20
Magnesium (Mg)-Total			88.2		%		80-120	16-OCT-20
Manganese (Mn)-Total			94.5		%		80-120	16-OCT-20
Molybdenum (Mo)-Total			103.2		%		80-120	16-OCT-20
Nickel (Ni)-Total			94.6		%		80-120	16-OCT-20
Potassium (K)-Total			97.0		%		80-120	16-OCT-20
Selenium (Se)-Total			97.6		%		80-120	16-OCT-20
Silicon (Si)-Total			97.9		%		80-120	16-OCT-20
Silver (Ag)-Total			103.2		%		80-120	16-OCT-20
Sodium (Na)-Total			94.8		%		80-120	16-OCT-20
Strontium (Sr)-Total			99.0		%		80-120	16-OCT-20
Thallium (Tl)-Total			98.5		%		80-120	16-OCT-20
Tin (Sn)-Total			98.5		%		80-120	16-OCT-20
Titanium (Ti)-Total			95.4		%		80-120	16-OCT-20
Uranium (U)-Total			93.5		%		80-120	16-OCT-20
Vanadium (V)-Total			95.8		%		80-120	16-OCT-20
Zinc (Zn)-Total			92.8		%		80-120	16-OCT-20
WG3424497-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-OCT-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Boron (B)-Total			<0.010		mg/L		0.01	16-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5256049							
WG3424497-1	MB							
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-OCT-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-OCT-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-OCT-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-OCT-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-OCT-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-OCT-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-OCT-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-OCT-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-OCT-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-OCT-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-OCT-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-OCT-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-OCT-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-OCT-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-OCT-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-OCT-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-OCT-20
NH3-L-F-CL		Water						
Batch	R5256416							
WG3426810-22	LCS							
Ammonia as N			107.7		%		85-115	17-OCT-20
WG3426810-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-OCT-20
NO2-L-IC-N-CL		Water						
Batch	R5253443							
WG3423306-10	LCS							
Nitrite (as N)			103.1		%		90-110	10-OCT-20
WG3423306-9	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5253443							
WG3423306-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	10-OCT-20
NO3-L-IC-N-CL	Water							
Batch	R5253443							
WG3423306-10 LCS								
Nitrate (as N)			103.6		%		90-110	10-OCT-20
WG3423306-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	10-OCT-20
ORP-CL	Water							
Batch	R5255337							
WG3425419-5 CRM		CL-ORP						
ORP			228		mV		210-230	15-OCT-20
P-T-L-COL-CL	Water							
Batch	R5255955							
WG3426195-26 LCS								
Phosphorus (P)-Total			87.7		%		80-120	16-OCT-20
WG3426195-25 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-OCT-20
PH-CL	Water							
Batch	R5254639							
WG3424758-11 LCS								
pH			6.99		pH		6.9-7.1	14-OCT-20
PO4-DO-L-COL-CL	Water							
Batch	R5253455							
WG3422076-22 LCS								
Orthophosphate-Dissolved (as P)			106.5		%		80-120	09-OCT-20
WG3422076-21 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-OCT-20
SO4-IC-N-CL	Water							
Batch	R5253443							
WG3423306-10 LCS								
Sulfate (SO4)			99.2		%		90-110	10-OCT-20
WG3423306-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	10-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5255982							
WG3424744-20 LCS								
Total Dissolved Solids			98.5		%		85-115	15-OCT-20
WG3424744-19 MB								
Total Dissolved Solids			<10		mg/L		10	15-OCT-20
TKN-L-F-CL		Water						
Batch	R5255115							
WG3424828-10 LCS								
Total Kjeldahl Nitrogen			89.6		%		75-125	15-OCT-20
WG3424828-14 LCS								
Total Kjeldahl Nitrogen			90.9		%		75-125	15-OCT-20
WG3424828-18 LCS								
Total Kjeldahl Nitrogen			92.7		%		75-125	15-OCT-20
WG3424828-2 LCS								
Total Kjeldahl Nitrogen			86.5		%		75-125	15-OCT-20
WG3424828-22 LCS								
Total Kjeldahl Nitrogen			96.3		%		75-125	15-OCT-20
WG3424828-4 LCS								
Total Kjeldahl Nitrogen			83.9		%		75-125	15-OCT-20
WG3424828-8 LCS								
Total Kjeldahl Nitrogen			85.4		%		75-125	15-OCT-20
WG3424828-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
WG3424828-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-OCT-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5255889							
WG3424743-6	LCS							
Total Suspended Solids			93.0		%		85-115	15-OCT-20
WG3424743-5	MB							
Total Suspended Solids			<1.0		mg/L		1	15-OCT-20
TURBIDITY-CL	Water							
Batch	R5252876							
WG3422422-8	LCS							
Turbidity			96.4		%		85-115	10-OCT-20
WG3422422-7	MB							
Turbidity			<0.10		NTU		0.1	10-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	08-OCT-20 12:00	15-OCT-20 15:00	0.25	171	hours	EHTR-FM
pH	1	08-OCT-20 12:00	14-OCT-20 14:00	0.25	146	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2515107 were received on 09-OCT-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		RG_T-Q4-2020		TURNAROUND TIME:			RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#		Regional Effects Program		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager		Cam Jaeger		Lab Contact		Lyudmyla Shvets		Email 1:		cam.jaeger@teck.com	X	X	X
Email		cam.jaeger@teck.com		Email		lyudmyla.shvets@alsglobal.com		Email 2:		jennifer.dewerk@teck.com	X	X	X
Address		421 Pine Ave		Address		2559 29 st NE		Email 3:		teckcoal@equisonline.com	X	X	X
City		Sparwood		City		Calgary		Email 4:					X
Postal Code		V0B 2G0		Postal Code		T1Y 7B5		Email 5:					
Phone Number		250-425-8449		Phone Number		403-407-1800		PO number		690772			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered by Field, Lab, Field & Lab, None



L2515107-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-T_WP_Q4-2020_NP - 09-08	RG_DW-T	WP	N	Oct 8, 20		G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	10/9/20

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jennifer de Werk
Priority (2-3 business days) - 50% surcharge		Mobile #	250-910-7287
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	<i>[Signature]</i>
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	Oct 8, 20



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 17-NOV-20
Report Date: 24-NOV-20 16:19 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2530465
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201116Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2530465-1 WG 16-NOV-20 11:30 EV_MW_MC4_WG _2020_Q4_NP	L2530465-2 WG 16-NOV-20 14:05 EV_MW_BC1A_W G_2020_Q4_NP	L2530465-3 WG 16-NOV-20 14:50 EV_MW_BC1B_W G_2020_Q4_NP	L2530465-4 WG 16-NOV-20 13:35 EV_MW_AQ1_WG _2020_Q4_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	821	2000	2420	779
	Hardness (as CaCO3) (mg/L)	467	1340	1530	473
	pH (pH)	8.19	8.13	8.22	7.97
	ORP (mV)	452	464	355	465
	Total Suspended Solids (mg/L)	1.1	1.8	1.1	4.3
	Total Dissolved Solids (mg/L)	566 ^{DLHC}	1770 ^{DLHC}	2200 ^{DLHC}	543 ^{DLHC}
	Turbidity (NTU)	2.00	1.44	0.62	7.29
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	7.3	6.6	9.8	9.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	339	258	242	333
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	339	258	242	333
	Ammonia as N (mg/L)	0.0061	<0.0050	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	413	315	295	407
	Bromide (Br) (mg/L)	0.133	0.66 ^{DLHC}	0.58 ^{DLHC}	0.162
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	31.6	42.5 ^{DLHC}	57.9 ^{DLHC}	33.1
	Fluoride (F) (mg/L)	0.220	0.24 ^{DLHC}	0.33 ^{DLHC}	0.246
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	97.3	99.9	90.7	101
	Nitrate (as N) (mg/L)	<0.0050	27.7 ^{DLHC}	42.1 ^{DLHC}	0.466
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.145	<0.050 ^{TKNI}	<0.050 ^{TKNI}	0.109
	Total Nitrogen (mg/L)	0.145	27.7	42.1	0.575
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013	0.0216	0.0271	0.0143
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.021 ^{DLM}	0.026 ^{DLM}	0.015 ^{DLM}
	Phosphorus (P)-Total (mg/L)	<0.0020	0.026 ^{DLM}	0.034 ^{DLM}	0.029 ^{DLM}
	Sulfate (SO4) (mg/L)	113	921 ^{DLHC}	1200 ^{DLHC}	96.0
	Anion Sum (meq/L)	10.0	27.5	34.5	9.64
	Cation Sum (meq/L)	9.75	27.5	31.3	9.69
	Cation - Anion Balance (%)	-1.4	-0.1	-4.9	0.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.11 ^{DTC}	<0.50	0.67	1.63
	Total Organic Carbon (mg/L)	1.14 ^{DTC}	<0.50	0.90	1.87
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	0.0046	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2530465-1 WG 16-NOV-20 11:30 EV_MW_MC4_WG _2020_Q4_NP	L2530465-2 WG 16-NOV-20 14:05 EV_MW_BC1A_W G_2020_Q4_NP	L2530465-3 WG 16-NOV-20 14:50 EV_MW_BC1B_W G_2020_Q4_NP	L2530465-4 WG 16-NOV-20 13:35 EV_MW_AQ1_WG _2020_Q4_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00078	0.00150	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00050	0.00022	0.00022	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.121	0.0745	0.0557	0.189
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.040 ^{DLA}	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 ^{DLA}	<0.000050
	Boron (B)-Dissolved (mg/L)	0.038	0.057	0.048	0.024
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.219	0.336	0.0352
	Calcium (Ca)-Dissolved (mg/L)	127	274	289	117
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 ^{DLA}	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.47	0.24	<0.20 ^{DLA}	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00029	0.00049 ^{DLA}	0.00079
	Iron (Fe)-Dissolved (mg/L)	0.417	<0.010	<0.020 ^{DLA}	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 ^{DLA}	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0198	0.194	0.189	0.0207
	Magnesium (Mg)-Dissolved (mg/L)	36.4	159	197	44.1
	Manganese (Mn)-Dissolved (mg/L)	0.0710	0.00626	0.00094	0.00014
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00345	0.00591	0.00931	0.000314
	Nickel (Ni)-Dissolved (mg/L)	0.00281	0.00190	0.0033	0.00052
	Potassium (K)-Dissolved (mg/L)	2.40	7.13	7.49	1.63
	Selenium (Se)-Dissolved (ug/L)	<0.050	218	335	2.43
	Silicon (Si)-Dissolved (mg/L)	5.52	3.76	2.96	4.02
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 ^{DLA}	<0.000010
	Sodium (Na)-Dissolved (mg/L)	7.61	12.7	10.5	4.51
	Strontium (Sr)-Dissolved (mg/L)	0.620	1.23	1.42	0.408
	Thallium (Tl)-Dissolved (mg/L)	0.000022	0.000024	0.000043	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 ^{DLA}	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00117	0.00754	0.0112	0.000466
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 ^{DLA}	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0050	0.0056	0.0072	0.0035

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2530465-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2530465-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			

Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode

Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201116Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2530465

Report Date: 24-NOV-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5288077							
WG3447910-5	LCS							
Acidity (as CaCO3)			104.0		%		85-115	18-NOV-20
WG3447910-8	LCS							
Acidity (as CaCO3)			107.0		%		85-115	18-NOV-20
WG3447910-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	18-NOV-20
WG3447910-7	MB							
Acidity (as CaCO3)			1.6		mg/L		2	18-NOV-20
ALK-MAN-CL		Water						
Batch	R5288956							
WG3448139-17	LCS							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	19-NOV-20
WG3448139-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-NOV-20
BE-D-L-CCMS-VA		Water						
Batch	R5291797							
WG3448446-2	LCS							
Beryllium (Be)-Dissolved			95.1		%		80-120	20-NOV-20
WG3448446-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-NOV-20
BIC-CL		Water						
Batch	R5288956							
WG3448139-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	19-NOV-20
BR-L-IC-N-CL		Water						
Batch	R5287230							
WG3447082-6	LCS							
Bromide (Br)			103.7		%		85-115	17-NOV-20
WG3447082-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-NOV-20
C-DIS-ORG-LOW-CL		Water						
Batch	R5289078							
WG3448113-2	LCS							
Dissolved Organic Carbon			95.5		%		80-120	18-NOV-20
WG3448113-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5290916							
WG3448726-2	LCS							
Dissolved Organic Carbon			95.0		%		80-120	19-NOV-20
WG3448726-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-NOV-20
C-TOT-ORG-LOW-CL Water								
Batch	R5289078							
WG3448113-2	LCS							
Total Organic Carbon			99.8		%		80-120	18-NOV-20
WG3448113-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-NOV-20
Batch	R5290916							
WG3448726-2	LCS							
Total Organic Carbon			98.5		%		80-120	19-NOV-20
WG3448726-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-NOV-20
CL-L-IC-N-CL Water								
Batch	R5287230							
WG3447082-6	LCS							
Chloride (Cl)			101.4		%		85-115	17-NOV-20
WG3447082-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	17-NOV-20
CO3-CL Water								
Batch	R5288956							
WG3448139-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	19-NOV-20
EC-L-PCT-CL Water								
Batch	R5288956							
WG3448139-17	LCS							
Conductivity (@ 25C)			97.2		%		90-110	19-NOV-20
WG3448139-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-NOV-20
F-IC-N-CL Water								
Batch	R5287230							
WG3447082-6	LCS							
Fluoride (F)			108.5		%		90-110	17-NOV-20
WG3447082-5	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL	Water							
Batch	R5287230							
WG3447082-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	17-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5292961							
WG3449311-6 LCS								
Mercury (Hg)-Dissolved			97.0		%		80-120	21-NOV-20
WG3449311-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-NOV-20
MET-D-CCMS-VA	Water							
Batch	R5291797							
WG3448446-2 LCS								
Aluminum (Al)-Dissolved			98.6		%		80-120	20-NOV-20
Antimony (Sb)-Dissolved			94.2		%		80-120	20-NOV-20
Arsenic (As)-Dissolved			101.3		%		80-120	20-NOV-20
Barium (Ba)-Dissolved			109.7		%		80-120	20-NOV-20
Bismuth (Bi)-Dissolved			105.7		%		80-120	20-NOV-20
Boron (B)-Dissolved			94.2		%		80-120	20-NOV-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	20-NOV-20
Calcium (Ca)-Dissolved			104.8		%		80-120	20-NOV-20
Chromium (Cr)-Dissolved			99.7		%		80-120	20-NOV-20
Cobalt (Co)-Dissolved			101.2		%		80-120	20-NOV-20
Copper (Cu)-Dissolved			97.4		%		80-120	20-NOV-20
Iron (Fe)-Dissolved			95.9		%		80-120	20-NOV-20
Lead (Pb)-Dissolved			101.6		%		80-120	20-NOV-20
Lithium (Li)-Dissolved			97.4		%		80-120	20-NOV-20
Magnesium (Mg)-Dissolved			94.7		%		80-120	20-NOV-20
Manganese (Mn)-Dissolved			104.4		%		80-120	20-NOV-20
Molybdenum (Mo)-Dissolved			97.4		%		80-120	20-NOV-20
Nickel (Ni)-Dissolved			98.2		%		80-120	20-NOV-20
Potassium (K)-Dissolved			101.3		%		80-120	20-NOV-20
Selenium (Se)-Dissolved			103.7		%		80-120	20-NOV-20
Silicon (Si)-Dissolved			101.4		%		60-140	20-NOV-20
Silver (Ag)-Dissolved			93.8		%		80-120	20-NOV-20
Sodium (Na)-Dissolved			99.1		%		80-120	20-NOV-20
Strontium (Sr)-Dissolved			98.6		%		80-120	20-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5291797							
WG3448446-2	LCS							
Thallium (Tl)-Dissolved			102.7		%		80-120	20-NOV-20
Tin (Sn)-Dissolved			96.4		%		80-120	20-NOV-20
Titanium (Ti)-Dissolved			94.0		%		80-120	20-NOV-20
Uranium (U)-Dissolved			103.4		%		80-120	20-NOV-20
Vanadium (V)-Dissolved			101.1		%		80-120	20-NOV-20
Zinc (Zn)-Dissolved			99.3		%		80-120	20-NOV-20
WG3448446-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Batch	R5291797							
WG3448446-1	MB	NP						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
NH3-L-F-CL								
Batch	R5287213							
WG3446903-10	LCS							
Ammonia as N			97.1		%		85-115	17-NOV-20
WG3446903-6	LCS							
Ammonia as N			101.2		%		85-115	17-NOV-20
WG3446903-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-NOV-20
WG3446903-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	17-NOV-20
NO2-L-IC-N-CL								
Batch	R5287230							
WG3447082-6	LCS							
Nitrite (as N)			100.6		%		90-110	17-NOV-20
WG3447082-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-NOV-20
NO3-L-IC-N-CL								
Batch	R5287230							
WG3447082-6	LCS							
Nitrate (as N)			102.2		%		90-110	17-NOV-20
WG3447082-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-NOV-20
OH-CL								
Batch	R5288956							
WG3448139-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	19-NOV-20
ORP-CL								
Batch	R5287119							
WG3446574-5	CRM	CL-ORP						
ORP			224		mV		210-230	17-NOV-20
P-T-L-COL-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL		Water						
Batch	R5289256							
WG3448194-14	LCS							
Phosphorus (P)-Total			97.1		%		80-120	19-NOV-20
WG3448194-18	LCS							
Phosphorus (P)-Total			97.5		%		80-120	19-NOV-20
WG3448194-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-NOV-20
WG3448194-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-NOV-20
P-TD-L-COL-CL		Water						
Batch	R5289256							
WG3448194-14	LCS							
Phosphorus (P)-Total Dissolved			97.1		%		80-120	19-NOV-20
WG3448194-18	LCS							
Phosphorus (P)-Total Dissolved			97.5		%		80-120	19-NOV-20
WG3448194-13	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-NOV-20
WG3448194-17	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-NOV-20
PH-CL		Water						
Batch	R5288956							
WG3448139-17	LCS							
pH			6.99		pH		6.9-7.1	19-NOV-20
PO4-DO-L-COL-CL		Water						
Batch	R5287085							
WG3446746-10	LCS							
Orthophosphate-Dissolved (as P)			101.5		%		80-120	17-NOV-20
WG3446746-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-NOV-20
SO4-IC-N-CL		Water						
Batch	R5287230							
WG3447082-6	LCS							
Sulfate (SO4)			105.3		%		90-110	17-NOV-20
WG3447082-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-NOV-20
SOLIDS-TDS-CL		Water						



Quality Control Report

Workorder: L2530465

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5293698							
WG3449367-2	LCS							
Total Dissolved Solids			94.0		%		85-115	21-NOV-20
WG3449367-1	MB							
Total Dissolved Solids			<10		mg/L		10	21-NOV-20
TKN-L-F-CL		Water						
Batch	R5287574							
WG3447123-11	LCS							
Total Kjeldahl Nitrogen			86.1		%		75-125	18-NOV-20
WG3447123-13	LCS							
Total Kjeldahl Nitrogen			86.3		%		75-125	18-NOV-20
WG3447123-2	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	18-NOV-20
WG3447123-6	LCS							
Total Kjeldahl Nitrogen			86.2		%		75-125	18-NOV-20
WG3447123-9	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	18-NOV-20
WG3447123-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
WG3447123-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-NOV-20
TSS-L-CL		Water						
Batch	R5293677							
WG3449285-2	LCS							
Total Suspended Solids			96.4		%		85-115	21-NOV-20
WG3449285-1	MB							
Total Suspended Solids			<1.0		mg/L		1	21-NOV-20
TURBIDITY-CL		Water						
Batch	R5287116							
WG3446572-8	LCS							
Turbidity			96.4		%		85-115	17-NOV-20
WG3446572-7	MB							
Turbidity			<0.10		NTU		0.1	17-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	16-NOV-20 11:30	17-NOV-20 16:00	0.25	29	hours	EHTR-FM
	2	16-NOV-20 14:05	17-NOV-20 16:00	0.25	26	hours	EHTR-FM
	3	16-NOV-20 14:50	17-NOV-20 16:00	0.25	25	hours	EHTR-FM
	4	16-NOV-20 13:35	17-NOV-20 16:00	0.25	26	hours	EHTR-FM
pH	1	16-NOV-20 11:30	19-NOV-20 14:00	0.25	74	hours	EHTR-FM
	2	16-NOV-20 14:05	19-NOV-20 14:00	0.25	72	hours	EHTR-FM
	3	16-NOV-20 14:50	19-NOV-20 14:00	0.25	71	hours	EHTR-FM
	4	16-NOV-20 13:35	19-NOV-20 14:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2530465 were received on 17-NOV-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201116Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2530465-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED										
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury
EV_MW_MC4_WG_2020_Q4_NP	EV_MW_MC4	WG	N	11/16/2020	11:30	G	5	1	1	1	1						1	
EV_MW_BC1A_WG_2020_Q3_NP	EV_MW_BC1A	WG	N	11/16/2020	14:05	G	5	1	1	1	1						1	
EV_MW_BC1B_WG_2020_Q3_NP	EV_MW_BC1B	WG	N	11/16/2020	14:50	G	5	1	1	1	1						1	
EV_MW_AQ1_WG_2020_Q4_NP	EV_MW_AQ1	WG	N	11/16/2020	13:35	G	5	1	1	1	1						1	
Total							20											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Colby Bracken/Jason Gravelle	November 16, 2020	<i>JM</i>	11/16 8:50

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Colby Bracken/Jason Gravelle
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>Colby Bracken</i>
Emergency (1 Business Day) - 100% surcharge		Date/Time	November 16, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Jo



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 19-NOV-20
Report Date: 26-NOV-20 14:55 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2531499
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2531499-1 WG 18-NOV-20 12:35 EV_BALGW_WG_ 2020_Q4_NP	L2531499-2 WG 18-NOV-20 09:30 EV_ECGW_WG_2 020_Q4_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	685	403		
	Hardness (as CaCO3) (mg/L)	371	145		
	pH (pH)	7.93	8.38		
	ORP (mV)	426	429		
	Total Suspended Solids (mg/L)	122	85.8		
	Total Dissolved Solids (mg/L)	516 ^{DLHC}	295 ^{DLHC}		
	Turbidity (NTU)	87.5	103		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.5	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	297	189		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	10.6		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	297	200		
	Ammonia as N (mg/L)	0.0265	0.0646		
	Bicarbonate (HCO3) (mg/L)	362	231		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	6.4		
	Chloride (Cl) (mg/L)	1.69	0.65		
	Fluoride (F) (mg/L)	0.245	0.857		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	114	91.7		
	Nitrate (as N) (mg/L)	0.0471	0.114		
	Nitrite (as N) (mg/L)	<0.0010	0.0239		
	Total Kjeldahl Nitrogen (mg/L)	0.290	0.293		
	Total Nitrogen (mg/L)	0.337	0.431		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0025	0.0122		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0162	0.0105		
	Phosphorus (P)-Total (mg/L)	0.217 ^{DLHC}	0.0717		
	Sulfate (SO4) (mg/L)	99.6	25.7		
	Anion Sum (meq/L)	8.07	4.60		
	Cation Sum (meq/L)	9.18	4.22		
Cation - Anion Balance (%)	6.5	-4.3			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.36	1.10		
	Total Organic Carbon (mg/L)	12.9 ^{DLM}	1.59		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.362	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2531499-1 WG 18-NOV-20 12:35 EV_BALGW_WG_ 2020_Q4_NP	L2531499-2 WG 18-NOV-20 09:30 EV_ECGW_WG_2 020_Q4_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00049	0.00033		
	Barium (Ba)-Dissolved (mg/L)	0.0507	0.0507		
	Beryllium (Be)-Dissolved (ug/L)	0.022	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.179	0.103		
	Cadmium (Cd)-Dissolved (ug/L)	0.0262	0.0183		
	Calcium (Ca)-Dissolved (mg/L)	98.3	33.1		
	Chromium (Cr)-Dissolved (mg/L)	0.00047	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.33	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00565	0.00134		
	Iron (Fe)-Dissolved (mg/L)	0.336	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.000443	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.127	0.0112		
	Magnesium (Mg)-Dissolved (mg/L)	30.5	15.1		
	Manganese (Mn)-Dissolved (mg/L)	0.0315	0.0341		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000308	0.0128		
	Nickel (Ni)-Dissolved (mg/L)	0.00136	0.00129		
	Potassium (K)-Dissolved (mg/L)	2.89	1.03		
	Selenium (Se)-Dissolved (ug/L)	0.166	0.172		
	Silicon (Si)-Dissolved (mg/L)	5.18	4.94		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	37.6	29.7		
	Strontium (Sr)-Dissolved (mg/L)	2.55	0.401		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000041		
	Tin (Sn)-Dissolved (mg/L)	0.00036	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000161	0.00147		
	Vanadium (V)-Dissolved (mg/L)	0.00102	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0237	0.0027		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2531499-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2531499-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2531499-1, -2
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2531499-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2531499-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2531499-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531499

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5293017							
WG3449330-2	LCS							
Acidity (as CaCO3)			105.6		%		85-115	20-NOV-20
WG3449330-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	20-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-5	LCS							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	21-NOV-20
WG3449971-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5291797							
WG3449073-2	LCS							
Beryllium (Be)-Dissolved			100.9		%		80-120	20-NOV-20
WG3449073-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-NOV-20
BIC-CL								
	Water							
Batch	R5295078							
WG3449971-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5290899							
WG3448694-6	LCS							
Bromide (Br)			102.7		%		85-115	19-NOV-20
WG3448694-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	19-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5293077							
WG3449357-2	LCS							
Dissolved Organic Carbon			101.0		%		80-120	20-NOV-20
WG3449357-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5293077							
WG3449357-2	LCS							
Total Organic Carbon			107.0		%		80-120	20-NOV-20
WG3449357-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5290899							
WG3448694-6	LCS							
Chloride (Cl)			102.8		%		85-115	19-NOV-20
WG3448694-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	19-NOV-20
CO3-CL	Water							
Batch	R5295078							
WG3449971-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL	Water							
Batch	R5295078							
WG3449971-5	LCS							
Conductivity (@ 25C)			92.9		%		90-110	21-NOV-20
WG3449971-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL	Water							
Batch	R5290899							
WG3448694-6	LCS							
Fluoride (F)			101.9		%		90-110	19-NOV-20
WG3448694-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	19-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5297859							
WG3451985-3	DUP	L2531499-2						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3451985-2	LCS							
Mercury (Hg)-Dissolved			97.3		%		80-120	26-NOV-20
WG3451985-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	26-NOV-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5291797							
WG3449073-2	LCS							
Aluminum (Al)-Dissolved			97.6		%		80-120	20-NOV-20
Antimony (Sb)-Dissolved			93.3		%		80-120	20-NOV-20
Arsenic (As)-Dissolved			97.5		%		80-120	20-NOV-20
Barium (Ba)-Dissolved			105.2		%		80-120	20-NOV-20
Bismuth (Bi)-Dissolved			106.9		%		80-120	20-NOV-20
Boron (B)-Dissolved			99.3		%		80-120	20-NOV-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	20-NOV-20
Calcium (Ca)-Dissolved			105.9		%		80-120	20-NOV-20
Chromium (Cr)-Dissolved			101.3		%		80-120	20-NOV-20
Cobalt (Co)-Dissolved			99.6		%		80-120	20-NOV-20
Copper (Cu)-Dissolved			93.5		%		80-120	20-NOV-20
Iron (Fe)-Dissolved			95.3		%		80-120	20-NOV-20
Lead (Pb)-Dissolved			105.8		%		80-120	20-NOV-20
Lithium (Li)-Dissolved			103.0		%		80-120	20-NOV-20
Magnesium (Mg)-Dissolved			94.8		%		80-120	20-NOV-20
Manganese (Mn)-Dissolved			101.0		%		80-120	20-NOV-20
Molybdenum (Mo)-Dissolved			105.6		%		80-120	20-NOV-20
Nickel (Ni)-Dissolved			97.5		%		80-120	20-NOV-20
Potassium (K)-Dissolved			100.2		%		80-120	20-NOV-20
Selenium (Se)-Dissolved			103.9		%		80-120	20-NOV-20
Silicon (Si)-Dissolved			100.8		%		60-140	20-NOV-20
Silver (Ag)-Dissolved			101.0		%		80-120	20-NOV-20
Sodium (Na)-Dissolved			102.7		%		80-120	20-NOV-20
Strontium (Sr)-Dissolved			107.6		%		80-120	20-NOV-20
Thallium (Tl)-Dissolved			109.9		%		80-120	20-NOV-20
Tin (Sn)-Dissolved			102.0		%		80-120	20-NOV-20
Titanium (Ti)-Dissolved			93.7		%		80-120	20-NOV-20
Uranium (U)-Dissolved			108.0		%		80-120	20-NOV-20
Vanadium (V)-Dissolved			100.2		%		80-120	20-NOV-20
Zinc (Zn)-Dissolved			101.9		%		80-120	20-NOV-20
WG3449073-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5291797							
WG3449073-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5291004							
WG3448466-2	LCS							
Ammonia as N			108.6		%		85-115	19-NOV-20
WG3448466-6	LCS							
Ammonia as N			111.8		%		85-115	19-NOV-20
WG3448466-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5291004							
WG3448466-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-20
NO2-L-IC-N-CL	Water							
Batch	R5290899							
WG3448694-6 LCS								
Nitrite (as N)			102.6		%		90-110	19-NOV-20
WG3448694-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	19-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5290899							
WG3448694-6 LCS								
Nitrate (as N)			103.7		%		90-110	19-NOV-20
WG3448694-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	19-NOV-20
OH-CL	Water							
Batch	R5295078							
WG3449971-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL	Water							
Batch	R5290318							
WG3448288-2 CRM		CL-ORP						
ORP			220		mV		210-230	19-NOV-20
P-T-L-COL-CL	Water							
Batch	R5293365							
WG3449476-14 LCS								
Phosphorus (P)-Total			97.1		%		80-120	21-NOV-20
WG3449476-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
P-TD-L-COL-CL	Water							
Batch	R5293365							
WG3449476-14 LCS								
Phosphorus (P)-Total Dissolved			97.1		%		80-120	21-NOV-20
WG3449476-13 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	21-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5295078							
WG3449971-5	LCS							
pH			7.03		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5290364							
WG3448407-3	LCS							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	19-NOV-20
WG3448407-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-NOV-20
SO4-IC-N-CL	Water							
Batch	R5290899							
WG3448694-6	LCS							
Sulfate (SO4)			105.6		%		90-110	19-NOV-20
WG3448694-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	19-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5296912							
WG3449735-2	LCS							
Total Dissolved Solids			101.1		%		85-115	23-NOV-20
WG3449735-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
TKN-L-F-CL	Water							
Batch	R5291038							
WG3448736-2	LCS							
Total Kjeldahl Nitrogen			87.5		%		75-125	20-NOV-20
WG3448736-22	LCS							
Total Kjeldahl Nitrogen			83.9		%		75-125	20-NOV-20
WG3448736-24	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	20-NOV-20
WG3448736-6	LCS							
Total Kjeldahl Nitrogen			87.1		%		75-125	20-NOV-20
WG3448736-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5291038							
WG3448736-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
TSS-L-CL	Water							
Batch	R5296877							
WG3449736-2 LCS								
Total Suspended Solids			93.8		%		85-115	23-NOV-20
WG3449736-1 MB								
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
TURBIDITY-CL	Water							
Batch	R5290322							
WG3448286-2 LCS								
Turbidity			97.9		%		85-115	19-NOV-20
WG3448286-1 MB								
Turbidity			<0.10		NTU		0.1	19-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	18-NOV-20 12:35	19-NOV-20 12:45	0.25	24	hours	EHTR-FM
	2	18-NOV-20 09:30	19-NOV-20 12:45	0.25	27	hours	EHTR-FM
pH							
	1	18-NOV-20 12:35	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	2	18-NOV-20 09:30	21-NOV-20 13:00	0.25	76	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531499 were received on 19-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20201118Q4GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (ClO-C32)	D-Mercury	D-CrVI	
EV_BALGW_WG_2020_Q4_NP	EV_BALGW	WG	N	11/18/2020	12:35	G	5	1		1	1		1					1		
EV_ECGW_WG_2020_Q4_NP	EV_ECGW	WG	N	1/18/2020	9:30	G	5	1		1	1		1					1		
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	November 18, 2020	<i>[Signature]</i>	11/19 850

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Jason Gravelle	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	November 18, 2020



L2531499-COFC



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 20-NOV-20
Report Date: 27-NOV-20 15:47 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2532002
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2532002-1 WG 19-NOV-20 10:35 EV_MW_MC1A_W G_2020_Q4_NP	L2532002-2 WG 19-NOV-20 10:40 EV_MW_MC10A_ WG_2020_Q4_NP	L2532002-3 WG 19-NOV-20 10:45 EV_MW_MC10B_ WG_2020_Q4_NP	L2532002-4 WG 19-NOV-20 10:50 EV_MW_MC10C_ WG_2020_Q4_NP	L2532002-5 WG 19-NOV-20 11:45 EV_MW_MC1B_W G_2020_Q4_NP
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	767	767	<2.0	<2.0	1150
	Hardness (as CaCO3) (mg/L)	391	381	<0.50	<0.50	609
	pH (pH)	7.85	7.87	5.50	5.45	7.59
	ORP (mV)	470	407	354	381	410
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	28.7
	Total Dissolved Solids (mg/L)	494 ^{DLHC}	489 ^{DLHC}	<10	<10	798 ^{DLHC}
	Turbidity (NTU)	8.08	9.27	<0.10	<0.10	129
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.4	3.8	1.4	1.4	7.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	342	339	<1.0	<1.0	362
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	342	339	<1.0	<1.0	362
	Ammonia as N (mg/L)	1.83 ^{DLHC}	1.64 ^{DLHC}	0.0074 ^{RRV}	0.0171 ^{RRV}	0.336
	Bicarbonate (HCO3) (mg/L)	417	413	<5.0	<5.0	441
	Bromide (Br) (mg/L)	0.553	0.553	<0.050	<0.050	1.24 ^{DLHC}
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	81.9	83.9	<0.10	<0.10	137 ^{DLHC}
	Fluoride (F) (mg/L)	0.273	0.264	<0.020	<0.020	0.20 ^{DLHC}
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.5	97.6	0.0	0.0	102
	Nitrate (as N) (mg/L)	0.0219	0.0198	<0.0050	<0.0050	<0.025 ^{DLHC}
	Nitrite (as N) (mg/L)	0.0026	0.0025	<0.0010	<0.0010	<0.0050 ^{DLHC}
	Total Kjeldahl Nitrogen (mg/L)	1.36	1.37	<0.050	<0.050	0.315
	Total Nitrogen (mg/L)	1.38	1.39	<0.050	<0.050	0.315
	Orthophosphate-Dissolved (as P) (mg/L)	0.0026	0.0018	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0053	0.0043	<0.0020	<0.0020	0.0126
	Phosphorus (P)-Total (mg/L)	0.0048	0.0058	<0.0020	<0.0020	0.0181
	Sulfate (SO4) (mg/L)	1.15	0.97	<0.30	<0.30	134 ^{DLHC}
	Anion Sum (meq/L)	9.19	9.17	<0.10	<0.10	13.9
	Cation Sum (meq/L)	9.15	8.96	<0.10	<0.10	14.1
Cation - Anion Balance (%)	-0.2	-1.2	0.0	0.0	0.9	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.79	1.63	<0.50	<0.50	2.37
	Total Organic Carbon (mg/L)	1.64	1.47	0.72	<0.50	2.40
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2532002-6 WG 19-NOV-20 13:45 EV_MW_MC2A_W G_2020_Q4_NP	L2532002-7 WG 19-NOV-20 14:30 EV_MW_MC2B_W G_2020_Q4_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	835	1050		
	Hardness (as CaCO3) (mg/L)	392	635		
	pH (pH)	7.93	7.85		
	ORP (mV)	399	484		
	Total Suspended Solids (mg/L)	1.4	<1.0		
	Total Dissolved Solids (mg/L)	507 ^{DLHC}	889 ^{DLHC}		
	Turbidity (NTU)	20.8	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.0	3.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	384	233		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	384 ^{DLHC}	233		
	Ammonia as N (mg/L)	0.944 ^{DLHC}	0.0067		
	Bicarbonate (HCO3) (mg/L)	469 ^{DLHC}	284 ^{DLHC}		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	0.44 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0 ^{DLHC}		
	Chloride (Cl) (mg/L)	77.8 ^{DLHC}	26.3 ^{DLHC}		
	Fluoride (F) (mg/L)	0.17 ^{DLHC}	0.11 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	99.8	96.9		
	Nitrate (as N) (mg/L)	<0.025 ^{DLHC}	7.99 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	0.0095 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	0.789	<0.050		
	Total Nitrogen (mg/L)	0.789	8.00		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0029		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0043	0.0043		
	Phosphorus (P)-Total (mg/L)	0.0065 ^{DLHC}	0.0043 ^{DLHC}		
	Sulfate (SO4) (mg/L)	<1.5 ^{DLHC}	368 ^{DLHC}		
	Anion Sum (meq/L)	9.89	13.6		
	Cation Sum (meq/L)	9.86	13.2		
	Cation - Anion Balance (%)	-0.1	-1.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.96	0.78		
	Total Organic Carbon (mg/L)	1.98	0.72		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2532002-1 WG 19-NOV-20 10:35 EV_MW_MC1A_W G_2020_Q4_NP	L2532002-2 WG 19-NOV-20 10:40 EV_MW_MC10A_ WG_2020_Q4_NP	L2532002-3 WG 19-NOV-20 10:45 EV_MW_MC10B_ WG_2020_Q4_NP	L2532002-4 WG 19-NOV-20 10:50 EV_MW_MC10C_ WG_2020_Q4_NP	L2532002-5 WG 19-NOV-20 11:45 EV_MW_MC1B_W G_2020_Q4_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00047	0.00046	<0.00010	<0.00010	0.00554
	Barium (Ba)-Dissolved (mg/L)	10.8	11.0	0.00026 ^{RRV}	<0.00010	0.825
	Beryllium (Be)-Dissolved (ug/L)	<0.040 ^{DLA}	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.070	0.064	<0.010	<0.010	0.060
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 ^{DLA}	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	104	100	<0.050	<0.050	160
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.20 ^{DLA}	<0.10	<0.10	<0.10	0.22
	Copper (Cu)-Dissolved (mg/L)	<0.00040 ^{DLA}	0.00038	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.876	0.868	<0.010	<0.010	12.1
	Lead (Pb)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.133	0.127	<0.0010	<0.0010	0.146
	Magnesium (Mg)-Dissolved (mg/L)	32.1	31.7	<0.10	<0.10	51.0
	Manganese (Mn)-Dissolved (mg/L)	0.101	0.0998	<0.00010	<0.00010	0.638
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00024	0.000241	<0.000050	<0.000050	0.00241
	Nickel (Ni)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	4.38	4.73	<0.050	<0.050	3.94
	Selenium (Se)-Dissolved (ug/L)	0.21	0.188	<0.050	<0.050	0.066
	Silicon (Si)-Dissolved (mg/L)	3.49	3.38	0.104 ^{RRV}	<0.050	5.71
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	24.0	24.3	0.141 ^{RRV}	<0.050	27.0
	Strontium (Sr)-Dissolved (mg/L)	1.73	1.78	<0.00020	<0.00020	0.940
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	0.00301 ^{RRV}	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000287	0.000281	<0.000010	<0.000010	0.000624
	Vanadium (V)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0055	0.0052	<0.0010	<0.0010	0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2532002-6	L2532002-7		
		Description	WG	WG		
		Sampled Date	19-NOV-20	19-NOV-20		
		Sampled Time	13:45	14:30		
		Client ID	EV_MW_MC2A_W G_2020_Q4_NP	EV_MW_MC2B_W G_2020_Q4_NP		
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00121	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	5.85	0.0531			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.063	0.024			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.103			
	Calcium (Ca)-Dissolved (mg/L)	103	154			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00025	0.00024			
	Iron (Fe)-Dissolved (mg/L)	1.56	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.233	0.0550			
	Magnesium (Mg)-Dissolved (mg/L)	32.8	61.2			
	Manganese (Mn)-Dissolved (mg/L)	0.0516	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000127	0.000623			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050			
	Potassium (K)-Dissolved (mg/L)	3.55	2.01			
	Selenium (Se)-Dissolved (ug/L)	<0.050	54.4			
	Silicon (Si)-Dissolved (mg/L)	4.16	3.31			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	41.1	10.8			
	Strontium (Sr)-Dissolved (mg/L)	1.50	0.328			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000014	0.00149			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0028	0.0012			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Chromium (Cr)-Dissolved	MB-LOR	L2532002-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Ammonia as N	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nitrate (as N)	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Phosphorus (P)-Total	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulfate (SO4)	MS-B	L2532002-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

C-TOT-ORG-LOW-CL Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

CL-L-IC-N-CL Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CO3-CL Water Carbonate (CO3) APHA 2320 B-Potentiometric Titration

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

Reference Information

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2532002

Report Date: 27-NOV-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5295116							
WG3449989-5	LCS							
Acidity (as CaCO3)			104.3		%		85-115	21-NOV-20
WG3449989-8	LCS							
Acidity (as CaCO3)			104.2		%		85-115	21-NOV-20
WG3449989-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-NOV-20
WG3449989-7	MB							
Acidity (as CaCO3)			1.2		mg/L		2	21-NOV-20
ALK-MAN-CL		Water						
Batch	R5295078							
WG3449971-14	LCS							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	21-NOV-20
WG3449971-17	LCS							
Alkalinity, Total (as CaCO3)			96.6		%		85-115	21-NOV-20
WG3449971-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
WG3449971-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-VA		Water						
Batch	R5293747							
WG3449561-3	DUP	L2532002-1						
Beryllium (Be)-Dissolved			<0.000040		mg/L	RPD-NA	20	23-NOV-20
WG3449561-2	LCS							
Beryllium (Be)-Dissolved			99.8		%		80-120	23-NOV-20
WG3449561-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-20
WG3449561-4	MS	L2532002-2						
Beryllium (Be)-Dissolved			98.4		%		70-130	23-NOV-20
BIC-CL		Water						
Batch	R5295078							
WG3449971-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
WG3449971-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL		Water						



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-15	DUP	L2532002-4						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10	LCS							
Bromide (Br)			105.1		%		85-115	20-NOV-20
WG3449430-14	LCS							
Bromide (Br)			99.7		%		85-115	20-NOV-20
WG3449430-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-NOV-20
WG3449430-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-NOV-20
WG3449430-16	MS	L2532002-4						
Bromide (Br)			104.8		%		75-125	20-NOV-20
C-DIS-ORG-LOW-CL								
Water								
Batch	R5294356							
WG3449808-2	LCS							
Dissolved Organic Carbon			101.6		%		80-120	22-NOV-20
WG3449808-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
C-TOT-ORG-LOW-CL								
Water								
Batch	R5294356							
WG3449808-2	LCS							
Total Organic Carbon			104.8		%		80-120	22-NOV-20
WG3449808-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-15	DUP	L2532002-4						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10	LCS							
Chloride (Cl)			102.7		%		85-115	20-NOV-20
WG3449430-14	LCS							
Chloride (Cl)			101.7		%		85-115	20-NOV-20
WG3449430-13	MB							
Chloride (Cl)			<0.10		mg/L		0.1	20-NOV-20
WG3449430-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	20-NOV-20
WG3449430-16	MS	L2532002-4						
Chloride (Cl)			110.3		%		75-125	20-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL								
Water								
Batch	R5295078							
WG3449971-13 MB								
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
WG3449971-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5295078							
WG3449971-14 LCS								
Conductivity (@ 25C)			96.6		%		90-110	21-NOV-20
WG3449971-17 LCS								
Conductivity (@ 25C)			96.5		%		90-110	21-NOV-20
WG3449971-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
WG3449971-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL								
Water								
Batch	R5293237							
WG3449430-15 DUP		L2532002-4						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10 LCS								
Fluoride (F)			108.9		%		90-110	20-NOV-20
WG3449430-14 LCS								
Fluoride (F)			108.6		%		90-110	20-NOV-20
WG3449430-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-20
WG3449430-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-20
WG3449430-16 MS		L2532002-4						
Fluoride (F)			117.6		%		75-125	20-NOV-20
HG-D-CVAA-VA								
Water								
Batch	R5296453							
WG3450136-19 DUP		L2532002-5						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-NOV-20
WG3450136-14 LCS								
Mercury (Hg)-Dissolved			97.7		%		80-120	24-NOV-20
WG3450136-18 LCS								
Mercury (Hg)-Dissolved			98.1		%		80-120	24-NOV-20
WG3450136-13 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			106.8		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			99.5		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			101.9		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			99.0		%		80-120	23-NOV-20
Boron (B)-Dissolved			89.7		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			97.5		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			95.3		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			99.1		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			98.2		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			97.4		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			96.6		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			94.4		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			95.0		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			98.0		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			100.6		%		80-120	23-NOV-20
Potassium (K)-Dissolved			96.1		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			99.2		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			96.9		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			95.1		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			105.2		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			95.4		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			100.5		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			94.9		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			99.97		%		80-120	23-NOV-20
Uranium (U)-Dissolved			99.1		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			98.8		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			97.1		%		80-120	23-NOV-20
WG3449561-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-1	MB	NP						
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			0.00024	MB-LOR	mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
WG3449561-4	MS	L2532002-2						
Aluminum (Al)-Dissolved			99.7		%		70-130	23-NOV-20
Antimony (Sb)-Dissolved			95.4		%		70-130	23-NOV-20
Arsenic (As)-Dissolved			98.6		%		70-130	23-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Bismuth (Bi)-Dissolved			84.5		%		70-130	23-NOV-20
Boron (B)-Dissolved			99.7		%		70-130	23-NOV-20
Cadmium (Cd)-Dissolved			95.4		%		70-130	23-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5293747							
WG3449561-4	MS	L2532002-2						
Cobalt (Co)-Dissolved			93.6		%		70-130	23-NOV-20
Copper (Cu)-Dissolved			90.3		%		70-130	23-NOV-20
Iron (Fe)-Dissolved			88.0		%		70-130	23-NOV-20
Lead (Pb)-Dissolved			88.7		%		70-130	23-NOV-20
Lithium (Li)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Molybdenum (Mo)-Dissolved			101.1		%		70-130	23-NOV-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Selenium (Se)-Dissolved			98.2		%		70-130	23-NOV-20
Silicon (Si)-Dissolved			80.6		%		70-130	23-NOV-20
Silver (Ag)-Dissolved			93.4		%		70-130	23-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-NOV-20
Thallium (Tl)-Dissolved			91.0		%		70-130	23-NOV-20
Tin (Sn)-Dissolved			94.7		%		70-130	23-NOV-20
Titanium (Ti)-Dissolved			97.5		%		70-130	23-NOV-20
Uranium (U)-Dissolved			96.5		%		70-130	23-NOV-20
Vanadium (V)-Dissolved			98.1		%		70-130	23-NOV-20
Zinc (Zn)-Dissolved			91.8		%		70-130	23-NOV-20
Batch	R5296276							
WG3450274-2	LCS							
Aluminum (Al)-Dissolved			92.1		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			102.5		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			98.8		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			95.0		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	23-NOV-20
Boron (B)-Dissolved			88.9		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			93.0		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			98.5		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			96.6		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			96.7		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			94.7		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			91.1		%		80-120	23-NOV-20



Quality Control Report

Workorder: L2532002

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296276							
WG3450274-2	LCS							
Lead (Pb)-Dissolved			93.3		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			93.1		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			93.8		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			94.7		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			95.7		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			95.6		%		80-120	23-NOV-20
Potassium (K)-Dissolved			96.8		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			95.8		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			94.8		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			93.7		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			95.7		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			97.8		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			98.4		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			94.6		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			94.9		%		80-120	23-NOV-20
Uranium (U)-Dissolved			89.4		%		80-120	23-NOV-20
Vanadium (V)-Dissolved			96.8		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			91.2		%		80-120	23-NOV-20
WG3450274-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296276							
WG3450274-1	MB	NP						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5292801							
WG3449219-11	DUP	L2532002-1						
Ammonia as N		1.83	1.86		mg/L	1.5	20	23-NOV-20
WG3449219-10	LCS							
Ammonia as N			103.3		%		85-115	20-NOV-20
WG3449219-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
WG3449219-12	MS	L2532002-1						
Ammonia as N			N/A	MS-B	%		-	23-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5293237							
WG3449430-15	DUP	L2532002-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10	LCS							
Nitrite (as N)			99.5		%		90-110	20-NOV-20
WG3449430-14	LCS							
Nitrite (as N)			102.2		%		90-110	20-NOV-20
WG3449430-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-20
WG3449430-9	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R5293237								
WG3449430-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-20
WG3449430-16	MS	L2532002-4						
Nitrite (as N)			109.4		%		75-125	20-NOV-20
NO3-L-IC-N-CL								
Batch R5293237								
WG3449430-15	DUP	L2532002-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10	LCS							
Nitrate (as N)			103.1		%		90-110	20-NOV-20
WG3449430-14	LCS							
Nitrate (as N)			103.4		%		90-110	20-NOV-20
WG3449430-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-20
WG3449430-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-20
WG3449430-16	MS	L2532002-4						
Nitrate (as N)			110.4		%		75-125	20-NOV-20
OH-CL								
Batch R5295078								
WG3449971-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
WG3449971-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL								
Batch R5292776								
WG3449231-3	CRM	CL-ORP						
ORP			222		mV		210-230	20-NOV-20
P-T-L-COL-CL								
Batch R5293365								
WG3449476-26	LCS							
Phosphorus (P)-Total			93.4		%		80-120	21-NOV-20
WG3449476-30	LCS							
Phosphorus (P)-Total			89.1		%		80-120	21-NOV-20
WG3449476-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
WG3449476-29	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5293365							
WG3449476-29 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
P-TD-L-COL-CL	Water							
Batch	R5293365							
WG3449476-26 LCS								
Phosphorus (P)-Total Dissolved			93.4		%		80-120	21-NOV-20
WG3449476-30 LCS								
Phosphorus (P)-Total Dissolved			89.1		%		80-120	21-NOV-20
WG3449476-25 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	21-NOV-20
WG3449476-29 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	21-NOV-20
PH-CL	Water							
Batch	R5295078							
WG3449971-14 LCS								
pH			7.03		pH		6.9-7.1	21-NOV-20
WG3449971-17 LCS								
pH			7.03		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5292676							
WG3449133-10 LCS								
Orthophosphate-Dissolved (as P)			102.0		%		80-120	20-NOV-20
WG3449133-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-20
SO4-IC-N-CL	Water							
Batch	R5293237							
WG3449430-15 DUP		L2532002-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3449430-10 LCS								
Sulfate (SO4)			105.1		%		90-110	20-NOV-20
WG3449430-14 LCS								
Sulfate (SO4)			104.1		%		90-110	20-NOV-20
WG3449430-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-20
WG3449430-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-20
WG3449430-16 MS		L2532002-4						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5293237							
WG3449430-16 MS		L2532002-4						
Sulfate (SO4)			112.2		%		75-125	20-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5296912							
WG3449735-8 LCS								
Total Dissolved Solids			100.3		%		85-115	23-NOV-20
WG3449735-7 MB								
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
TKN-L-F-CL	Water							
Batch	R5293398							
WG3449360-10 LCS								
Total Kjeldahl Nitrogen			93.7		%		75-125	21-NOV-20
WG3449360-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	21-NOV-20
WG3449360-4 LCS								
Total Kjeldahl Nitrogen			94.2		%		75-125	21-NOV-20
WG3449360-6 LCS								
Total Kjeldahl Nitrogen			92.4		%		75-125	21-NOV-20
WG3449360-8 LCS								
Total Kjeldahl Nitrogen			103.5		%		75-125	21-NOV-20
WG3449360-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
TSS-L-CL	Water							
Batch	R5296877							
WG3449736-6 LCS								
Total Suspended Solids			86.9		%		85-115	23-NOV-20
WG3449736-5 MB								
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
Water								
Batch	R5292817							
WG3449232-10	DUP	L2532002-7						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	20-NOV-20
WG3449232-7	DUP	L2532002-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	20-NOV-20
WG3449232-12	LCS							
Turbidity			95.9		%		85-115	20-NOV-20
WG3449232-9	LCS							
Turbidity			96.4		%		85-115	20-NOV-20
WG3449232-11	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-20
WG3449232-8	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	19-NOV-20 10:35	20-NOV-20 15:30	0.25	29	hours	EHTR-FM
	2	19-NOV-20 10:40	20-NOV-20 15:30	0.25	29	hours	EHTR-FM
	3	19-NOV-20 10:45	20-NOV-20 15:30	0.25	29	hours	EHTR-FM
	4	19-NOV-20 10:50	20-NOV-20 15:30	0.25	29	hours	EHTR-FM
	5	19-NOV-20 11:45	21-NOV-20 08:00	0.25	44	hours	EHTR-FM
	6	19-NOV-20 13:45	20-NOV-20 15:30	0.25	26	hours	EHTR-FM
	7	19-NOV-20 14:30	20-NOV-20 15:30	0.25	25	hours	EHTR-FM
pH							
	1	19-NOV-20 10:35	21-NOV-20 13:00	0.25	50	hours	EHTR-FM
	2	19-NOV-20 10:40	21-NOV-20 13:00	0.25	50	hours	EHTR-FM
	3	19-NOV-20 10:45	21-NOV-20 13:00	0.25	50	hours	EHTR-FM
	4	19-NOV-20 10:50	21-NOV-20 13:00	0.25	50	hours	EHTR-FM
	5	19-NOV-20 11:45	21-NOV-20 13:00	0.25	49	hours	EHTR-FM
	6	19-NOV-20 13:45	21-NOV-20 13:00	0.25	47	hours	EHTR-FM
	7	19-NOV-20 14:30	21-NOV-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2532002 were received on 20-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20201119Q4GW	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.Hackett@teck.com X X X
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com	Email 2:	Annie.Larrivee@teck.com X X X
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allan@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.com X X X
				Email 5:	teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Postal Code	T1Y 7B5
Phone Number	1-250-865-5289	Phone Number	403-407-1800	PO number	VPO00678877

SAMPLE DETAILS Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED													
								TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI		
EV_MW_MC1A_WG_2020_Q4_NP	EV_MW_MC1A	WG	N	11/19/20	10:35	G	5	1	1	1	1										
EV_MW_MC10A_WG_2020_Q4_NP	EV_MW_MC10A	WG	N	11/19/20	10:40	G	5	1	1	1	1										
EV_MW_MC10B_WG_2020_Q4_NP	EV_MW_MC10B	WG	N	11/19/20	10:45	G	5	1	1	1	1										
EV_MW_MC10C_WG_2020_Q4_NP	EV_MW_MC10C	WG	N	11/19/20	10:50	G	5	1	1	1	1										
EV_MW_MC1B_WG_2020_Q4_NP	EV_MW_MC1B	WG	N	11/19/20	11:45	G	5	1	1	1	1										
EV_MW_MC2A_WG_2020_Q4_NP	EV_MW_MC2A	WG	N	11/19/20	13:45	G	5	1	1	1	1										
EV_MW_MC2B_WG_2020_Q4_NP	EV_MW_MC2B	WG	N	11/19/20	14:30	G	5	1	1	1	1										
							Total	35													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle/Jess Ritz	November 19, 2020	<i>[Signature]</i>	Nov 19 2020

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Jason Gravelle/Jess Ritz	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge	<i>[Signature]</i>	November 19, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 24-NOV-20
Report Date: 01-DEC-20 18:20 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2532783
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201123Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2532783-1 WG 23-NOV-20 11:35 EV_LSGW_WG_20 20_Q4_NP	L2532783-2 WG 23-NOV-20 13:30 EV_GCGW_WG_2 020_Q4_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	916	386		
	Hardness (as CaCO3) (mg/L)	592	208		
	pH (pH)	8.03	8.10		
	ORP (mV)	395	379		
	Total Suspended Solids (mg/L)	5.3	3.7		
	Total Dissolved Solids (mg/L)	588 ^{DLHC}	261 ^{DLHC}		
	Turbidity (NTU)	37.1	6.36		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	544	177		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	544	177		
	Ammonia as N (mg/L)	0.246	0.0525		
	Bicarbonate (HCO3) (mg/L)	664	216		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	8.74 ^{DLHC}	3.76		
	Fluoride (F) (mg/L)	0.28 ^{DLHC}	0.761		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	100	91.1		
	Nitrate (as N) (mg/L)	0.027 ^{DLHC}	<0.0050		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.202	0.212		
	Total Nitrogen (mg/L)	0.229	0.212		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020		
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0032		
	Sulfate (SO4) (mg/L)	68.0 ^{DLHC}	53.4		
	Anion Sum (meq/L)	12.6	4.80		
	Cation Sum (meq/L)	12.6	4.37		
	Cation - Anion Balance (%)	0.2	-4.7		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.34	<0.50		
	Total Organic Carbon (mg/L)	2.26	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2532783-1 WG 23-NOV-20 11:35 EV_LSGW_WG_20 20_Q4_NP	L2532783-2 WG 23-NOV-20 13:30 EV_GCGW_WG_2 020_Q4_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00190	0.00368		
	Barium (Ba)-Dissolved (mg/L)	0.281	0.0746		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.050	0.016		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	121	57.5		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	1.61	0.15		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	2.97	0.446		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0653	0.0080		
	Magnesium (Mg)-Dissolved (mg/L)	70.6	15.8		
	Manganese (Mn)-Dissolved (mg/L)	1.24	0.0596		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00252	0.00242		
	Nickel (Ni)-Dissolved (mg/L)	0.00467	<0.00050		
	Potassium (K)-Dissolved (mg/L)	4.26	0.767		
	Selenium (Se)-Dissolved (ug/L)	0.103	<0.050		
	Silicon (Si)-Dissolved (mg/L)	5.00	4.46		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	10.3	3.62		
	Strontium (Sr)-Dissolved (mg/L)	0.509	0.246		
	Thallium (Tl)-Dissolved (mg/L)	0.000043	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00157	0.000898		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0016	0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2532783-1, -2
Matrix Spike	Ammonia as N	MS-B	L2532783-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201123Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2532783

Report Date: 01-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5297400							
WG3451531-14	LCS							
Acidity (as CaCO3)			108.6		%		85-115	25-NOV-20
WG3451531-13	MB							
Acidity (as CaCO3)			1.5		mg/L		2	25-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5297397							
WG3451523-11	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	25-NOV-20
WG3451523-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-2	LCS							
Beryllium (Be)-Dissolved			97.8		%		80-120	25-NOV-20
WG3451952-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-NOV-20
BIC-CL								
	Water							
Batch	R5297397							
WG3451523-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	25-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5297209							
WG3451310-2	LCS							
Bromide (Br)			101.8		%		85-115	24-NOV-20
WG3451310-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5298615							
WG3452895-2	LCS							
Dissolved Organic Carbon			116.3		%		80-120	26-NOV-20
WG3452895-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2532783

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5298615							
WG3452895-2	LCS							
Total Organic Carbon			108.0		%		80-120	26-NOV-20
WG3452895-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	26-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2	LCS							
Chloride (Cl)			100.3		%		85-115	24-NOV-20
WG3451310-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	24-NOV-20
CO3-CL	Water							
Batch	R5297397							
WG3451523-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	25-NOV-20
EC-L-PCT-CL	Water							
Batch	R5297397							
WG3451523-11	LCS							
Conductivity (@ 25C)			93.9		%		90-110	25-NOV-20
WG3451523-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-NOV-20
F-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2	LCS							
Fluoride (F)			105.2		%		90-110	24-NOV-20
WG3451310-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5297859							
WG3451985-2	LCS							
Mercury (Hg)-Dissolved			97.3		%		80-120	26-NOV-20
WG3451985-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-NOV-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2532783

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-2	LCS							
Aluminum (Al)-Dissolved			102.2		%		80-120	25-NOV-20
Antimony (Sb)-Dissolved			94.8		%		80-120	25-NOV-20
Arsenic (As)-Dissolved			100.9		%		80-120	25-NOV-20
Barium (Ba)-Dissolved			102.2		%		80-120	25-NOV-20
Bismuth (Bi)-Dissolved			100.1		%		80-120	25-NOV-20
Boron (B)-Dissolved			99.7		%		80-120	25-NOV-20
Cadmium (Cd)-Dissolved			100.6		%		80-120	25-NOV-20
Calcium (Ca)-Dissolved			101.6		%		80-120	25-NOV-20
Chromium (Cr)-Dissolved			95.3		%		80-120	25-NOV-20
Cobalt (Co)-Dissolved			98.6		%		80-120	25-NOV-20
Copper (Cu)-Dissolved			96.2		%		80-120	25-NOV-20
Iron (Fe)-Dissolved			88.7		%		80-120	25-NOV-20
Lead (Pb)-Dissolved			93.8		%		80-120	25-NOV-20
Lithium (Li)-Dissolved			94.9		%		80-120	25-NOV-20
Magnesium (Mg)-Dissolved			99.1		%		80-120	25-NOV-20
Manganese (Mn)-Dissolved			99.1		%		80-120	25-NOV-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	25-NOV-20
Nickel (Ni)-Dissolved			98.6		%		80-120	25-NOV-20
Potassium (K)-Dissolved			102.2		%		80-120	25-NOV-20
Selenium (Se)-Dissolved			91.9		%		80-120	25-NOV-20
Silicon (Si)-Dissolved			99.1		%		60-140	25-NOV-20
Silver (Ag)-Dissolved			95.3		%		80-120	25-NOV-20
Sodium (Na)-Dissolved			106.6		%		80-120	25-NOV-20
Strontium (Sr)-Dissolved			100.3		%		80-120	25-NOV-20
Thallium (Tl)-Dissolved			100.7		%		80-120	25-NOV-20
Tin (Sn)-Dissolved			95.4		%		80-120	25-NOV-20
Titanium (Ti)-Dissolved			94.7		%		80-120	25-NOV-20
Uranium (U)-Dissolved			99.4		%		80-120	25-NOV-20
Vanadium (V)-Dissolved			100.2		%		80-120	25-NOV-20
Zinc (Zn)-Dissolved			92.8		%		80-120	25-NOV-20
WG3451952-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20



Quality Control Report

Workorder: L2532783

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298422							
WG3451952-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5297184							
WG3451106-6	LCS							
Ammonia as N			96.1		%		85-115	24-NOV-20
WG3451106-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	24-NOV-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2	LCS							
Nitrite (as N)			105.4		%		90-110	24-NOV-20
WG3451310-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2	LCS							
Nitrate (as N)			106.2		%		90-110	24-NOV-20
WG3451310-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-NOV-20
OH-CL	Water							
Batch	R5297397							
WG3451523-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	25-NOV-20
ORP-CL	Water							
Batch	R5297038							
WG3450929-1	CRM	CL-ORP						
ORP			221		mV		210-230	24-NOV-20
P-T-L-COL-CL	Water							
Batch	R5297465							
WG3451557-6	LCS							
Phosphorus (P)-Total			100.8		%		80-120	25-NOV-20
WG3451557-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-NOV-20
P-TD-L-COL-CL	Water							
Batch	R5297465							
WG3451557-6	LCS							
Phosphorus (P)-Total Dissolved			100.8		%		80-120	25-NOV-20
WG3451557-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	25-NOV-20
PH-CL	Water							
Batch	R5297397							
WG3451523-11	LCS							
pH			7.00		pH		6.9-7.1	25-NOV-20



Quality Control Report

Workorder: L2532783

Report Date: 01-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5297016							
WG3451004-2 LCS								
Orthophosphate-Dissolved (as P)			101.3		%		80-120	24-NOV-20
WG3451004-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-NOV-20
SO4-IC-N-CL	Water							
Batch	R5297209							
WG3451310-2 LCS								
Sulfate (SO4)			105.6		%		90-110	24-NOV-20
WG3451310-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5299008							
WG3452460-5 LCS								
Total Dissolved Solids			101.2		%		85-115	26-NOV-20
WG3452460-4 MB								
Total Dissolved Solids			<10		mg/L		10	26-NOV-20
TKN-L-F-CL	Water							
Batch	R5297550							
WG3451102-10 LCS								
Total Kjeldahl Nitrogen			84.7		%		75-125	25-NOV-20
WG3451102-13 LCS								
Total Kjeldahl Nitrogen			86.6		%		75-125	25-NOV-20
WG3451102-15 LCS								
Total Kjeldahl Nitrogen			85.1		%		75-125	25-NOV-20
WG3451102-17 LCS								
Total Kjeldahl Nitrogen			83.3		%		75-125	25-NOV-20
WG3451102-2 LCS								
Total Kjeldahl Nitrogen			87.5		%		75-125	25-NOV-20
WG3451102-6 LCS								
Total Kjeldahl Nitrogen			84.1		%		75-125	25-NOV-20
WG3451102-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-14 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5297550							
WG3451102-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
WG3451102-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-NOV-20
TSS-L-CL	Water							
Batch	R5298947							
WG3451882-4 LCS								
Total Suspended Solids			105.2		%		85-115	26-NOV-20
WG3451882-3 MB								
Total Suspended Solids			<1.0		mg/L		1	26-NOV-20
TURBIDITY-CL	Water							
Batch	R5297046							
WG3450927-2 LCS								
Turbidity			97.4		%		85-115	24-NOV-20
WG3450927-1 MB								
Turbidity			<0.10		NTU		0.1	24-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	23-NOV-20 11:35	24-NOV-20 13:30	0.25	26	hours	EHTR-FM
	2	23-NOV-20 13:30	24-NOV-20 13:30	0.25	24	hours	EHTR-FM
pH	1	23-NOV-20 11:35	25-NOV-20 14:00	0.25	50	hours	EHTR-FM
	2	23-NOV-20 13:30	25-NOV-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2532783 were received on 24-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201123Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD		
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com		X	X	X	
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com		X	X	X	
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X	
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X	
								Email 5:	teckcoal@equisonline.com				X	
City	Sparwood		Province	BC		City	Calgary		Province	AB				
Postal Code			Country	Canada		Postal Code	T1Y 7B5		Country	Canada				
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877					

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_LSGW_WG_2020_Q4_NP	EV_LSGW	WG	N	11/23/2020	11:35	G	5	1		1	1		1					1		
EV_GCGW_WG_2020_Q4_NP	EV_GCGW	WG	N	11/23/2020	13:30	G	5	1		1	1		1					1		
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	November 23, 2020	<i>JG</i>	24/11 9:00

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X		
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
Sampler's Name	Jason Gravelle	Mobile #	
Sampler's Signature	<i>Jason Gravelle</i>	Date/Time	November 23, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 25-NOV-20
Report Date: 01-DEC-20 11:07 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2533372
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201124Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2533372-1 WG 24-NOV-20 10:00 EV_MW_GT1A_W G_2020_Q4_NP	L2533372-2 WG 24-NOV-20 10:50 EV_MW_GT1B_W G_2020_Q4_NP	L2533372-3 WG 24-NOV-20 11:40 EV_BCGW_WG_2 020_Q4_NP	L2533372-4 WG 24-NOV-20 13:40 EV_MW_MC3_WG _2020_Q4_NP
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	456	1430	529	683
	Hardness (as CaCO3) (mg/L)	265	998	309	270
	pH (pH)	8.14	8.05	8.05	8.12
	ORP (mV)	354	326	279	299
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	315 ^{DLHC}	1260 ^{DLHC}	356 ^{DLHC}	413 ^{DLHC}
	Turbidity (NTU)	1.03	0.17	0.25	1.09
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.1	2.7	1.2	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	180	207	179	278
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	180	207	179	278
	Ammonia as N (mg/L)	0.110	<0.0050	<0.0050	0.0159
	Bicarbonate (HCO3) (mg/L)	220	253 ^{DLHC}	219	339
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}	<0.050	0.154
	Carbonate (CO3) (mg/L)	<5.0	<5.0 ^{DLHC}	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.40	13.9 ^{DLHC}	3.18	13.1
	Fluoride (F) (mg/L)	0.158	0.20 ^{DLHC}	0.171	0.945
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	92.5	98.3	96.7	97.3
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	22.3 ^{DLHC}	1.66	1.18
	Nitrate (as N) (mg/L)	<0.0050	22.3 ^{DLHC}	1.66	1.17
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{TKNI}	<0.0010	0.0108
	Total Kjeldahl Nitrogen (mg/L)	0.065	<0.050	0.288	0.302
	Orthophosphate-Dissolved (as P) (mg/L)	0.0044	0.0094	0.0041	0.0022
	Phosphorus (P)-Total Dissolved (mg/L)	0.0109	0.0107	0.0050	0.0084
	Phosphorus (P)-Total (mg/L)	0.0115	0.0107 ^{DLHC}	0.0057	0.0107
	Sulfate (SO4) (mg/L)	106	698	134	104
	Anion Sum (meq/L)	5.89	20.7	6.59	8.21
	Cation Sum (meq/L)	5.45	20.3	6.37	7.99
Cation - Anion Balance (%)	-3.9	-0.8	-1.7	-1.4	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2533372-1	L2533372-2	L2533372-3	L2533372-4
					WG	WG	WG	WG
		24-NOV-20	10:00		24-NOV-20	24-NOV-20	24-NOV-20	24-NOV-20
					10:00	10:50	11:40	13:40
					EV_MW_GT1A_W G_2020_Q4_NP	EV_MW_GT1B_W G_2020_Q4_NP	EV_BCGW_WG_2 020_Q4_NP	EV_MW_MC3_WG _2020_Q4_NP
Grouping	Analyte							
WATER								
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00084	0.00011	0.00012			
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00032	0.00017	0.00042			
	Barium (Ba)-Dissolved (mg/L)	0.0596	0.0437	0.0325	0.156			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.010	0.025	0.013	0.042			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.118	0.0228	0.0309			
	Calcium (Ca)-Dissolved (mg/L)	70.2	185	74.4	70.1			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00020	0.00023	0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00041	0.00148	0.00062			
	Iron (Fe)-Dissolved (mg/L)	0.126	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0090	0.0956	0.0163	0.0525			
	Magnesium (Mg)-Dissolved (mg/L)	21.7	130	29.8	23.0			
	Manganese (Mn)-Dissolved (mg/L)	0.0809	<0.00010	<0.00010	0.0337			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00130	0.00536	0.00105	0.0146			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0153	0.00050	0.00064			
	Potassium (K)-Dissolved (mg/L)	0.792	4.02	1.00	1.31			
	Selenium (Se)-Dissolved (ug/L)	0.247	202	15.4	12.2			
	Silicon (Si)-Dissolved (mg/L)	2.67	2.28	2.58	2.91			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.78	6.52	4.12	58.9			
	Strontium (Sr)-Dissolved (mg/L)	0.126	0.685	0.146	0.213			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000011			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000438	0.00674	0.00113	0.000902			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0038	0.0019	0.0016			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2533372-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2533372-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201124Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2533372

Report Date: 01-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5298091							
WG3452278-5	LCS							
Acidity (as CaCO3)			112.8		%		85-115	26-NOV-20
WG3452278-4	MB							
Acidity (as CaCO3)			1.9		mg/L		2	26-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5298100							
WG3452287-11	LCS							
Alkalinity, Total (as CaCO3)			101.6		%		85-115	26-NOV-20
WG3452287-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5298908							
WG3452572-3	DUP	L2533372-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3452572-2	LCS							
Beryllium (Be)-Dissolved			93.9		%		80-120	27-NOV-20
WG3452572-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-NOV-20
WG3452572-4	MS	L2533372-2						
Beryllium (Be)-Dissolved			93.4		%		70-130	27-NOV-20
BIC-CL								
	Water							
Batch	R5298100							
WG3452287-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5298278							
WG3452430-2	LCS							
Bromide (Br)			102.9		%		85-115	25-NOV-20
WG3452430-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	25-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5298615							
WG3452895-10	LCS							
Dissolved Organic Carbon			107.7		%		80-120	26-NOV-20
WG3452895-14	LCS							
Dissolved Organic Carbon			104.4		%		80-120	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
C-DIS-ORG-LOW-CL Water									
Batch R5298615									
WG3452895-13 MB									
			Dissolved Organic Carbon		<0.50		mg/L	0.5	26-NOV-20
WG3452895-9 MB									
			Dissolved Organic Carbon		<0.50		mg/L	0.5	26-NOV-20
Batch R5299476									
WG3453575-2 LCS									
			Dissolved Organic Carbon		105.6		%	80-120	28-NOV-20
WG3453575-1 MB									
			Dissolved Organic Carbon		<0.50		mg/L	0.5	28-NOV-20
C-TOT-ORG-LOW-CL Water									
Batch R5298615									
WG3452895-10 LCS									
			Total Organic Carbon		111.6		%	80-120	26-NOV-20
WG3452895-14 LCS									
			Total Organic Carbon		105.8		%	80-120	26-NOV-20
WG3452895-13 MB									
			Total Organic Carbon		<0.50		mg/L	0.5	26-NOV-20
WG3452895-9 MB									
			Total Organic Carbon		<0.50		mg/L	0.5	26-NOV-20
Batch R5299476									
WG3453575-2 LCS									
			Total Organic Carbon		115.7		%	80-120	28-NOV-20
WG3453575-1 MB									
			Total Organic Carbon		<0.50		mg/L	0.5	28-NOV-20
CL-L-IC-N-CL Water									
Batch R5298278									
WG3452430-2 LCS									
			Chloride (Cl)		101.4		%	85-115	25-NOV-20
WG3452430-1 MB									
			Chloride (Cl)		<0.10		mg/L	0.1	25-NOV-20
CO3-CL Water									
Batch R5298100									
WG3452287-10 MB									
			Carbonate (CO3)		<5.0		mg/L	5	26-NOV-20
EC-L-PCT-CL Water									



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL		Water						
Batch	R5298100							
WG3452287-11	LCS							
Conductivity (@ 25C)			93.4		%		90-110	26-NOV-20
Batch	R5298100							
WG3452287-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-NOV-20
F-IC-N-CL		Water						
Batch	R5298278							
WG3452430-2	LCS							
Fluoride (F)			100.5		%		90-110	25-NOV-20
Batch	R5298278							
WG3452430-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	25-NOV-20
HG-D-CVAA-VA		Water						
Batch	R5299206							
WG3453482-2	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	28-NOV-20
Batch	R5299206							
WG3453482-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-20
MET-D-CCMS-VA		Water						
Batch	R5298908							
WG3452572-3	DUP	L2533372-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Arsenic (As)-Dissolved		0.00021	0.00025		mg/L	18	20	27-NOV-20
Barium (Ba)-Dissolved		0.0596	0.0611		mg/L	2.6	20	27-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Boron (B)-Dissolved		0.010	0.011		mg/L	8.2	20	27-NOV-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	27-NOV-20
Calcium (Ca)-Dissolved		70.2	72.2		mg/L	2.8	20	27-NOV-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-NOV-20
Iron (Fe)-Dissolved		0.126	0.125		mg/L	1.0	20	27-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-NOV-20
Lithium (Li)-Dissolved		0.0090	0.0093		mg/L	3.7	20	27-NOV-20
Magnesium (Mg)-Dissolved		21.7	22.1		mg/L	2.0	20	27-NOV-20
Manganese (Mn)-Dissolved		0.0809	0.0809		mg/L	0.0	20	27-NOV-20
Molybdenum (Mo)-Dissolved		0.00130	0.00126		mg/L	3.2	20	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298908							
WG3452572-3	DUP	L2533372-1						
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Potassium (K)-Dissolved		0.792	0.783		mg/L	1.2	20	27-NOV-20
Selenium (Se)-Dissolved		0.000247	0.000253		mg/L	2.3	20	27-NOV-20
Silicon (Si)-Dissolved		2.67	2.68		mg/L	0.4	20	27-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Sodium (Na)-Dissolved		2.78	2.81		mg/L	1.1	20	27-NOV-20
Strontium (Sr)-Dissolved		0.126	0.123		mg/L	2.8	20	27-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-NOV-20
Uranium (U)-Dissolved		0.000438	0.000446		mg/L	1.8	20	27-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-NOV-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3452572-2	LCS							
Aluminum (Al)-Dissolved			102.8		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			97.9		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			102.3		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			102.3		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			94.6		%		80-120	27-NOV-20
Boron (B)-Dissolved			92.5		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			100.7		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			99.1		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			102.7		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			103.7		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			100.4		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			97.2		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			93.1		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			95.3		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			102.9		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			106.7		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			100.0		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			103.3		%		80-120	27-NOV-20
Potassium (K)-Dissolved			105.0		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			96.0		%		80-120	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298908							
WG3452572-2	LCS							
Silicon (Si)-Dissolved			100.6		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			99.1		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			102.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			100.7		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			93.9		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			97.4		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			106.1		%		80-120	27-NOV-20
Uranium (U)-Dissolved			98.9		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			104.4		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			94.6		%		80-120	27-NOV-20
WG3452572-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5298908							
WG3452572-1	MB	NP						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
WG3452572-4	MS	L2533372-2						
Aluminum (Al)-Dissolved			102.9		%		70-130	27-NOV-20
Antimony (Sb)-Dissolved			101.5		%		70-130	27-NOV-20
Arsenic (As)-Dissolved			111.7		%		70-130	27-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Bismuth (Bi)-Dissolved			71.9		%		70-130	27-NOV-20
Boron (B)-Dissolved			86.7		%		70-130	27-NOV-20
Cadmium (Cd)-Dissolved			95.8		%		70-130	27-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Chromium (Cr)-Dissolved			102.0		%		70-130	27-NOV-20
Cobalt (Co)-Dissolved			97.9		%		70-130	27-NOV-20
Copper (Cu)-Dissolved			92.4		%		70-130	27-NOV-20
Iron (Fe)-Dissolved			96.3		%		70-130	27-NOV-20
Lead (Pb)-Dissolved			84.6		%		70-130	27-NOV-20
Lithium (Li)-Dissolved			88.4		%		70-130	27-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Manganese (Mn)-Dissolved			102.5		%		70-130	27-NOV-20
Molybdenum (Mo)-Dissolved			99.8		%		70-130	27-NOV-20
Nickel (Ni)-Dissolved			95.8		%		70-130	27-NOV-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Selenium (Se)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Silicon (Si)-Dissolved			94.7		%		70-130	27-NOV-20
Silver (Ag)-Dissolved			90.4		%		70-130	27-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Thallium (Tl)-Dissolved			85.4		%		70-130	27-NOV-20
Tin (Sn)-Dissolved			96.8		%		70-130	27-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Batch	R5298908							
WG3452572-4 MS		L2533372-2						
Titanium (Ti)-Dissolved			111.9		%		70-130	27-NOV-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	27-NOV-20
Vanadium (V)-Dissolved			106.6		%		70-130	27-NOV-20
Zinc (Zn)-Dissolved			93.2		%		70-130	27-NOV-20
NH3-L-F-CL								
Batch	R5298379							
WG3451919-2 LCS								
Ammonia as N			97.0		%		85-115	25-NOV-20
WG3451919-1 MB								
Ammonia as N			<0.0050		mg/L		0.005	25-NOV-20
NO2-L-IC-N-CL								
Batch	R5298278							
WG3452430-2 LCS								
Nitrite (as N)			99.9		%		90-110	25-NOV-20
WG3452430-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	25-NOV-20
NO3-L-IC-N-CL								
Batch	R5298278							
WG3452430-2 LCS								
Nitrate (as N)			101.6		%		90-110	25-NOV-20
WG3452430-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	25-NOV-20
OH-CL								
Batch	R5298100							
WG3452287-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	26-NOV-20
ORP-CL								
Batch	R5297769							
WG3451621-1 CRM		CL-ORP						
ORP			227		mV		210-230	25-NOV-20
P-T-L-COL-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R5297987							
WG3452173-6	LCS							
Phosphorus (P)-Total			96.3		%		80-120	26-NOV-20
WG3452173-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-NOV-20
P-TD-L-COL-CL Water								
Batch	R5297987							
WG3452173-6	LCS							
Phosphorus (P)-Total Dissolved			96.3		%		80-120	26-NOV-20
WG3452173-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	26-NOV-20
PH-CL Water								
Batch	R5298100							
WG3452287-11	LCS							
pH			7.03		pH		6.9-7.1	26-NOV-20
PO4-DO-L-COL-CL Water								
Batch	R5297743							
WG3451750-2	LCS							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	25-NOV-20
WG3451750-6	LCS							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	25-NOV-20
WG3451750-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-NOV-20
WG3451750-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-NOV-20
SO4-IC-N-CL Water								
Batch	R5298278							
WG3452430-2	LCS							
Sulfate (SO4)			104.5		%		90-110	25-NOV-20
WG3452430-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-NOV-20
SOLIDS-TDS-CL Water								
Batch	R5300305							
WG3453851-3	DUP	L2533372-2						
Total Dissolved Solids		1260	1290		mg/L	2.4	20	30-NOV-20
WG3453851-2	LCS							
Total Dissolved Solids			97.1		%		85-115	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5300305							
WG3453851-1 MB								
Total Dissolved Solids			<10		mg/L		10	30-NOV-20
TKN-L-F-CL		Water						
Batch	R5298084							
WG3452092-12 LCS								
Total Kjeldahl Nitrogen			85.1		%		75-125	26-NOV-20
WG3452092-18 LCS								
Total Kjeldahl Nitrogen			87.8		%		75-125	26-NOV-20
WG3452092-2 LCS								
Total Kjeldahl Nitrogen			86.4		%		75-125	26-NOV-20
WG3452092-20 LCS								
Total Kjeldahl Nitrogen			88.0		%		75-125	26-NOV-20
WG3452092-22 LCS								
Total Kjeldahl Nitrogen			88.2		%		75-125	26-NOV-20
WG3452092-8 LCS								
Total Kjeldahl Nitrogen			84.1		%		75-125	26-NOV-20
WG3452092-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-19 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
WG3452092-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-NOV-20
TSS-L-CL		Water						
Batch	R5300239							
WG3453850-2 LCS								
Total Suspended Solids			93.5		%		85-115	30-NOV-20
WG3453850-1 MB								
Total Suspended Solids			<1.0		mg/L		1	30-NOV-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5297774							
WG3451619-5	LCS							
Turbidity			95.9		%		85-115	25-NOV-20
WG3451619-4	MB							
Turbidity			<0.10		NTU		0.1	25-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	24-NOV-20 10:00	25-NOV-20 14:30	0.25	29	hours	EHTR-FM
	2	24-NOV-20 10:50	25-NOV-20 14:30	0.25	28	hours	EHTR-FM
	3	24-NOV-20 11:40	25-NOV-20 14:30	0.25	27	hours	EHTR-FM
	4	24-NOV-20 13:40	25-NOV-20 14:30	0.25	25	hours	EHTR-FM
pH							
	1	24-NOV-20 10:00	26-NOV-20 14:00	0.25	52	hours	EHTR-FM
	2	24-NOV-20 10:50	26-NOV-20 14:00	0.25	51	hours	EHTR-FM
	3	24-NOV-20 11:40	26-NOV-20 14:00	0.25	50	hours	EHTR-FM
	4	24-NOV-20 13:40	26-NOV-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2533372 were received on 25-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20201124Q4GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com			X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com			X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com			X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com			X	X	X
								Email 5:	teckcoal@equisonline.com					X
City	Sparwood	Province	BC	City	Calgary	Province	AB							
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada							
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877					

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_GT1A_WG_2020_Q4_NP	EV_MW_GT1A	WG	N	11/24/20	10:00	G	5	1	1	1	1	1	1	1				1		
EV_MW_GT1B_WG_2020_Q4_NP	EV_MW_GT1B	WG	N	11/24/20	10:50	G	5	1	1	1	1	1	1	1				1		
EV_BCGW_WG_2020_Q4_NP	EV_BCGW	WG	N	11/24/20	11:40	G	5	1	1	1	1	1	1	1				1		
EV_MW_MC3_WG_2020_Q4_NP	EV_MW_MC3	WG	N	11/24/20	13:40	G	5	1	1	1	1	1	1	1				1		
							Total	20												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	November 24, 2020	<i>JA</i>	25/11 8:40

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> X	Jason Gravelle		<i>Jason Gravelle</i>	November 24, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 26-NOV-20
Report Date: 09-DEC-20 12:22 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2533970
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201125Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2533970-1	L2533970-2	L2533970-3	L2533970-4	L2533970-5
					WG	WG	WG	WG	WG
					25-NOV-20	25-NOV-20	25-NOV-20	25-NOV-20	25-NOV-20
					12:20	10:00	10:05	10:10	10:15
					EV_MW_AQ2_WG_2020_Q4_NP	EV_OCGW_WG_2020_Q4_NP	EV_MC5GW_WG_2020_Q4_NP	EV_MC6GW_WG_2020_Q4_NP	EV_MC7GW_WG_2020_Q4_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	982	442	453	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	654	164	163	<0.50	<0.50			
	pH (pH)	7.68	8.13	8.15	5.59	5.37			
	ORP (mV)	386	107	374	370	258			
	Total Suspended Solids (mg/L)	4.3	4.4	4.1	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	701 ^{DLHC}	289 ^{DLHC}	292 ^{DLHC}	<10	<10			
	Turbidity (NTU)	2.97	2.96	3.52	<0.10	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	15.5	<1.0	<1.0	1.7	1.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	471	181	179	<1.0	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	471	181	179	<1.0	<1.0			
	Ammonia as N (mg/L)	0.0642	0.108	0.111	<0.0050	<0.0050			
	Bicarbonate (HCO3) (mg/L)	575 ^{DLHC}	221	219	<5.0	<5.0			
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0 ^{DLHC}	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	15.7 ^{DLHC}	2.26	2.27	<0.10	<0.10			
	Fluoride (F) (mg/L)	0.21 ^{DLHC}	1.19	1.19	<0.020	<0.020			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	106	107	106	0.0	0.0			
	Nitrate (as N) (mg/L)	<0.025 ^{DLHC}	<0.0050	<0.0050	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.072	0.082	0.129	<0.050	<0.050			
	Total Nitrogen (mg/L)	0.072	0.082	0.129	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0090	0.0091	<0.0010	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0127	0.0144	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0044 ^{DLHC}	0.0227	0.0182	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	158	76.4	76.0	<0.30	<0.30			
	Anion Sum (meq/L)	13.2	5.34	5.29	<0.10	<0.10			
	Cation Sum (meq/L)	14.0	5.71	5.60	<0.10	<0.10			
Cation - Anion Balance (%)	3.1	3.4	2.8	0.0	0.0				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0092	0.0034	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2533970-6 WG 25-NOV-20 14:10 EV_HW1_WG_202 0_Q4_NP	L2533970-7 WG 25-NOV-20 13:45 EV_RCSGW_WG_ 2020_Q4_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	1090	2340		
	Hardness (as CaCO3) (mg/L)	688	1810		
	pH (pH)	7.90	7.91		
	ORP (mV)	236	428		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	814 ^{DLHC}	2150 ^{DLHC}		
	Turbidity (NTU)	<0.10	<0.10		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	5.7	8.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	232	298		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	232	298		
	Ammonia as N (mg/L)	0.0072	0.0070		
	Bicarbonate (HCO3) (mg/L)	283	364		
	Bromide (Br) (mg/L)	0.40 ^{DLHC}	<0.25 ^{DLHC}		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	26.3 ^{DLHC}	18.6 ^{DLHC}		
	Fluoride (F) (mg/L)	0.13 ^{DLHC}	0.16 ^{DLHC}		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	105	106		
	Nitrate (as N) (mg/L)	7.61 ^{DLHC}	31.5 ^{DLHC}		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 ^{TKNI}	<0.050 ^{TKNI}		
	Total Nitrogen (mg/L)	7.61	31.5		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0036 ^{RRV}	0.0033 ^{RRV}		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020 ^{RRV}	0.0027 ^{RRV}		
	Phosphorus (P)-Total (mg/L)	0.0020 ^{RRV}	0.0024 ^{RRV}		
	Sulfate (SO4) (mg/L)	368 ^{DLHC}	1240 ^{DLHC}		
	Anion Sum (meq/L)	13.6	34.5		
	Cation Sum (meq/L)	14.3	36.7		
Cation - Anion Balance (%)	2.5	3.1			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2533970-1 WG 25-NOV-20 12:20 EV_MW_AQ2_WG_2020_Q4_NP	L2533970-2 WG 25-NOV-20 10:00 EV_OCGW_WG_2020_Q4_NP	L2533970-3 WG 25-NOV-20 10:05 EV_MC5GW_WG_2020_Q4_NP	L2533970-4 WG 25-NOV-20 10:10 EV_MC6GW_WG_2020_Q4_NP	L2533970-5 WG 25-NOV-20 10:15 EV_MC7GW_WG_2020_Q4_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00015	0.00153	0.00150	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0196	0.0578	0.0571	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.100	0.129	0.134	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	158	30.7	31.4	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.13	0.12	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00027	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.532	0.227	0.231	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0563	0.0301	0.0310	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	62.9	21.1	20.5	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.0782	0.104	0.103	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)		<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000324	0.0155	0.0151	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00087	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	2.06	1.68	1.61	<0.050
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	6.25	4.20	4.23	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	19.7	54.6	52.5	<0.050
	Strontium (Sr)-Dissolved (mg/L)	1.19	0.433	0.418	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000111	0.00111	0.00108	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
Speciated Metals	Chromium (VI)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
Hydrocarbons	EPH10-19 (mg/L)		<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)		<0.50	<0.50	<0.50
	EPH19-32 (mg/L)		<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)		<0.25	<0.25	<0.25

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2533970-6 WG 25-NOV-20 14:10 EV_HW1_WG_202 0_Q4_NP	L2533970-7 WG 25-NOV-20 13:45 EV_RCSGW_WG_ 2020_Q4_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00020		
	Arsenic (As)-Dissolved (mg/L)	0.00011	0.00013		
	Barium (Ba)-Dissolved (mg/L)	0.0517	0.0422		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.027	0.023		
	Cadmium (Cd)-Dissolved (ug/L)	0.0657	0.270		
	Calcium (Ca)-Dissolved (mg/L)	166	385		
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00014		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00913	0.0247		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	0.000055	0.000373		
	Lithium (Li)-Dissolved (mg/L)	0.0607	0.0896		
	Magnesium (Mg)-Dissolved (mg/L)	66.1	206		
	Manganese (Mn)-Dissolved (mg/L)	0.00019	0.0112		
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050		
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000702	0.00139		
	Nickel (Ni)-Dissolved (mg/L)	0.00060	0.00676		
	Potassium (K)-Dissolved (mg/L)	2.17	4.33		
	Selenium (Se)-Dissolved (ug/L)	55.0	264		
	Silicon (Si)-Dissolved (mg/L)	3.25	4.44		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	11.2	9.60		
	Strontium (Sr)-Dissolved (mg/L)	0.374	0.472		
	Thallium (Tl)-Dissolved (mg/L)	0.000017	0.000011		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00152	0.00700		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0052	0.0525		
Speciated Metals	Chromium (VI)-Dissolved (mg/L)				
Hydrocarbons	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2533970-1	L2533970-2	L2533970-3	L2533970-4	L2533970-5
					WG	WG	WG	WG	WG
					25-NOV-20	25-NOV-20	25-NOV-20	25-NOV-20	25-NOV-20
					12:20	10:00	10:05	10:10	10:15
					EV_MW_AQ2_WG_2020_Q4_NP	EV_OCGW_WG_2020_Q4_NP	EV_MC5GW_WG_2020_Q4_NP	EV_MC6GW_WG_2020_Q4_NP	EV_MC7GW_WG_2020_Q4_NP
Grouping	Analyte								
WATER									
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)					80.8	86.1	83.6	78.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2533970-6 WG 25-NOV-20 14:10 EV_HW1_WG_202 0_Q4_NP	L2533970-7 WG 25-NOV-20 13:45 EV_RCSGW_WG_ 2020_Q4_NP			
Grouping	Analyte				
WATER					
Hydrocarbons	Surrogate: 2-Bromobenzotrifluoride (%)				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2533970-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2533970-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2533970-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2533970-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2533970-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
CR-CR6-DIS-WT	Water	Dissolved Hexavalent Chromium in Water	EPA 7199
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and			

Reference Information

the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-L-PCT-CL Water Electrical Conductivity (EC) APHA 2510B
 Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

EPH(10-32)-CALC-CL Water Sum of EPH (10-32) Sum of EPH - Auto Calculated
 The sum of EPH(C10-C19) and EPH(C19-C32)

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B
 Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)
 Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E
 This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
 This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498
 This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

TEH-BC-VA-CL Water EPH (C10-C19) & EPH (C19-C32) BCMOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

TEH-WATER-VA-CL Water TEH (C10-C30) BC Lab Manual

Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201125Q4GW

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2533970

Report Date: 09-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299380							
WG3453663-3	DUP	L2533970-7						
Acidity (as CaCO3)		8.5	8.3		mg/L	1.4	20	27-NOV-20
WG3453663-2	LCS							
Acidity (as CaCO3)			110.2		%		85-115	27-NOV-20
WG3453663-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	27-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5299383							
WG3453669-6	DUP	L2533970-6						
Alkalinity, Total (as CaCO3)		232	234		mg/L	1.1	20	27-NOV-20
WG3453669-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-20
WG3453669-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-2	LCS							
Beryllium (Be)-Dissolved			108.6		%		80-120	27-NOV-20
WG3453349-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-NOV-20
BIC-CL								
	Water							
Batch	R5299383							
WG3453669-6	DUP	L2533970-6						
Bicarbonate (HCO3)		283	286		mg/L	1.1	20	27-NOV-20
WG3453669-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-NOV-20
WG3453669-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5298781							
WG3452992-3	DUP	L2533970-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2	LCS							
Bromide (Br)			99.2		%		85-115	26-NOV-20
WG3452992-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-20
WG3452992-4	MS	L2533970-5						



Quality Control Report

Workorder: L2533970

Report Date: 09-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-4	MS	L2533970-5						
Bromide (Br)			84.2		%		75-125	26-NOV-20
C-DIS-ORG-LOW-CL Water								
Batch	R5299476							
WG3453575-10	LCS							
Dissolved Organic Carbon			102.2		%		80-120	28-NOV-20
WG3453575-6	LCS							
Dissolved Organic Carbon			112.6		%		80-120	28-NOV-20
WG3453575-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
C-TOT-ORG-LOW-CL Water								
Batch	R5299476							
WG3453575-10	LCS							
Total Organic Carbon			109.7		%		80-120	28-NOV-20
WG3453575-6	LCS							
Total Organic Carbon			116.6		%		80-120	28-NOV-20
WG3453575-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
WG3453575-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
CL-L-IC-N-CL Water								
Batch	R5298781							
WG3452992-3	DUP	L2533970-5						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2	LCS							
Chloride (Cl)			105.4		%		85-115	26-NOV-20
WG3452992-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	26-NOV-20
WG3452992-4	MS	L2533970-5						
Chloride (Cl)			85.1		%		75-125	26-NOV-20
CO3-CL Water								
Batch	R5299383							
WG3453669-6	DUP	L2533970-6						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	27-NOV-20
WG3453669-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch	R5299383							
WG3453669-1 MB								
Carbonate (CO3)			<5.0		mg/L		5	27-NOV-20
WG3453669-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	27-NOV-20
CR-CR6-DIS-WT	Water							
Batch	R5299540							
WG3453286-2 LCS								
Chromium (VI)-Dissolved			102.1		%		70-130	27-NOV-20
WG3453286-1 MB								
Chromium (VI)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
EC-L-PCT-CL	Water							
Batch	R5299383							
WG3453669-6 DUP		L2533970-6						
Conductivity (@ 25C)		1090	1110		uS/cm	1.5	10	27-NOV-20
WG3453669-1 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
WG3453669-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
F-IC-N-CL	Water							
Batch	R5298781							
WG3452992-3 DUP		L2533970-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2 LCS								
Fluoride (F)			102.9		%		90-110	26-NOV-20
WG3452992-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-20
WG3452992-4 MS		L2533970-5						
Fluoride (F)			91.0		%		75-125	26-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5300167							
WG3454513-3 DUP		L2533970-7						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	01-DEC-20
WG3454513-2 LCS								
Mercury (Hg)-Dissolved			95.9		%		80-120	01-DEC-20
WG3454513-1 MB		NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	01-DEC-20
HG-D-U-CVAF-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-U-CVAF-VA								
	Water							
Batch	R5303397							
WG3455470-2	LCS							
Mercury (Hg)-Dissolved			96.2		%		80-120	02-DEC-20
WG3455470-1	MB	NP						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	02-DEC-20
WG3455470-4	MS	L2533970-5						
Mercury (Hg)-Dissolved			86.8		%		70-130	02-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-2	LCS							
Aluminum (Al)-Dissolved			103.9		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			107.4		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			101.7		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			105.0		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			97.9		%		80-120	27-NOV-20
Boron (B)-Dissolved			104.8		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			103.7		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			101.0		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			101.1		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			98.4		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			95.7		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			97.3		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			110.8		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			105.8		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			109.3		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			101.0		%		80-120	27-NOV-20
Potassium (K)-Dissolved			104.9		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			97.7		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			92.7		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			106.8		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			106.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			103.5		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			99.1		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			102.6		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			102.5		%		80-120	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453349-2	LCS							
Uranium (U)-Dissolved			92.9		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			103.0		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			107.8		%		80-120	27-NOV-20
WG3453349-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5298936								
WG3452713-6	LCS							
Ammonia as N			100.3		%		85-115	26-NOV-20
WG3452713-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5298781								
WG3452992-3	DUP	L2533970-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2	LCS							
Nitrite (as N)			101.8		%		90-110	26-NOV-20
WG3452992-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-20
WG3452992-4	MS	L2533970-5						
Nitrite (as N)			89.1		%		75-125	26-NOV-20
NO3-L-IC-N-CL								
Water								
Batch R5298781								
WG3452992-3	DUP	L2533970-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2	LCS							
Nitrate (as N)			102.8		%		90-110	26-NOV-20
WG3452992-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-20
WG3452992-4	MS	L2533970-5						
Nitrate (as N)			84.9		%		75-125	26-NOV-20
OH-CL								
Water								
Batch R5299383								
WG3453669-6	DUP	L2533970-6						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	27-NOV-20
WG3453669-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	27-NOV-20
WG3453669-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	27-NOV-20
ORP-CL								
Water								
Batch R5298490								
WG3452546-1	CRM	CL-ORP						
ORP			227		mV		210-230	26-NOV-20
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch R5298968								
WG3453126-10 LCS								
Phosphorus (P)-Total			93.0		%		80-120	27-NOV-20
WG3453126-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-NOV-20
P-TD-L-COL-CL								
Water								
Batch R5298968								
WG3453126-10 LCS								
Phosphorus (P)-Total Dissolved			93.0		%		80-120	27-NOV-20
WG3453126-9 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	27-NOV-20
PH-CL								
Water								
Batch R5299383								
WG3453669-6 DUP		L2533970-6						
pH			7.90	J	pH	0.09	0.2	27-NOV-20
PO4-DO-L-COL-CL								
Water								
Batch R5298450								
WG3452559-7 DUP		L2533970-2						
Orthophosphate-Dissolved (as P)			0.0090		mg/L	3.1	20	26-NOV-20
WG3452559-2 LCS								
Orthophosphate-Dissolved (as P)			100.2		%		80-120	26-NOV-20
WG3452559-6 LCS								
Orthophosphate-Dissolved (as P)			98.0		%		80-120	26-NOV-20
WG3452559-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-20
WG3452559-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-20
SO4-IC-N-CL								
Water								
Batch R5298781								
WG3452992-3 DUP		L2533970-5						
Sulfate (SO4)			<0.30	RPD-NA	mg/L	N/A	20	26-NOV-20
WG3452992-2 LCS								
Sulfate (SO4)			104.3		%		90-110	26-NOV-20
WG3452992-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-20
WG3452992-4 MS		L2533970-5						
Sulfate (SO4)			88.2		%		75-125	26-NOV-20
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5304888							
WG3455281-2	LCS							
Total Dissolved Solids			86.0		%		85-115	02-DEC-20
WG3455281-1	MB							
Total Dissolved Solids			<10		mg/L		10	02-DEC-20
TEH-BC-VA-CL		Water						
Batch	R5300063							
WG3453853-2	LCS							
EPH10-19			91.4		%		70-130	30-NOV-20
EPH19-32			92.3		%		70-130	30-NOV-20
WG3453853-1	MB							
EPH10-19			<0.25		mg/L		0.25	30-NOV-20
EPH19-32			<0.25		mg/L		0.25	30-NOV-20
Surrogate: 2-Bromobenzotrifluoride			79.9		%		60-140	30-NOV-20
TEH-WATER-VA-CL		Water						
Batch	R5300063							
WG3453853-2	LCS							
TEH (C10-C30)			91.6		%		70-130	30-NOV-20
WG3453853-1	MB							
TEH (C10-C30)			<0.25		mg/L		0.25	30-NOV-20
Surrogate: 2-Bromobenzotrifluoride			79.9		%		60-140	30-NOV-20
TKN-L-F-CL		Water						
Batch	R5298937							
WG3452899-10	LCS							
Total Kjeldahl Nitrogen			110.0		%		75-125	27-NOV-20
WG3452899-12	LCS							
Total Kjeldahl Nitrogen			112.0		%		75-125	27-NOV-20
WG3452899-2	LCS							
Total Kjeldahl Nitrogen			115.0		%		75-125	27-NOV-20
WG3452899-6	LCS							
Total Kjeldahl Nitrogen			117.0		%		75-125	27-NOV-20
WG3452899-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-9	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5298937							
WG3452899-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
TSS-L-CL	Water							
Batch	R5304350							
WG3455278-2 LCS								
Total Suspended Solids			97.1		%		85-115	02-DEC-20
WG3455278-1 MB								
Total Suspended Solids			<1.0		mg/L		1	02-DEC-20
TURBIDITY-CL	Water							
Batch	R5298493							
WG3452472-2 LCS								
Turbidity			96.4		%		85-115	26-NOV-20
WG3452472-5 LCS								
Turbidity			97.4		%		85-115	26-NOV-20
WG3452472-1 MB								
Turbidity			<0.10		NTU		0.1	26-NOV-20
WG3452472-4 MB								
Turbidity			<0.10		NTU		0.1	26-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	25-NOV-20 12:20	26-NOV-20 12:00	0.25	24	hours	EHTR-FM
	2	25-NOV-20 10:00	26-NOV-20 12:00	0.25	26	hours	EHTR-FM
	3	25-NOV-20 10:05	26-NOV-20 12:00	0.25	26	hours	EHTR-FM
	4	25-NOV-20 10:10	26-NOV-20 12:00	0.25	26	hours	EHTR-FM
	5	25-NOV-20 10:15	26-NOV-20 12:00	0.25	26	hours	EHTR-FM
	6	25-NOV-20 14:10	26-NOV-20 12:00	0.25	22	hours	EHTR-FM
	7	25-NOV-20 13:45	26-NOV-20 12:00	0.25	22	hours	EHTR-FM
pH							
	1	25-NOV-20 12:20	27-NOV-20 12:00	0.25	48	hours	EHTR-FM
	2	25-NOV-20 10:00	27-NOV-20 12:00	0.25	50	hours	EHTR-FM
	3	25-NOV-20 10:05	27-NOV-20 12:00	0.25	50	hours	EHTR-FM
	4	25-NOV-20 10:10	27-NOV-20 12:00	0.25	50	hours	EHTR-FM
	5	25-NOV-20 10:15	27-NOV-20 12:00	0.25	50	hours	EHTR-FM
	6	25-NOV-20 14:10	27-NOV-20 12:00	0.25	46	hours	EHTR-FM
	7	25-NOV-20 13:45	27-NOV-20 12:00	0.25	46	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2533970 were received on 26-NOV-20 08:50.

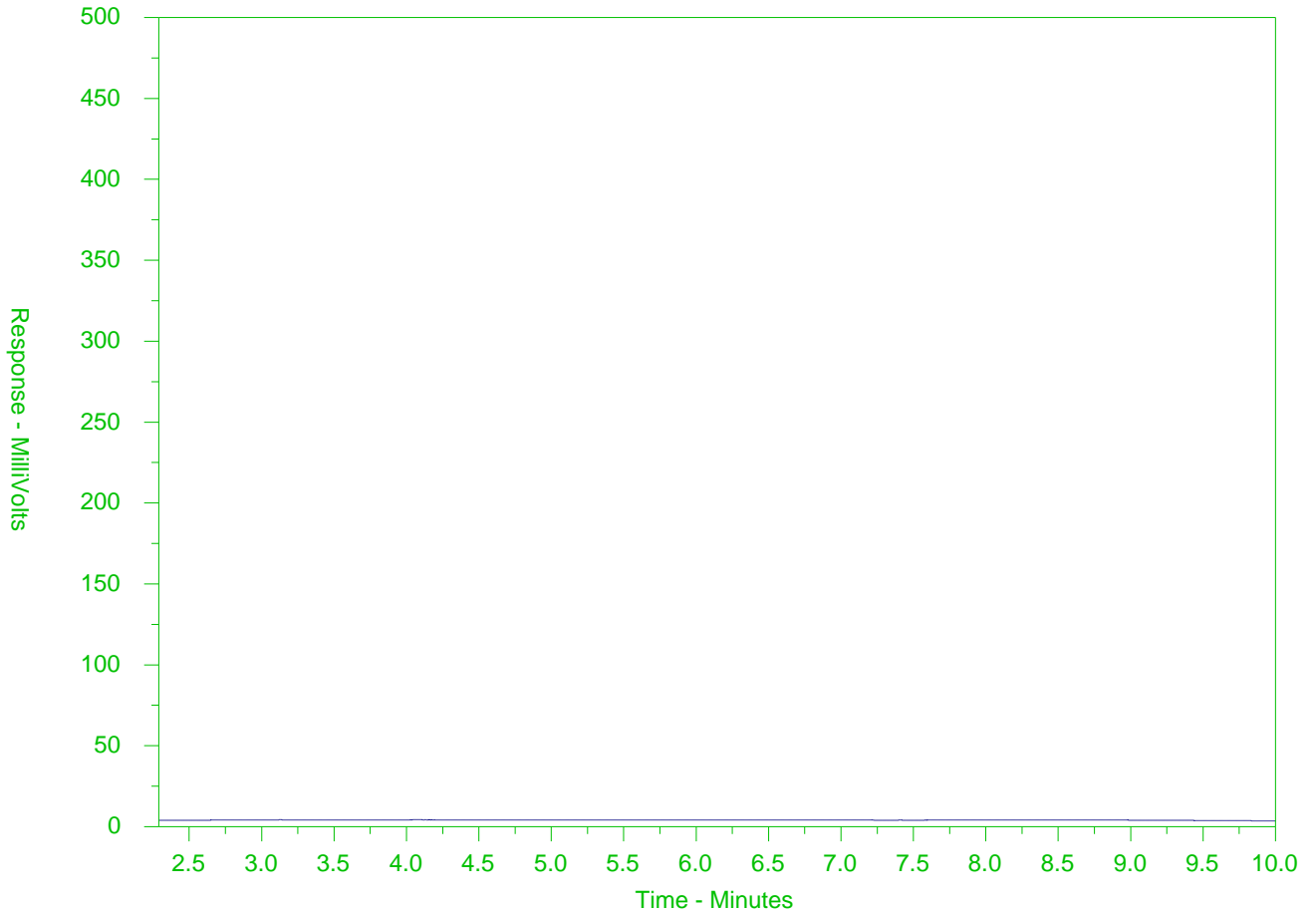
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2533970-2
 Client Sample ID: EV_OCGW_WG_2020_Q4_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

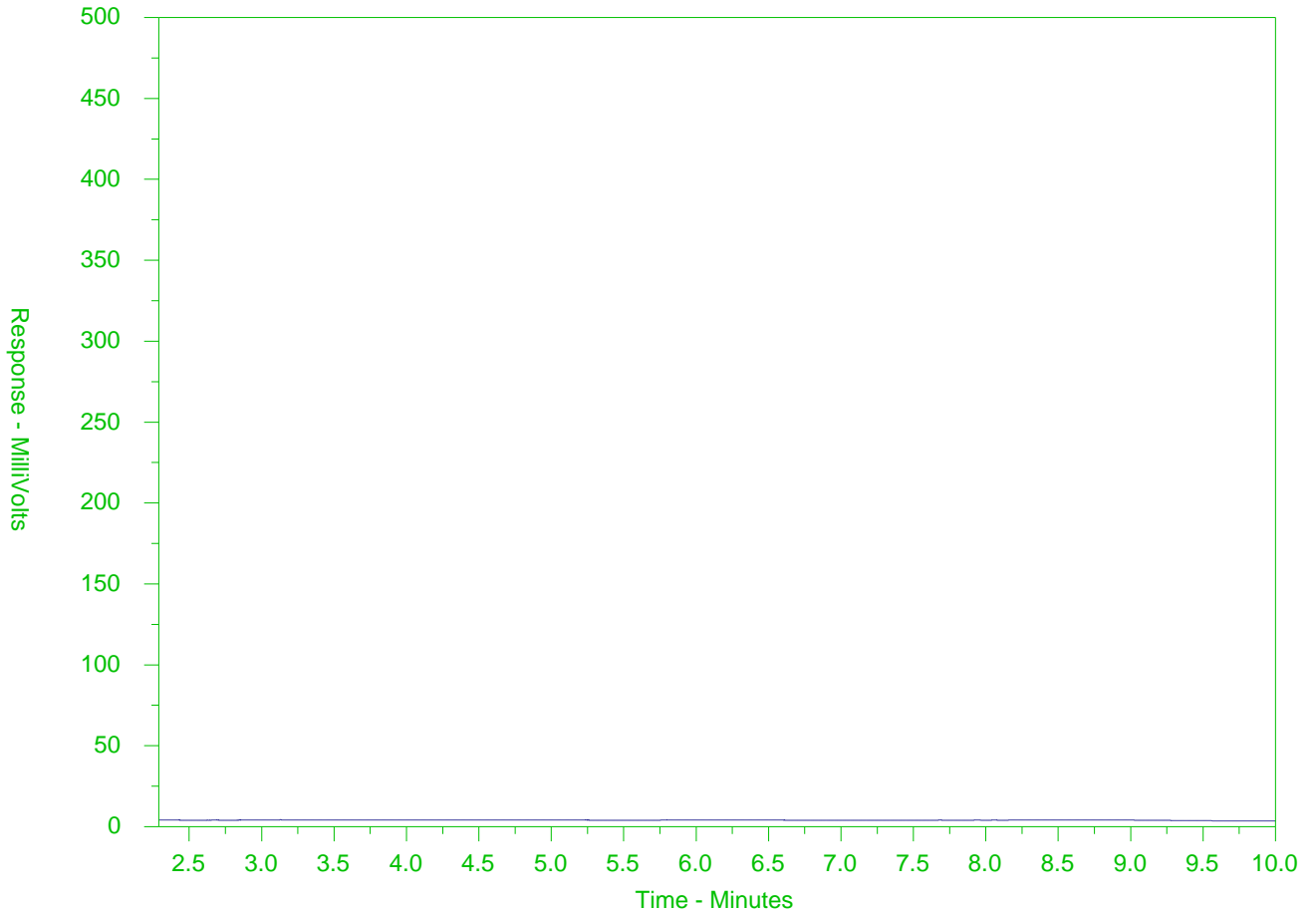
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2533970-3
 Client Sample ID: EV_MC5GW_WG_2020_Q4_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

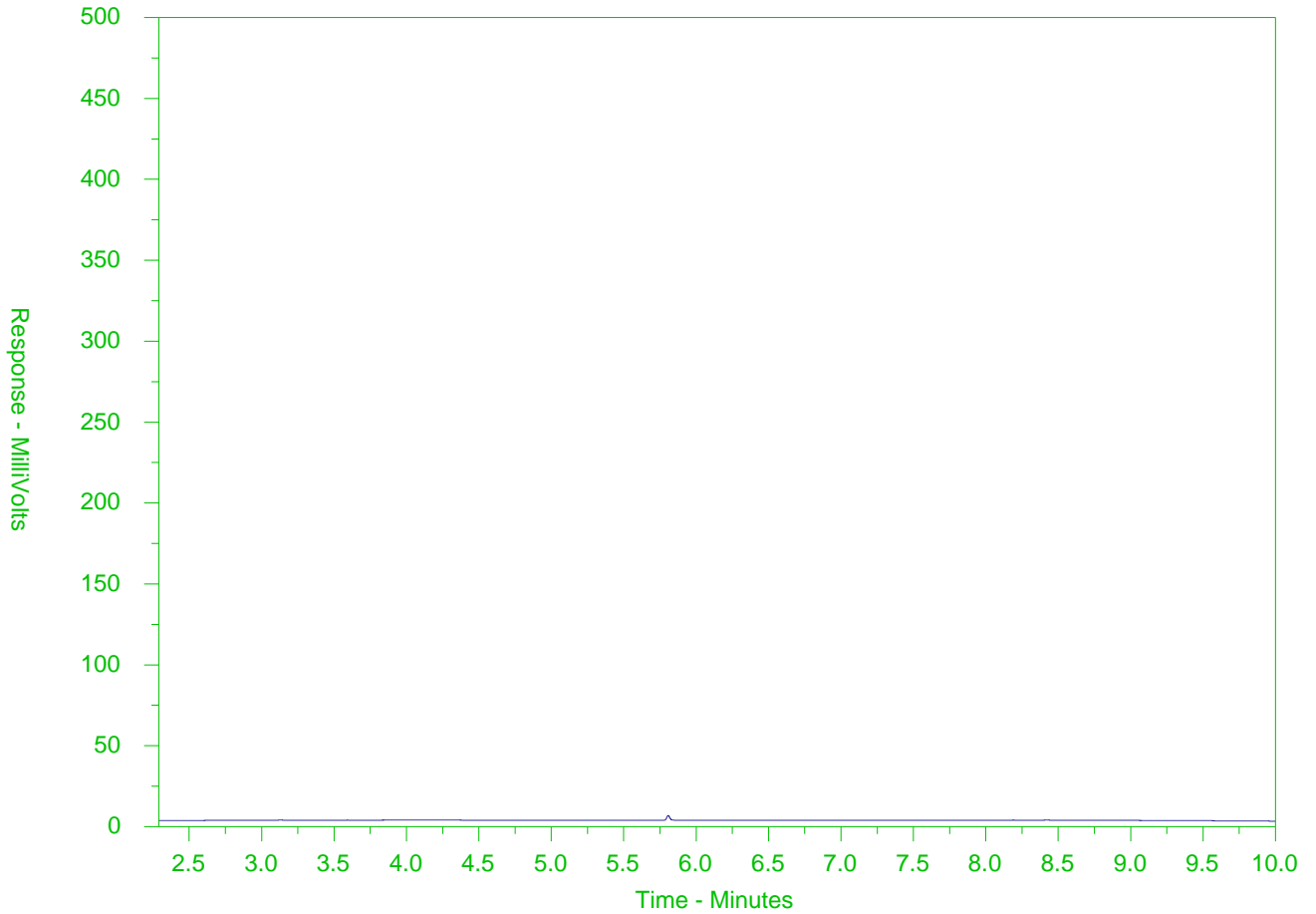
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2533970-4
 Client Sample ID: EV_MC6GW_WG_2020_Q4_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

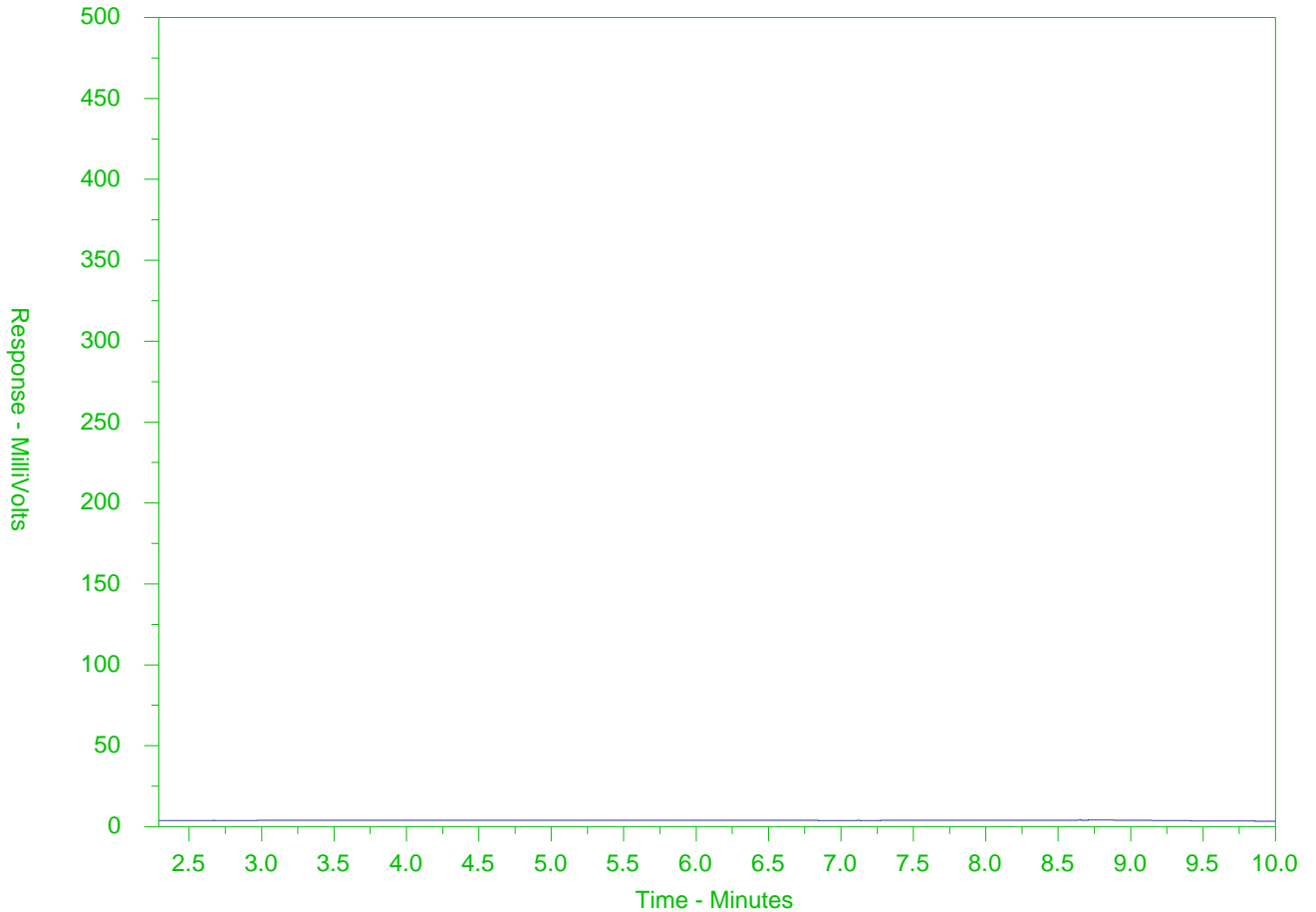
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2533970-5
 Client Sample ID: EV_MC7GW_WG_2020_Q4_NP



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

COC ID:	20201125Q4GW	TURNAROUND TIME:		RUSH:		
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		
Job Description	Q4 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		
Project Manager	Annie Larrivee		Email	lyudmyla.shvets@alsglobal.com		
Email	Annie.Larrivee@teck.com		Address	2559 29 Street NE		
Address	RR#1 HWY# 3			Email 1: kimberley.hackett@teck.com X X X		
				Email 2: Annie.Larrivee@teck.com X X X		
				Email 3: kennedy.allan@teck.com X X X		
				Email 4: Teck.Lab.Results@sharepoint.teck X X X		
				Email 5: teckcoal@equisonline.com X		
City	Sparwood	Province	BC	City	Calgary	
Postal Code		Country	Canada	Postal Code	T1Y 7B5	
Phone Number	1-250-865-5289			Phone Number	403-407-1800	
				PO number	VPO00678877	



L2533970-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV		Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate		HCl		NaOH	
								TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL, Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury					
EV_MW_AQ2_WG_2020_Q4_NP	EV_MW_AQ2	WG	N	11/25/20	12:20	G	5	1		1	1		1					1					
EV_OCGW_WG_2020_Q4_NP	EV_OCGW	WG	N	11/25/20	10:00	G	8	1		1	1		1			1	2						1
EV_MC5GW_WG_2020_Q4_NP	EV_MC5GW	WG	N	11/25/20	10:05	G	8	1		1	1		1			1	2						1
EV_MC6GW_WG_2020_Q4_NP	EV_MC6GW	WG	N	11/25/20	10:10	G	8	1		1	1		1			1	2						1
EV_MC7GW_WG_2020_Q4_NP	EV_MC7gw	WG	N	11/25/20	10:15	G	8	1		1	1		1			1	2						1
EV_HW1_WG_2020_Q4_NP	EV_HW1	WG	N	11/25/20	14:10	G	5	1		1	1		1					1					
EV_RCSGW_WG_2020_Q4_NP	EV_RCSGW	WG	N	11/25/20	13:45	G	5	1		1	1		1					1					
							Total																

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	November 25, 2020	<i>JG</i>	11/25 8:50

SERVICE REQUEST (rush - subject to availability)	SAMPLER'S NAME	MOBILE #
Regular (default) <input checked="" type="checkbox"/> X	Jason Gravelle	
Priority (2-3 business days) - 50% surcharge	SAMPLER'S SIGNATURE	DATE/TIME
Emergency (1 Business Day) - 100% surcharge	<i>Jason Gravelle</i>	November 25, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 27-NOV-20
Report Date: 03-DEC-20 18:38 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2534284
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201126Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2534284-1 WG 26-NOV-20 10:00 EV_MW_SP1A_W G_2020_Q4_NP	L2534284-2 WG 26-NOV-20 10:50 EV_MW_SP1B_W G_2020_Q4_NP	L2534284-3 WG 26-NOV-20 11:50 EV_MW_SP1C_W G_2020_Q4_NP	L2534284-4 WG 26-NOV-20 14:10 EV_MW_MCGWA_ WG_2020_Q4_NP	L2534284-5 WG 26-NOV-20 13:30 EV_MW_MCGWB_ WG_2020_Q4_NP
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	537	444	432	713	717
	Hardness (as CaCO3) (mg/L)	288	233	219	362	362
	pH (pH)	7.88	7.97	8.00	7.97	7.55
	ORP (mV)	427	474	450	431	411
	Total Suspended Solids (mg/L)	1.1	1.0	222	3.6	<1.0
	Total Dissolved Solids (mg/L)	335 ^{DLHC}	298 ^{DLHC}	271 ^{DLHC}	409 ^{DLHC}	448 ^{DLHC}
	Turbidity (NTU)	7.17	0.18	42.4	1.83	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	2.8	2.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	274	165	180	332	328
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	274	165	180	332	328
	Ammonia as N (mg/L)	0.776 ^{DLHC}	<0.0050	0.0062	0.0157	<0.0050
	Bicarbonate (HCO3) (mg/L)	334	201	219	405	400
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.230	0.193
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	3.96	3.26	6.76	39.4	34.9
	Fluoride (F) (mg/L)	0.263	0.108	0.104	0.177	0.179
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	96.3	98.1	95.7	93.9	93.4
	Nitrate (as N) (mg/L)	<0.0050	0.703	0.375	0.616	2.29
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0043	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.667	0.266	0.187	0.129	0.095
	Total Nitrogen (mg/L)	0.667	0.969	0.562	0.749	2.38
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0027	0.0034	0.0014	0.0063
	Phosphorus (P)-Total Dissolved (mg/L)	0.013 ^{DLM}	0.0031	0.0039	0.0027	0.011 ^{DLM}
	Phosphorus (P)-Total (mg/L)	0.023 ^{DLM}	0.0032	0.280 ^{DLHC}	0.013 ^{DLM}	0.0128
	Sulfate (SO4) (mg/L)	44.4	76.3	52.8	28.9	33.9
	Anion Sum (meq/L)	6.53	5.03	4.91	8.40	8.42
	Cation Sum (meq/L)	6.29	4.93	4.70	7.89	7.87
Cation - Anion Balance (%)	-1.9	-1.0	-2.2	-3.1	-3.4	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2534284-1 WG 26-NOV-20 10:00 EV_MW_SP1A_W G_2020_Q4_NP	L2534284-2 WG 26-NOV-20 10:50 EV_MW_SP1B_W G_2020_Q4_NP	L2534284-3 WG 26-NOV-20 11:50 EV_MW_SP1C_W G_2020_Q4_NP	L2534284-4 WG 26-NOV-20 14:10 EV_MW_MCGWA_ WG_2020_Q4_NP	L2534284-5 WG 26-NOV-20 13:30 EV_MW_MCGWB_ WG_2020_Q4_NP	
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00018	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	0.00019	0.00013
	Barium (Ba)-Dissolved (mg/L)	0.668	0.158	0.150	0.457	0.216
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.023	<0.010	<0.010	0.029	0.032
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0064	0.0278	0.0118	0.0692
	Calcium (Ca)-Dissolved (mg/L)	72.9	62.4	59.6	91.3	93.9
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00015	0.00014	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	0.15	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00024	0.00038	<0.00020	0.00032
	Iron (Fe)-Dissolved (mg/L)	0.595	<0.010	<0.010	0.089	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0780	0.0069	0.0080	0.0200	0.0152
	Magnesium (Mg)-Dissolved (mg/L)	25.6	18.7	17.0	32.6	30.8
	Manganese (Mn)-Dissolved (mg/L)	0.0557	<0.00010	0.00159	0.0310	0.00033
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000397	0.000832	0.000797	0.00319	0.00355
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00124	0.00123
	Potassium (K)-Dissolved (mg/L)	3.07	0.773	0.770	2.14	2.33
	Selenium (Se)-Dissolved (ug/L)	<0.050	6.39	3.87	1.25	1.99
	Silicon (Si)-Dissolved (mg/L)	2.91	2.55	2.45	4.78	4.52
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.57	5.94	6.94	13.6	13.4
	Strontium (Sr)-Dissolved (mg/L)	0.272	0.149	0.145	0.399	0.290
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000014	0.000012
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000104	0.000692	0.000661	0.000577	0.000640
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0012	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2534284-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2534284-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2534284-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2534284-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2534284-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201126Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2534284

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299414							
WG3453684-2	LCS							
Acidity (as CaCO3)			112.1		%		85-115	28-NOV-20
WG3453684-1	MB							
Acidity (as CaCO3)			1.3		mg/L		2	28-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5299459							
WG3453711-12	DUP	L2534284-5						
Alkalinity, Total (as CaCO3)		328	332		mg/L	1.2	20	29-NOV-20
WG3453711-11	LCS							
Alkalinity, Total (as CaCO3)			104.3		%		85-115	29-NOV-20
WG3453711-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-3	DUP	L2534284-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-NOV-20
WG3453699-2	LCS							
Beryllium (Be)-Dissolved			93.0		%		80-120	30-NOV-20
WG3453699-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-NOV-20
WG3453699-4	MS	L2534284-2						
Beryllium (Be)-Dissolved			97.2		%		70-130	30-NOV-20
BIC-CL								
	Water							
Batch	R5299459							
WG3453711-12	DUP	L2534284-5						
Bicarbonate (HCO3)		400	405		mg/L	1.2	20	29-NOV-20
WG3453711-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5299301							
WG3453559-2	LCS							
Bromide (Br)			104.2		%		85-115	27-NOV-20
WG3453559-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	27-NOV-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R5299476							
WG3453575-10 LCS								
Dissolved Organic Carbon			102.2		%		80-120	28-NOV-20
WG3453575-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
C-TOT-ORG-LOW-CL	Water							
Batch	R5299476							
WG3453575-10 LCS								
Total Organic Carbon			109.7		%		80-120	28-NOV-20
WG3453575-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5299301							
WG3453559-2 LCS								
Chloride (Cl)			103.2		%		85-115	27-NOV-20
WG3453559-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	27-NOV-20
CO3-CL	Water							
Batch	R5299459							
WG3453711-12 DUP		L2534284-5						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	29-NOV-20
WG3453711-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	29-NOV-20
EC-L-PCT-CL	Water							
Batch	R5299459							
WG3453711-12 DUP		L2534284-5						
Conductivity (@ 25C)		717	707		uS/cm	1.4	10	29-NOV-20
WG3453711-11 LCS								
Conductivity (@ 25C)			94.4		%		90-110	29-NOV-20
WG3453711-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-NOV-20
F-IC-N-CL	Water							
Batch	R5299301							
WG3453559-2 LCS								
Fluoride (F)			98.8		%		90-110	27-NOV-20
WG3453559-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	27-NOV-20
HG-D-CVAA-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5300167							
WG3454513-6	LCS							
Mercury (Hg)-Dissolved			95.5		%		80-120	01-DEC-20
WG3454513-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	01-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-3	DUP	L2534284-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	30-NOV-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Barium (Ba)-Dissolved		0.668	0.691		mg/L	3.4	20	30-NOV-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Boron (B)-Dissolved		0.023	0.022		mg/L	3.4	20	30-NOV-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Calcium (Ca)-Dissolved		72.9	72.1		mg/L	1.1	20	30-NOV-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-NOV-20
Iron (Fe)-Dissolved		0.595	0.617		mg/L	3.6	20	30-NOV-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-NOV-20
Lithium (Li)-Dissolved		0.0780	0.0750		mg/L	3.9	20	30-NOV-20
Magnesium (Mg)-Dissolved		25.6	26.2		mg/L	2.3	20	30-NOV-20
Manganese (Mn)-Dissolved		0.0557	0.0564		mg/L	1.2	20	30-NOV-20
Molybdenum (Mo)-Dissolved		0.000397	0.000399		mg/L	0.5	20	30-NOV-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-NOV-20
Potassium (K)-Dissolved		3.07	3.10		mg/L	1.1	20	30-NOV-20
Silicon (Si)-Dissolved		2.91	3.02		mg/L	3.8	20	30-NOV-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Sodium (Na)-Dissolved		8.57	8.66		mg/L	1.0	20	30-NOV-20
Strontium (Sr)-Dissolved		0.272	0.275		mg/L	1.4	20	30-NOV-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-NOV-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-NOV-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-NOV-20
Uranium (U)-Dissolved		0.000104	0.000098		mg/L	5.1	20	30-NOV-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-3	DUP	L2534284-1						
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-NOV-20
WG3453699-2	LCS							
Aluminum (Al)-Dissolved			104.0		%		80-120	30-NOV-20
Antimony (Sb)-Dissolved			98.8		%		80-120	30-NOV-20
Arsenic (As)-Dissolved			98.1		%		80-120	30-NOV-20
Barium (Ba)-Dissolved			103.0		%		80-120	30-NOV-20
Bismuth (Bi)-Dissolved			95.1		%		80-120	30-NOV-20
Boron (B)-Dissolved			92.0		%		80-120	30-NOV-20
Cadmium (Cd)-Dissolved			97.4		%		80-120	30-NOV-20
Calcium (Ca)-Dissolved			99.8		%		80-120	30-NOV-20
Chromium (Cr)-Dissolved			100.7		%		80-120	30-NOV-20
Cobalt (Co)-Dissolved			102.7		%		80-120	30-NOV-20
Copper (Cu)-Dissolved			98.8		%		80-120	30-NOV-20
Iron (Fe)-Dissolved			100.6		%		80-120	30-NOV-20
Lead (Pb)-Dissolved			91.5		%		80-120	30-NOV-20
Lithium (Li)-Dissolved			91.1		%		80-120	30-NOV-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	30-NOV-20
Manganese (Mn)-Dissolved			99.8		%		80-120	30-NOV-20
Molybdenum (Mo)-Dissolved			98.8		%		80-120	30-NOV-20
Nickel (Ni)-Dissolved			100.8		%		80-120	30-NOV-20
Potassium (K)-Dissolved			101.0		%		80-120	30-NOV-20
Selenium (Se)-Dissolved			93.1		%		80-120	30-NOV-20
Silicon (Si)-Dissolved			98.5		%		60-140	30-NOV-20
Silver (Ag)-Dissolved			96.3		%		80-120	30-NOV-20
Sodium (Na)-Dissolved			102.3		%		80-120	30-NOV-20
Strontium (Sr)-Dissolved			105.1		%		80-120	30-NOV-20
Thallium (Tl)-Dissolved			96.4		%		80-120	30-NOV-20
Tin (Sn)-Dissolved			94.8		%		80-120	30-NOV-20
Titanium (Ti)-Dissolved			96.0		%		80-120	30-NOV-20
Uranium (U)-Dissolved			112.3		%		80-120	30-NOV-20
Vanadium (V)-Dissolved			101.1		%		80-120	30-NOV-20
Zinc (Zn)-Dissolved			95.9		%		80-120	30-NOV-20
WG3453699-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-1	MB	NP						
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-20
WG3453699-4	MS	L2534284-2						
Aluminum (Al)-Dissolved			100.0		%		70-130	30-NOV-20
Antimony (Sb)-Dissolved			102.3		%		70-130	30-NOV-20
Arsenic (As)-Dissolved			107.6		%		70-130	30-NOV-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Bismuth (Bi)-Dissolved			77.9		%		70-130	30-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299690							
WG3453699-4	MS	L2534284-2						
Boron (B)-Dissolved			86.4		%		70-130	30-NOV-20
Cadmium (Cd)-Dissolved			98.3		%		70-130	30-NOV-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Chromium (Cr)-Dissolved			97.8		%		70-130	30-NOV-20
Cobalt (Co)-Dissolved			94.9		%		70-130	30-NOV-20
Copper (Cu)-Dissolved			93.4		%		70-130	30-NOV-20
Iron (Fe)-Dissolved			98.9		%		70-130	30-NOV-20
Lead (Pb)-Dissolved			87.8		%		70-130	30-NOV-20
Lithium (Li)-Dissolved			90.3		%		70-130	30-NOV-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Manganese (Mn)-Dissolved			96.9		%		70-130	30-NOV-20
Molybdenum (Mo)-Dissolved			98.3		%		70-130	30-NOV-20
Nickel (Ni)-Dissolved			94.7		%		70-130	30-NOV-20
Potassium (K)-Dissolved			97.5		%		70-130	30-NOV-20
Selenium (Se)-Dissolved			108.8		%		70-130	30-NOV-20
Silicon (Si)-Dissolved			90.3		%		70-130	30-NOV-20
Silver (Ag)-Dissolved			93.2		%		70-130	30-NOV-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-NOV-20
Thallium (Tl)-Dissolved			86.2		%		70-130	30-NOV-20
Tin (Sn)-Dissolved			95.4		%		70-130	30-NOV-20
Titanium (Ti)-Dissolved			97.3		%		70-130	30-NOV-20
Uranium (U)-Dissolved			88.6		%		70-130	30-NOV-20
Vanadium (V)-Dissolved			100.3		%		70-130	30-NOV-20
Zinc (Zn)-Dissolved			100.2		%		70-130	30-NOV-20
Batch	R5300473							
WG3453699-3	DUP	L2534284-1						
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-DEC-20
NH3-L-F-CL								
	Water							
Batch	R5299432							
WG3453672-6	LCS							
Ammonia as N			104.5		%		85-115	28-NOV-20
WG3453672-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5299301							
WG3453559-2	LCS							
Nitrite (as N)			100.7		%		90-110	27-NOV-20
WG3453559-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	27-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5299301							
WG3453559-2	LCS							
Nitrate (as N)			101.0		%		90-110	27-NOV-20
WG3453559-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	27-NOV-20
OH-CL	Water							
Batch	R5299459							
WG3453711-12	DUP	L2534284-5						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	29-NOV-20
WG3453711-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	29-NOV-20
ORP-CL	Water							
Batch	R5299160							
WG3453423-1	CRM	CL-ORP						
ORP			230		mV		210-230	27-NOV-20
P-T-L-COL-CL	Water							
Batch	R5299819							
WG3454165-6	LCS							
Phosphorus (P)-Total			99.3		%		80-120	30-NOV-20
WG3454165-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-NOV-20
P-TD-L-COL-CL	Water							
Batch	R5299819							
WG3454165-6	LCS							
Phosphorus (P)-Total Dissolved			99.3		%		80-120	30-NOV-20
WG3454165-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	30-NOV-20
PH-CL	Water							



Quality Control Report

Workorder: L2534284

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL								
Water								
Batch	R5299459							
WG3453711-12	DUP	L2534284-5						
pH		7.55	7.59	J	pH	0.04	0.2	29-NOV-20
WG3453711-11	LCS							
pH			7.04		pH		6.9-7.1	29-NOV-20
PO4-DO-L-COL-CL								
Water								
Batch	R5299009							
WG3453186-2	LCS							
Orthophosphate-Dissolved (as P)			99.8		%		80-120	27-NOV-20
WG3453186-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-NOV-20
SO4-IC-N-CL								
Water								
Batch	R5299301							
WG3453559-2	LCS							
Sulfate (SO4)			102.2		%		90-110	27-NOV-20
WG3453559-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-NOV-20
SOLIDS-TDS-CL								
Water								
Batch	R5304888							
WG3455281-8	LCS							
Total Dissolved Solids			93.1		%		85-115	02-DEC-20
WG3455281-7	MB							
Total Dissolved Solids			<10		mg/L		10	02-DEC-20
TKN-L-F-CL								
Water								
Batch	R5299262							
WG3453412-10	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	28-NOV-20
WG3453412-12	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	28-NOV-20
WG3453412-14	LCS							
Total Kjeldahl Nitrogen			91.3		%		75-125	28-NOV-20
WG3453412-2	LCS							
Total Kjeldahl Nitrogen			93.8		%		75-125	28-NOV-20
WG3453412-8	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	28-NOV-20
WG3453412-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-11	MB							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5299262							
WG3453412-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
WG3453412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-20
TSS-L-CL		Water						
Batch	R5304350							
WG3455278-2 LCS								
Total Suspended Solids			97.1		%		85-115	02-DEC-20
WG3455278-4 LCS								
Total Suspended Solids			95.8		%		85-115	02-DEC-20
WG3455278-1 MB								
Total Suspended Solids			<1.0		mg/L		1	02-DEC-20
WG3455278-3 MB								
Total Suspended Solids			<1.0		mg/L		1	02-DEC-20
TURBIDITY-CL		Water						
Batch	R5299163							
WG3453425-2 LCS								
Turbidity			95.9		%		85-115	27-NOV-20
WG3453425-3 MB								
Turbidity			<0.10		NTU		0.1	27-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2534284

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	26-NOV-20 10:00	27-NOV-20 14:15	0.25	28	hours	EHTR-FM
	2	26-NOV-20 10:50	27-NOV-20 14:15	0.25	27	hours	EHTR-FM
	3	26-NOV-20 11:50	27-NOV-20 14:15	0.25	26	hours	EHTR-FM
	4	26-NOV-20 14:10	27-NOV-20 14:15	0.25	24	hours	EHTR-FM
	5	26-NOV-20 13:30	27-NOV-20 14:15	0.25	25	hours	EHTR-FM
pH							
	1	26-NOV-20 10:00	29-NOV-20 09:00	0.25	71	hours	EHTR-FM
	2	26-NOV-20 10:50	29-NOV-20 09:00	0.25	70	hours	EHTR-FM
	3	26-NOV-20 11:50	29-NOV-20 09:00	0.25	69	hours	EHTR-FM
	4	26-NOV-20 14:10	29-NOV-20 09:00	0.25	67	hours	EHTR-FM
	5	26-NOV-20 13:30	29-NOV-20 09:00	0.25	67	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2534284 were received on 27-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201126Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com		X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_SP1A_WG_2020_Q4_NP	EV_MW_SP1A	WG	N	11/26/20	10:00	G	5	1	1	1	1	1	1	1				1		
EV_MW_SP1B_WG_2020_Q4_NP	EV_MW_SP1B	WG	N	11/26/20	10:50	G	5	1	1	1	1	1	1	1				1		
EV_MW_SP1C_WG_2020_Q4_NP	EV_MW_SP1C	WG	N	11/26/20	11:50	G	5	1	1	1	1	1	1	1				1		
EV_MW_MCGWA_WG_2020_Q4_NP	EV_MW_MCGWA	WG	N	11/26/20	14:10	G	5	1	1	1	1	1	1	1				1		
EV_MW_MCGWB_WG_2020_Q4_NP	EV_MW_MCGWB	WG	N	11/26/20	13:30	G	5	1	1	1	1	1	1	1				1		
							Total	25												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	November 26, 2020	<i>JG</i>	27/11 8:40

SERVICE REQUEST (rush - subject to availability)	SAMPLER'S NAME	MOBILE #	DATE/TIME
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jason Gravelle		November 26, 2020



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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 03-DEC-20
Report Date: 10-DEC-20 14:40 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2536485
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2536485-1	L2536485-2	L2536485-3		
		Description	WG	WG	WG		
		Sampled Date	02-DEC-20	02-DEC-20	02-DEC-20		
		Sampled Time	11:35	15:05	14:35		
		Client ID	EV_WF_SW_WG_2020_Q4_NP	EV_WH50GW_WG_2020_Q4_NP	EV_BRGW_WG_2020_Q4_NP		
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (@ 25C) (uS/cm)		960	464	1030		
	Hardness (as CaCO3) (mg/L)		525	251	588		
	pH (pH)		8.09	8.07	8.02		
	ORP (mV)		416	311	432		
	Total Suspended Solids (mg/L)		28.7	2.7	<1.0		
	Total Dissolved Solids (mg/L)		703 ^{DLHC}	317 ^{DLHC}	842 ^{DLHC}		
	Turbidity (NTU)		74.2	7.14	0.59		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		4.2	<1.0	2.6		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		282	172	258		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		282	172	258		
	Ammonia as N (mg/L)		0.0309	<0.0050	<0.0050		
	Bicarbonate (HCO3) (mg/L)		344	210	315		
	Bromide (Br) (mg/L)		<0.25 ^{DLHC}	<0.050	0.46 ^{DLHC}		
	Carbonate (CO3) (mg/L)		<5.0	<5.0	<5.0		
	Chloride (Cl) (mg/L)		2.43 ^{DLHC}	1.77	17.3 ^{DLHC}		
	Fluoride (F) (mg/L)		0.19 ^{DLHC}	0.116	<0.10 ^{DLHC}		
	Hydroxide (OH) (mg/L)		<5.0	<5.0	<5.0		
	Ion Balance (%)		95.1	95.8	92.9		
	Nitrate (as N) (mg/L)		<0.025 ^{DLHC}	1.13	4.24 ^{DLHC}		
	Nitrite (as N) (mg/L)		<0.0050 ^{DLHC}	<0.0010	<0.0050 ^{DLHC}		
	Total Kjeldahl Nitrogen (mg/L)		0.080	0.236	<0.050		
	Total Nitrogen (mg/L)		0.080	1.37	4.24		
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	0.0043	0.0016		
	Phosphorus (P)-Total Dissolved (mg/L)		0.0027	0.0045	<0.0020		
	Phosphorus (P)-Total (mg/L)		0.0163	0.0074	0.0055		
	Sulfate (SO4) (mg/L)		289 ^{DLHC}	90.6	351 ^{DLHC}		
	Anion Sum (meq/L)		11.7	5.46	13.3		
Cation Sum (meq/L)		11.2	5.24	12.3			
Cation - Anion Balance (%)		-2.5	-2.1	-3.7			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		1.47	<0.50	<0.50		
	Total Organic Carbon (mg/L)		1.50	<0.50	<0.50		
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2536485-1 WG 02-DEC-20 11:35 EV_WF_SW_WG_ 2020_Q4_NP	L2536485-2 WG 02-DEC-20 15:05 EV_WH50GW_WG_ 2020_Q4_NP	L2536485-3 WG 02-DEC-20 14:35 EV_BRGW_WG_2 020_Q4_NP		
Grouping	Analyte					
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00017	0.00018	0.00011		
	Arsenic (As)-Dissolved (mg/L)	0.00024	0.00012	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0113	0.104	0.0509		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.011	0.011	0.036		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0233	0.0223		
	Calcium (Ca)-Dissolved (mg/L)	101	61.8	145		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	3.06	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00068	0.00090	0.00035		
	Iron (Fe)-Dissolved (mg/L)	7.87	0.161	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0203	0.0100	0.0533		
	Magnesium (Mg)-Dissolved (mg/L)	66.4	23.5	54.7		
	Manganese (Mn)-Dissolved (mg/L)	0.378	0.00886	0.00093		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00105	0.00107	0.000796		
	Nickel (Ni)-Dissolved (mg/L)	0.00462	<0.00050	0.00121		
	Potassium (K)-Dissolved (mg/L)	2.68	1.06	2.25		
	Selenium (Se)-Dissolved (ug/L)	0.062	10.5	31.9		
	Silicon (Si)-Dissolved (mg/L)	1.36	2.32	3.03		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.07	4.22	11.8		
	Strontium (Sr)-Dissolved (mg/L)	0.0967	0.146	0.317		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00212	0.00105	0.00155		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010	0.0023		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2536485-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2536485-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2536485-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2536485-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2536485-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5307819							
WG3456838-6	DUP	L2536485-3						
Acidity (as CaCO3)		2.6	2.4		mg/L	8.8	20	04-DEC-20
WG3456838-5	LCS							
Acidity (as CaCO3)			106.3		%		85-115	04-DEC-20
WG3456838-4	MB							
Acidity (as CaCO3)			1.4		mg/L		2	04-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5307878							
WG3456782-5	LCS							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	04-DEC-20
WG3456782-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5308430							
WG3457329-2	LCS							
Beryllium (Be)-Dissolved			96.1		%		80-120	05-DEC-20
WG3457329-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-DEC-20
BIC-CL								
	Water							
Batch	R5307878							
WG3456782-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	04-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5308534							
WG3457386-2	LCS							
Bromide (Br)			103.1		%		85-115	04-DEC-20
WG3457386-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	04-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5309497							
WG3458265-3	DUP	L2536485-3						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-DEC-20
WG3458265-2	LCS							
Dissolved Organic Carbon			99.5		%		80-120	07-DEC-20
WG3458265-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5309497							
WG3458265-4	MS	L2536485-3						
Dissolved Organic Carbon			101.9		%		70-130	07-DEC-20
C-TOT-ORG-LOW-CL Water								
Batch	R5309497							
WG3458265-3	DUP	L2536485-3						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-DEC-20
WG3458265-2	LCS							
Total Organic Carbon			99.5		%		80-120	07-DEC-20
WG3458265-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-DEC-20
WG3458265-4	MS	L2536485-3						
Total Organic Carbon			106.2		%		70-130	07-DEC-20
CL-L-IC-N-CL Water								
Batch	R5308534							
WG3457386-2	LCS							
Chloride (Cl)			101.9		%		85-115	04-DEC-20
WG3457386-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	04-DEC-20
CO3-CL Water								
Batch	R5307878							
WG3456782-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	04-DEC-20
EC-L-PCT-CL Water								
Batch	R5307878							
WG3456782-5	LCS							
Conductivity (@ 25C)			92.6		%		90-110	04-DEC-20
WG3456782-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-DEC-20
F-IC-N-CL Water								
Batch	R5308534							
WG3457386-2	LCS							
Fluoride (F)			100.5		%		90-110	04-DEC-20
WG3457386-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	04-DEC-20
HG-D-CVAA-VA Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5308306							
WG3457176-2	LCS							
Mercury (Hg)-Dissolved			95.7		%		80-120	05-DEC-20
WG3457176-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5308430							
WG3457329-2	LCS							
Aluminum (Al)-Dissolved			105.4		%		80-120	05-DEC-20
Antimony (Sb)-Dissolved			102.5		%		80-120	05-DEC-20
Arsenic (As)-Dissolved			101.4		%		80-120	05-DEC-20
Barium (Ba)-Dissolved			104.3		%		80-120	05-DEC-20
Bismuth (Bi)-Dissolved			102.3		%		80-120	05-DEC-20
Boron (B)-Dissolved			89.7		%		80-120	05-DEC-20
Cadmium (Cd)-Dissolved			105.6		%		80-120	05-DEC-20
Calcium (Ca)-Dissolved			93.8		%		80-120	05-DEC-20
Chromium (Cr)-Dissolved			106.8		%		80-120	05-DEC-20
Cobalt (Co)-Dissolved			106.4		%		80-120	05-DEC-20
Copper (Cu)-Dissolved			103.5		%		80-120	05-DEC-20
Iron (Fe)-Dissolved			103.5		%		80-120	05-DEC-20
Lead (Pb)-Dissolved			100.9		%		80-120	05-DEC-20
Lithium (Li)-Dissolved			95.2		%		80-120	05-DEC-20
Magnesium (Mg)-Dissolved			103.6		%		80-120	05-DEC-20
Manganese (Mn)-Dissolved			102.6		%		80-120	05-DEC-20
Molybdenum (Mo)-Dissolved			102.1		%		80-120	05-DEC-20
Nickel (Ni)-Dissolved			105.7		%		80-120	05-DEC-20
Potassium (K)-Dissolved			105.0		%		80-120	05-DEC-20
Selenium (Se)-Dissolved			109.4		%		80-120	05-DEC-20
Silicon (Si)-Dissolved			97.0		%		60-140	05-DEC-20
Silver (Ag)-Dissolved			98.4		%		80-120	05-DEC-20
Sodium (Na)-Dissolved			108.3		%		80-120	05-DEC-20
Strontium (Sr)-Dissolved			93.8		%		80-120	05-DEC-20
Thallium (Tl)-Dissolved			99.9		%		80-120	05-DEC-20
Tin (Sn)-Dissolved			101.9		%		80-120	05-DEC-20
Titanium (Ti)-Dissolved			106.9		%		80-120	05-DEC-20
Uranium (U)-Dissolved			101.2		%		80-120	05-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5308430							
WG3457329-2	LCS							
Vanadium (V)-Dissolved			107.3		%		80-120	05-DEC-20
Zinc (Zn)-Dissolved			104.1		%		80-120	05-DEC-20
WG3457329-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-DEC-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5308341							
WG3457173-6	LCS							
Ammonia as N			105.5		%		85-115	04-DEC-20
WG3457173-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-DEC-20
NO2-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-2	LCS							
Nitrite (as N)			101.7		%		90-110	04-DEC-20
WG3457386-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	04-DEC-20
NO3-L-IC-N-CL								
Water								
Batch	R5308534							
WG3457386-2	LCS							
Nitrate (as N)			103.5		%		90-110	04-DEC-20
WG3457386-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	04-DEC-20
OH-CL								
Water								
Batch	R5307878							
WG3456782-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	04-DEC-20
ORP-CL								
Water								
Batch	R5306322							
WG3456505-7	CRM	CL-ORP						
ORP			223		mV		210-230	03-DEC-20
P-T-L-COL-CL								
Water								
Batch	R5309431							
WG3458407-6	LCS							
Phosphorus (P)-Total			103.0		%		80-120	08-DEC-20
WG3458407-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-DEC-20
P-TD-L-COL-CL								
Water								
Batch	R5309431							
WG3458407-6	LCS							
Phosphorus (P)-Total Dissolved			103.0		%		80-120	08-DEC-20
WG3458407-5	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5308435							
WG3457290-2	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	05-DEC-20
WG3457290-4	LCS							
Total Kjeldahl Nitrogen			85.9		%		75-125	05-DEC-20
WG3457290-6	LCS							
Total Kjeldahl Nitrogen			86.4		%		75-125	05-DEC-20
WG3457290-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
WG3457290-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-DEC-20
TSS-L-CL		Water						
Batch	R5310076							
WG3458891-6	LCS							
Total Suspended Solids			105.3		%		85-115	09-DEC-20
WG3458891-5	MB							
Total Suspended Solids			<1.0		mg/L		1	09-DEC-20
TURBIDITY-CL		Water						
Batch	R5306330							
WG3455996-24	LCS							
Turbidity			96.9		%		85-115	03-DEC-20
WG3455996-23	MB							
Turbidity			<0.10		NTU		0.1	03-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	02-DEC-20 11:35	03-DEC-20 14:30	0.25	27	hours	EHTR-FM
	2	02-DEC-20 15:05	03-DEC-20 14:30	0.25	24	hours	EHTR-FM
	3	02-DEC-20 14:35	03-DEC-20 14:30	0.25	24	hours	EHTR-FM
pH	1	02-DEC-20 11:35	04-DEC-20 09:00	0.25	45	hours	EHTR-FM
	2	02-DEC-20 15:05	04-DEC-20 09:00	0.25	42	hours	EHTR-FM
	3	02-DEC-20 14:35	04-DEC-20 09:00	0.25	42	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2536485 were received on 03-DEC-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201202Q4GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com		X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877				

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_WF_SW_WG_2020_Q4_NP	EV_WF_SW	WG	N	12/02/20	11:35	G	5	1		1	1		1					1		
EV_WH50GW_WG_2020_Q4_NP	EV_WH50GW	WG	N	12/02/20	15:05	G	5	1		1	1		1					1		
EV_BRGW_WG_2020_Q4_NP	EV_BRGW	WG	N	12/02/20	14:35	G	5	1		1	1		1					1		
Total							15													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	December 2, 2020	<i>[Signature]</i>	12/3/20 855

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jason Gravelle	Mobile #	
Sampler's Signature	<i>[Signature]</i>	Date/Time	December 2, 2020

3



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 04-DEC-20
Report Date: 11-DEC-20 16:53 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2536966
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201203Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2536966-1 WG 03-DEC-20 14:10 EV_MW_SPR1A_ WG_2020_Q4_NP	L2536966-2 WG 03-DEC-20 12:05 EV_MW_SPR1C_ WG_2020_Q4_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	543	711		
	Hardness (as CaCO3) (mg/L)	322	386		
	pH (pH)	8.11	8.27		
	ORP (mV)	255	476		
	Total Suspended Solids (mg/L)	2.3	<1.0		
	Total Dissolved Solids (mg/L)	329 ^{DLHC}	431 ^{DLHC}		
	Turbidity (NTU)	4.46	0.19		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.6	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	264	248		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	264	248		
	Ammonia as N (mg/L)	0.0388	0.0073		
	Bicarbonate (HCO3) (mg/L)	322	302		
	Bromide (Br) (mg/L)	<0.050	0.446		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	12.2	37.7		
	Fluoride (F) (mg/L)	0.260	0.127		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	105	96.0		
	Nitrate (as N) (mg/L)	<0.0050	0.907		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.096		
	Total Nitrogen (mg/L)	<0.050	1.00		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0038		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0033		
	Phosphorus (P)-Total (mg/L)	0.0043	0.0032		
	Sulfate (SO4) (mg/L)	33.6	112		
	Anion Sum (meq/L)	6.34	8.42		
	Cation Sum (meq/L)	6.68	8.08		
Cation - Anion Balance (%)	2.6	-2.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.82	0.75		
	Total Organic Carbon (mg/L)	0.68	0.68		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2536966-1 WG 03-DEC-20 14:10 EV_MW_SPR1A_ WG_2020_Q4_NP	L2536966-2 WG 03-DEC-20 12:05 EV_MW_SPR1C_ WG_2020_Q4_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00011		
	Arsenic (As)-Dissolved (mg/L)	0.00077	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.351	0.154		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.021	0.015		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0596		
	Calcium (Ca)-Dissolved (mg/L)	83.6	107		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.58	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00028	0.00036		
	Iron (Fe)-Dissolved (mg/L)	0.279	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0148	0.0165		
	Magnesium (Mg)-Dissolved (mg/L)	27.5	28.8		
	Manganese (Mn)-Dissolved (mg/L)	0.281	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00128	0.000745		
	Nickel (Ni)-Dissolved (mg/L)	0.00168	<0.00050		
	Potassium (K)-Dissolved (mg/L)	1.41	1.26		
	Selenium (Se)-Dissolved (ug/L)	<0.050	8.89		
	Silicon (Si)-Dissolved (mg/L)	4.43	2.73		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.30	7.69		
	Strontium (Sr)-Dissolved (mg/L)	0.332	0.235		
	Thallium (Tl)-Dissolved (mg/L)	0.000013	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000775	0.00103		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2536966-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2536966-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2536966-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2536966-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2536966-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201203Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2536966

Report Date: 11-DEC-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5309084							
WG3458050-5	LCS							
Acidity (as CaCO3)			106.8		%		85-115	07-DEC-20
WG3458050-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	07-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5309082							
WG3458046-11	LCS							
Alkalinity, Total (as CaCO3)			104.2		%		85-115	07-DEC-20
WG3458046-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5309048							
WG3457402-2	LCS							
Beryllium (Be)-Dissolved			96.5		%		80-120	07-DEC-20
WG3457402-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-DEC-20
BIC-CL								
	Water							
Batch	R5309082							
WG3458046-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5308570							
WG3457411-6	LCS							
Bromide (Br)			98.8		%		85-115	05-DEC-20
WG3457411-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5312062							
WG3460649-3	DUP	L2536966-2						
Dissolved Organic Carbon		0.75	0.84		mg/L	11	20	11-DEC-20
WG3460649-2	LCS							
Dissolved Organic Carbon			94.0		%		80-120	11-DEC-20
WG3460649-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
WG3460649-4	MS	L2536966-2						
Dissolved Organic Carbon			100.4		%		70-130	11-DEC-20



Quality Control Report

Workorder: L2536966

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5312062							
WG3460649-3	DUP	L2536966-2						
Total Organic Carbon		0.68	0.65		mg/L	3.5	20	11-DEC-20
WG3460649-2	LCS							
Total Organic Carbon			94.9		%		80-120	11-DEC-20
WG3460649-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	11-DEC-20
WG3460649-4	MS	L2536966-2						
Total Organic Carbon			107.0		%		70-130	11-DEC-20
CL-L-IC-N-CL								
Water								
Batch	R5308570							
WG3457411-6	LCS							
Chloride (Cl)			98.3		%		85-115	05-DEC-20
WG3457411-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	05-DEC-20
CO3-CL								
Water								
Batch	R5309082							
WG3458046-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	07-DEC-20
EC-L-PCT-CL								
Water								
Batch	R5309082							
WG3458046-11	LCS							
Conductivity (@ 25C)			97.5		%		90-110	07-DEC-20
WG3458046-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-DEC-20
F-IC-N-CL								
Water								
Batch	R5308570							
WG3457411-6	LCS							
Fluoride (F)			92.3		%		90-110	05-DEC-20
WG3457411-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-DEC-20
HG-D-CVAA-VA								
Water								
Batch	R5309746							
WG3459277-2	LCS							
Mercury (Hg)-Dissolved			99.3		%		80-120	09-DEC-20
WG3459277-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-DEC-20



Quality Control Report

Workorder: L2536966

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457402-2	LCS							
Aluminum (Al)-Dissolved			94.3		%		80-120	07-DEC-20
Antimony (Sb)-Dissolved			110.7		%		80-120	07-DEC-20
Arsenic (As)-Dissolved			98.2		%		80-120	07-DEC-20
Barium (Ba)-Dissolved			102.6		%		80-120	07-DEC-20
Bismuth (Bi)-Dissolved			103.8		%		80-120	07-DEC-20
Boron (B)-Dissolved			89.8		%		80-120	07-DEC-20
Cadmium (Cd)-Dissolved			94.2		%		80-120	07-DEC-20
Calcium (Ca)-Dissolved			99.3		%		80-120	07-DEC-20
Chromium (Cr)-Dissolved			95.8		%		80-120	07-DEC-20
Cobalt (Co)-Dissolved			95.0		%		80-120	07-DEC-20
Copper (Cu)-Dissolved			95.1		%		80-120	07-DEC-20
Iron (Fe)-Dissolved			90.8		%		80-120	07-DEC-20
Lead (Pb)-Dissolved			99.2		%		80-120	07-DEC-20
Lithium (Li)-Dissolved			96.2		%		80-120	07-DEC-20
Magnesium (Mg)-Dissolved			94.4		%		80-120	07-DEC-20
Manganese (Mn)-Dissolved			95.9		%		80-120	07-DEC-20
Molybdenum (Mo)-Dissolved			108.9		%		80-120	07-DEC-20
Nickel (Ni)-Dissolved			97.1		%		80-120	07-DEC-20
Potassium (K)-Dissolved			99.9		%		80-120	07-DEC-20
Selenium (Se)-Dissolved			102.0		%		80-120	07-DEC-20
Silicon (Si)-Dissolved			97.0		%		60-140	07-DEC-20
Silver (Ag)-Dissolved			109.6		%		80-120	07-DEC-20
Sodium (Na)-Dissolved			94.6		%		80-120	07-DEC-20
Strontium (Sr)-Dissolved			107.9		%		80-120	07-DEC-20
Thallium (Tl)-Dissolved			104.5		%		80-120	07-DEC-20
Tin (Sn)-Dissolved			100.0		%		80-120	07-DEC-20
Titanium (Ti)-Dissolved			93.7		%		80-120	07-DEC-20
Uranium (U)-Dissolved			94.0		%		80-120	07-DEC-20
Vanadium (V)-Dissolved			98.4		%		80-120	07-DEC-20
Zinc (Zn)-Dissolved			95.4		%		80-120	07-DEC-20
WG3457402-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5309048							
WG3457402-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-DEC-20
NH3-L-F-CL								
	Water							
Batch	R5308556							
WG3457328-10	LCS							
Ammonia as N			90.2		%		85-115	05-DEC-20
WG3457328-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-DEC-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5308570							
WG3457411-6	LCS							
Nitrite (as N)			102.2		%		90-110	05-DEC-20
WG3457411-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5308570							
WG3457411-6	LCS							
Nitrate (as N)			99.1		%		90-110	05-DEC-20
WG3457411-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-DEC-20
OH-CL	Water							
Batch	R5309082							
WG3458046-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-DEC-20
ORP-CL	Water							
Batch	R5308295							
WG3457158-5	CRM	CL-ORP						
ORP			227		mV		210-230	04-DEC-20
P-T-L-COL-CL	Water							
Batch	R5309431							
WG3458407-22	LCS							
Phosphorus (P)-Total			105.5		%		80-120	08-DEC-20
WG3458407-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-DEC-20
P-TD-L-COL-CL	Water							
Batch	R5309431							
WG3458407-22	LCS							
Phosphorus (P)-Total Dissolved			105.5		%		80-120	08-DEC-20
WG3458407-21	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	08-DEC-20
PH-CL	Water							
Batch	R5309082							
WG3458046-11	LCS							
pH			7.02		pH		6.9-7.1	07-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5308291							
WG3456965-10 LCS								
Orthophosphate-Dissolved (as P)			102.0		%		80-120	04-DEC-20
WG3456965-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-DEC-20
SO4-IC-N-CL	Water							
Batch	R5308570							
WG3457411-6 LCS								
Sulfate (SO4)			97.6		%		90-110	05-DEC-20
WG3457411-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	05-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5311721							
WG3459662-5 LCS								
Total Dissolved Solids			92.5		%		85-115	10-DEC-20
WG3459662-4 MB								
Total Dissolved Solids			<10		mg/L		10	10-DEC-20
TKN-L-F-CL	Water							
Batch	R5308539							
WG3457360-10 LCS								
Total Kjeldahl Nitrogen			99.1		%		75-125	06-DEC-20
WG3457360-12 LCS								
Total Kjeldahl Nitrogen			97.2		%		75-125	06-DEC-20
WG3457360-14 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	06-DEC-20
WG3457360-2 LCS								
Total Kjeldahl Nitrogen			89.6		%		75-125	06-DEC-20
WG3457360-4 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	06-DEC-20
WG3457360-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20
WG3457360-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5311296							
WG3459677-4	LCS							
Total Suspended Solids			93.8		%		85-115	10-DEC-20
WG3459677-3	MB							
Total Suspended Solids			<1.0		mg/L		1	10-DEC-20
TURBIDITY-CL	Water							
Batch	R5308301							
WG3457154-8	LCS							
Turbidity			96.9		%		85-115	04-DEC-20
WG3457154-7	MB							
Turbidity			<0.10		NTU		0.1	04-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	03-DEC-20 14:10	04-DEC-20 15:15	0.25	25	hours	EHTR-FM
	2	03-DEC-20 12:05	04-DEC-20 15:15	0.25	27	hours	EHTR-FM
pH	1	03-DEC-20 14:10	07-DEC-20 13:00	0.25	95	hours	EHTR-FM
	2	03-DEC-20 12:05	07-DEC-20 13:00	0.25	97	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2536966 were received on 04-DEC-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20201203Q4GW	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.hackett@teck.com X X X
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com	Email 2:	Annie.Larrivee@teck.com X X X
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allan@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.X X X
				Email 5:	teckcoal@equisonline.com X X X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	VPO00678877

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Fill	No	Yes	Yes	No	No	No	No	Yes	Yes				
								PREPARE		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl	NaOH				
								ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_MW_SPRIA_WG_2020_Q4_NP	EV_MW_SPRIA	WG	N	12/03/20	14:10	G	5		1	1	1	1					1				
EV_MW_SPRIC_WG_2020_Q4_NP	EV_MW_SPRIC	WG	N	12/03/20	12:05	G	5		1	1	1	1					1				
Total							10														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	December 3, 2020	<i>JG</i>	04/12 8:40

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X	Jason Gravelle	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge	<i>Jason Gravelle</i>	December 3, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 09-DEC-20
Report Date: 17-DEC-20 15:20 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2538609
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201208Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2538609-1 WG 08-DEC-20 14:25 EV_GV3GW_WG_ 2020_Q4_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	593			
	Hardness (as CaCO3) (mg/L)	343			
	pH (pH)	8.24			
	ORP (mV)	301			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	424	DLHC		
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	201			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	201			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	246			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	1.56			
	Fluoride (F) (mg/L)	0.477			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	101			
	Nitrate (as N) (mg/L)	0.128			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.115			
	Total Nitrogen (mg/L)	0.243			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	138			
	Anion Sum (meq/L)	6.98			
	Cation Sum (meq/L)	7.02			
	Cation - Anion Balance (%)	0.3			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	0.75			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2538609-1	WG	08-DEC-20	14:25	EV_GV3GW_WG_2020_Q4_NP
WATER						
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)					<0.00010
	Arsenic (As)-Dissolved (mg/L)					<0.00010
	Barium (Ba)-Dissolved (mg/L)					0.0163
	Beryllium (Be)-Dissolved (ug/L)					<0.020
	Bismuth (Bi)-Dissolved (mg/L)					<0.000050
	Boron (B)-Dissolved (mg/L)					0.012
	Cadmium (Cd)-Dissolved (ug/L)					0.0060
	Calcium (Ca)-Dissolved (mg/L)					86.9
	Chromium (Cr)-Dissolved (mg/L)					0.00021
	Cobalt (Co)-Dissolved (ug/L)					<0.10
	Copper (Cu)-Dissolved (mg/L)					0.00022
	Iron (Fe)-Dissolved (mg/L)					<0.010
	Lead (Pb)-Dissolved (mg/L)					<0.000050
	Lithium (Li)-Dissolved (mg/L)					0.0157
	Magnesium (Mg)-Dissolved (mg/L)					30.6
	Manganese (Mn)-Dissolved (mg/L)					<0.00010
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.000939
	Nickel (Ni)-Dissolved (mg/L)					<0.00050
	Potassium (K)-Dissolved (mg/L)					0.999
	Selenium (Se)-Dissolved (ug/L)					4.58
	Silicon (Si)-Dissolved (mg/L)					3.08
	Silver (Ag)-Dissolved (mg/L)					<0.000010
	Sodium (Na)-Dissolved (mg/L)					3.36
	Strontium (Sr)-Dissolved (mg/L)					0.591
	Thallium (Tl)-Dissolved (mg/L)					<0.000010
	Tin (Sn)-Dissolved (mg/L)					<0.00010
	Titanium (Ti)-Dissolved (mg/L)					<0.010
	Uranium (U)-Dissolved (mg/L)					0.00178
	Vanadium (V)-Dissolved (mg/L)					<0.00050
	Zinc (Zn)-Dissolved (mg/L)					0.0015

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl

Reference Information

Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201208Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5317885							
WG3462644-5	LCS							
Acidity (as CaCO3)			105.6		%		85-115	15-DEC-20
WG3462644-4	MB							
Acidity (as CaCO3)			1.2		mg/L		2	15-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5318142							
WG3462931-11	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	15-DEC-20
WG3462931-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5310955							
WG3460169-2	LCS							
Beryllium (Be)-Dissolved			95.9		%		80-120	11-DEC-20
WG3460169-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	11-DEC-20
BIC-CL								
	Water							
Batch	R5318142							
WG3462931-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5310472							
WG3459696-10	LCS							
Bromide (Br)			103.0		%		85-115	09-DEC-20
WG3459696-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5318091							
WG3462854-2	LCS							
Dissolved Organic Carbon			92.5		%		80-120	15-DEC-20
WG3462854-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-DEC-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5318091							
WG3462854-2 LCS								
Total Organic Carbon			91.9		%		80-120	15-DEC-20
WG3462854-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-DEC-20
CL-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-10 LCS								
Chloride (Cl)			104.3		%		85-115	09-DEC-20
WG3459696-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	09-DEC-20
CO3-CL	Water							
Batch	R5318142							
WG3462931-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	15-DEC-20
EC-L-PCT-CL	Water							
Batch	R5318142							
WG3462931-11 LCS								
Conductivity (@ 25C)			102.3		%		90-110	15-DEC-20
WG3462931-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	15-DEC-20
F-IC-N-CL	Water							
Batch	R5310472							
WG3459696-10 LCS								
Fluoride (F)			104.9		%		90-110	09-DEC-20
WG3459696-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	09-DEC-20
HG-D-CVAA-VA	Water							
Batch	R5311027							
WG3460542-6 LCS								
Mercury (Hg)-Dissolved			102.9		%		80-120	11-DEC-20
WG3460542-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-DEC-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5310955							
WG3460169-2	LCS							
Aluminum (Al)-Dissolved			100.4		%		80-120	11-DEC-20
Antimony (Sb)-Dissolved			104.4		%		80-120	11-DEC-20
Arsenic (As)-Dissolved			98.1		%		80-120	11-DEC-20
Barium (Ba)-Dissolved			97.8		%		80-120	11-DEC-20
Bismuth (Bi)-Dissolved			99.1		%		80-120	11-DEC-20
Boron (B)-Dissolved			96.0		%		80-120	11-DEC-20
Cadmium (Cd)-Dissolved			98.1		%		80-120	11-DEC-20
Calcium (Ca)-Dissolved			101.6		%		80-120	11-DEC-20
Chromium (Cr)-Dissolved			98.0		%		80-120	11-DEC-20
Cobalt (Co)-Dissolved			98.6		%		80-120	11-DEC-20
Copper (Cu)-Dissolved			98.5		%		80-120	11-DEC-20
Iron (Fe)-Dissolved			94.5		%		80-120	11-DEC-20
Lead (Pb)-Dissolved			103.7		%		80-120	11-DEC-20
Lithium (Li)-Dissolved			98.1		%		80-120	11-DEC-20
Magnesium (Mg)-Dissolved			95.3		%		80-120	11-DEC-20
Manganese (Mn)-Dissolved			99.5		%		80-120	11-DEC-20
Molybdenum (Mo)-Dissolved			103.9		%		80-120	11-DEC-20
Nickel (Ni)-Dissolved			97.9		%		80-120	11-DEC-20
Potassium (K)-Dissolved			101.4		%		80-120	11-DEC-20
Selenium (Se)-Dissolved			95.4		%		80-120	11-DEC-20
Silicon (Si)-Dissolved			90.9		%		60-140	11-DEC-20
Silver (Ag)-Dissolved			103.9		%		80-120	11-DEC-20
Sodium (Na)-Dissolved			106.3		%		80-120	11-DEC-20
Strontium (Sr)-Dissolved			110.5		%		80-120	11-DEC-20
Thallium (Tl)-Dissolved			102.0		%		80-120	11-DEC-20
Tin (Sn)-Dissolved			98.1		%		80-120	11-DEC-20
Titanium (Ti)-Dissolved			98.6		%		80-120	11-DEC-20
Uranium (U)-Dissolved			104.1		%		80-120	11-DEC-20
Vanadium (V)-Dissolved			97.5		%		80-120	11-DEC-20
Zinc (Zn)-Dissolved			100.5		%		80-120	11-DEC-20
WG3460169-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5310955							
WG3460169-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-DEC-20
NH3-L-F-CL								
	Water							
Batch	R5311085							
WG3460077-6	LCS							
Ammonia as N			102.6		%		85-115	10-DEC-20
WG3460077-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-DEC-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-10 LCS								
Nitrite (as N)			104.3		%		90-110	09-DEC-20
WG3459696-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	09-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5310472							
WG3459696-10 LCS								
Nitrate (as N)			104.4		%		90-110	09-DEC-20
WG3459696-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-DEC-20
OH-CL	Water							
Batch	R5318142							
WG3462931-10 MB								
Hydroxide (OH)			<5.0		mg/L		5	15-DEC-20
ORP-CL	Water							
Batch	R5317399							
WG3462273-5 CRM		CL-ORP						
ORP			220		mV		210-230	15-DEC-20
P-T-L-COL-CL	Water							
Batch	R5317617							
WG3462296-14 LCS								
Phosphorus (P)-Total			94.2		%		80-120	15-DEC-20
WG3462296-13 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-20
P-TD-L-COL-CL	Water							
Batch	R5317617							
WG3462296-14 LCS								
Phosphorus (P)-Total Dissolved			94.2		%		80-120	15-DEC-20
WG3462296-13 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	15-DEC-20
PH-CL	Water							
Batch	R5318142							
WG3462931-11 LCS								
pH			6.99		pH		6.9-7.1	15-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5310271							
WG3459208-10 LCS								
Orthophosphate-Dissolved (as P)			105.7		%		80-120	09-DEC-20
WG3459208-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-DEC-20
SO4-IC-N-CL	Water							
Batch	R5310472							
WG3459696-10 LCS								
Sulfate (SO4)			102.5		%		90-110	09-DEC-20
WG3459696-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5317951							
WG3462112-5 LCS								
Total Dissolved Solids			101.9		%		85-115	15-DEC-20
WG3462112-4 MB								
Total Dissolved Solids			<10		mg/L		10	15-DEC-20
TKN-L-F-CL	Water							
Batch	R5311504							
WG3460420-14 LCS								
Total Kjeldahl Nitrogen			106.4		%		75-125	11-DEC-20
WG3460420-18 LCS								
Total Kjeldahl Nitrogen			106.0		%		75-125	11-DEC-20
WG3460420-2 LCS								
Total Kjeldahl Nitrogen			104.9		%		75-125	11-DEC-20
WG3460420-4 LCS								
Total Kjeldahl Nitrogen			104.3		%		75-125	11-DEC-20
WG3460420-6 LCS								
Total Kjeldahl Nitrogen			106.2		%		75-125	11-DEC-20
WG3460420-8 LCS								
Total Kjeldahl Nitrogen			103.3		%		75-125	11-DEC-20
WG3460420-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-3 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5311504							
WG3460420-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
WG3460420-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-20
TSS-L-CL	Water							
Batch	R5317910							
WG3461596-2 LCS								
Total Suspended Solids			94.0		%		85-115	15-DEC-20
WG3461596-1 MB								
Total Suspended Solids			<1.0		mg/L		1	15-DEC-20
TURBIDITY-CL	Water							
Batch	R5310377							
WG3459601-14 LCS								
Turbidity			102.4		%		85-115	09-DEC-20
WG3459601-13 MB								
Turbidity			<0.10		NTU		0.1	09-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	08-DEC-20 14:25	15-DEC-20 18:30	0.25	172	hours	EHTR-FM
pH	1	08-DEC-20 14:25	15-DEC-20 13:00	0.25	167	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2538609 were received on 09-DEC-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20201208Q4GW	TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.hackett@teck.com X X X
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com	Email 2:	Annie.Larrivee@teck.com X X X
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allan@teck.com X X X
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.com X X X
				Email 5:	teckcoal@equisonline.com X
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Province	AB
Phone Number	1-250-865-5289	Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403-407-1800	PO number	VPO00678877



L2538609-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-C+VI	
EV_GV3GW_WG_2020_Q4_NP	EV_GC3GW	WG	N	12/08/20	14:25	G	5	1		1	1			1					1	
							Total	5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	December 8, 2020	<i>Kimberley Hackett</i>	12-19 4:00
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #		
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		Sampler's Signature	Date/Time
	<i>Kimberley Hackett</i>			December 8, 2020

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Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 10-DEC-20
Report Date: 22-DEC-20 13:05 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2539048
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201209Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2539048-1 WG 09-DEC-20 11:00 EV_GV3GWS_WG _2020_Q4_NP	L2539048-2 WG 09-DEC-20 12:45 EV_MW_GC1B_W G_2020_Q4_NP	L2539048-3 WG 09-DEC-20 14:30 EV_ER1GWS_WG _2020_Q4_NP	L2539048-4 WG 09-DEC-20 14:25 EV_ER1GWD_WG _2020_Q4_NP	
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	487	1030	501	425
	Hardness (as CaCO3) (mg/L)	274	559	254	227
	pH (pH)	8.34	8.22	8.26	8.24
	ORP (mV)	429	336	435	445
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	3.5
	Total Dissolved Solids (mg/L)	302 ^{DLHC}	735 ^{DLHC}	333 ^{DLHC}	258 ^{DLHC}
	Turbidity (NTU)	<0.10	0.68	<0.10	0.46
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	2.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	250	345	192	205
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.6	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	256	345	192	205
	Ammonia as N (mg/L)	<0.0050	0.0696	<0.0050	0.0411
	Bicarbonate (HCO3) (mg/L)	305	421	234	249
	Bromide (Br) (mg/L)	<0.050	<0.25 ^{DLHC}	<0.050	0.162
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.52	24.5 ^{DLHC}	8.37	5.18
	Fluoride (F) (mg/L)	0.324	0.18 ^{DLHC}	0.168	0.247
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.7	94.1	93.7	94.7
	Nitrate (as N) (mg/L)	0.0656	0.029 ^{DLHC}	1.77	0.544
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 ^{DLHC}	<0.0010	0.0012
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.092	0.290	0.149
	Total Nitrogen (mg/L)	0.066	0.121	2.06	0.695
	Orthophosphate-Dissolved (as P) (mg/L)	0.0016	0.0016	0.0031	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	0.0036 ^{RRV}	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0022	<0.0020 ^{DLHC}	0.0021 ^{RRV}	0.0063
	Sulfate (SO4) (mg/L)	34.3	248	72.4	32.6
	Anion Sum (meq/L)	5.86	12.7	5.71	4.96
	Cation Sum (meq/L)	5.60	12.0	5.35	4.70
	Cation - Anion Balance (%)	-2.2	-3.0	-3.3	-2.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.60	1.30	<0.50	0.90
	Total Organic Carbon (mg/L)	<0.50	1.12	<0.50	0.87
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0047

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2539048-1 WG 09-DEC-20 11:00 EV_GV3GWS_WG _2020_Q4_NP	L2539048-2 WG 09-DEC-20 12:45 EV_MW_GC1B_W G_2020_Q4_NP	L2539048-3 WG 09-DEC-20 14:30 EV_ER1GWS_WG _2020_Q4_NP	L2539048-4 WG 09-DEC-20 14:25 EV_ER1GWD_WG _2020_Q4_NP	
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	0.00022
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00016	0.00011	0.00018
	Barium (Ba)-Dissolved (mg/L)	0.0660	0.0908	0.108	0.0793
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	0.053	<0.010	0.011
	Cadmium (Cd)-Dissolved (ug/L)	0.0080	0.111	0.0131	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	72.2	119	66.4	60.0
	Chromium (Cr)-Dissolved (mg/L)	0.00016	<0.00010	0.00028	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.50	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00033	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.098	<0.010	0.011
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0079	0.0396	0.0075	0.0080
	Magnesium (Mg)-Dissolved (mg/L)	22.7	63.4	21.4	18.6
	Manganese (Mn)-Dissolved (mg/L)	0.00019	0.775	<0.00010	0.0106
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000882	0.00197	0.000872	0.00197
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00365	<0.00050	0.00084
	Potassium (K)-Dissolved (mg/L)	1.02	2.20	0.748	1.03
	Selenium (Se)-Dissolved (ug/L)	2.60	1.32	9.56	1.78
	Silicon (Si)-Dissolved (mg/L)	3.19	3.98	2.14	3.19
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.37	16.9	5.99	3.21
	Strontium (Sr)-Dissolved (mg/L)	0.206	0.793	0.202	0.202
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000056	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00127	0.00151	0.00101	0.00111
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0019	<0.0010	0.0044

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2539048-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L2539048-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration

Reference Information

EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201209Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2539048

Report Date: 22-DEC-20

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5318453							
WG3463291-5	LCS							
Acidity (as CaCO3)			101.2		%		85-115	16-DEC-20
WG3463291-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	16-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5318462							
WG3463293-5	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	16-DEC-20
WG3463293-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5313257							
WG3460884-2	LCS							
Beryllium (Be)-Dissolved			97.1		%		80-120	13-DEC-20
WG3460884-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-DEC-20
BIC-CL								
	Water							
Batch	R5318462							
WG3463293-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	16-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5311126							
WG3460411-10	LCS							
Bromide (Br)			98.3		%		85-115	10-DEC-20
WG3460411-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	10-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5318801							
WG3463683-7	DUP	L2539048-4						
Dissolved Organic Carbon		0.90	1.02		mg/L	13	20	16-DEC-20
WG3463683-6	LCS							
Dissolved Organic Carbon			96.6		%		80-120	16-DEC-20
WG3463683-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-20
WG3463683-8	MS	L2539048-4						
Dissolved Organic Carbon			88.2		%		70-130	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5318801							
WG3463683-7	DUP	L2539048-4						
Total Organic Carbon		0.87	0.83		mg/L	4.3	20	16-DEC-20
WG3463683-6	LCS							
Total Organic Carbon			99.5		%		80-120	16-DEC-20
WG3463683-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-20
WG3463683-8	MS	L2539048-4						
Total Organic Carbon			92.3		%		70-130	16-DEC-20
CL-L-IC-N-CL								
Water								
Batch	R5311126							
WG3460411-10	LCS							
Chloride (Cl)			104.1		%		85-115	10-DEC-20
WG3460411-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	10-DEC-20
CO3-CL								
Water								
Batch	R5318462							
WG3463293-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	16-DEC-20
EC-L-PCT-CL								
Water								
Batch	R5318462							
WG3463293-5	LCS							
Conductivity (@ 25C)			101.6		%		90-110	16-DEC-20
WG3463293-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-DEC-20
F-IC-N-CL								
Water								
Batch	R5311126							
WG3460411-10	LCS							
Fluoride (F)			101.3		%		90-110	10-DEC-20
WG3460411-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	10-DEC-20
HG-D-CVAA-VA								
Water								
Batch	R5312918							
WG3460938-6	LCS							
Mercury (Hg)-Dissolved			96.0		%		80-120	12-DEC-20
WG3460938-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-DEC-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5312918							
WG3460938-8 MS		L2539048-1						
Mercury (Hg)-Dissolved			94.0		%		70-130	12-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5313257							
WG3460884-2 LCS								
Aluminum (Al)-Dissolved			100.8		%		80-120	13-DEC-20
Antimony (Sb)-Dissolved			103.4		%		80-120	13-DEC-20
Arsenic (As)-Dissolved			98.1		%		80-120	13-DEC-20
Barium (Ba)-Dissolved			99.2		%		80-120	13-DEC-20
Bismuth (Bi)-Dissolved			106.4		%		80-120	13-DEC-20
Boron (B)-Dissolved			93.3		%		80-120	13-DEC-20
Cadmium (Cd)-Dissolved			103.4		%		80-120	13-DEC-20
Calcium (Ca)-Dissolved			99.6		%		80-120	13-DEC-20
Chromium (Cr)-Dissolved			102.1		%		80-120	13-DEC-20
Cobalt (Co)-Dissolved			105.3		%		80-120	13-DEC-20
Copper (Cu)-Dissolved			102.2		%		80-120	13-DEC-20
Iron (Fe)-Dissolved			94.9		%		80-120	13-DEC-20
Lead (Pb)-Dissolved			103.6		%		80-120	13-DEC-20
Lithium (Li)-Dissolved			104.7		%		80-120	13-DEC-20
Magnesium (Mg)-Dissolved			104.0		%		80-120	13-DEC-20
Manganese (Mn)-Dissolved			98.9		%		80-120	13-DEC-20
Molybdenum (Mo)-Dissolved			97.0		%		80-120	13-DEC-20
Nickel (Ni)-Dissolved			102.7		%		80-120	13-DEC-20
Potassium (K)-Dissolved			103.3		%		80-120	13-DEC-20
Selenium (Se)-Dissolved			102.2		%		80-120	13-DEC-20
Silicon (Si)-Dissolved			89.5		%		60-140	13-DEC-20
Silver (Ag)-Dissolved			103.2		%		80-120	13-DEC-20
Sodium (Na)-Dissolved			102.9		%		80-120	13-DEC-20
Strontium (Sr)-Dissolved			108.6		%		80-120	13-DEC-20
Thallium (Tl)-Dissolved			97.7		%		80-120	13-DEC-20
Tin (Sn)-Dissolved			103.1		%		80-120	13-DEC-20
Titanium (Ti)-Dissolved			98.6		%		80-120	13-DEC-20
Uranium (U)-Dissolved			108.1		%		80-120	13-DEC-20
Vanadium (V)-Dissolved			103.3		%		80-120	13-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5313257							
WG3460884-2	LCS							
Zinc (Zn)-Dissolved			102.3		%		80-120	13-DEC-20
WG3460884-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-DEC-20
NH3-L-F-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5314122							
WG3460796-26	LCS							
Ammonia as N			100.1		%		85-115	11-DEC-20
WG3460796-25	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-DEC-20
NO2-L-IC-N-CL	Water							
Batch	R5311126							
WG3460411-10	LCS							
Nitrite (as N)			104.7		%		90-110	10-DEC-20
WG3460411-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	10-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5311126							
WG3460411-10	LCS							
Nitrate (as N)			104.5		%		90-110	10-DEC-20
WG3460411-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	10-DEC-20
OH-CL	Water							
Batch	R5318462							
WG3463293-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	16-DEC-20
ORP-CL	Water							
Batch	R5318440							
WG3463202-1	CRM	CL-ORP						
ORP			222		mV		210-230	16-DEC-20
P-T-L-COL-CL	Water							
Batch	R5319783							
WG3464682-3	DUP	L2539048-4						
Phosphorus (P)-Total		0.0063	0.0063		mg/L	0.2	20	19-DEC-20
WG3464682-2	LCS							
Phosphorus (P)-Total			95.4		%		80-120	19-DEC-20
WG3464682-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-DEC-20
WG3464682-4	MS	L2539048-4						
Phosphorus (P)-Total			71.7		%		70-130	19-DEC-20
P-TD-L-COL-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-TD-L-COL-CL Water								
Batch	R5319783							
WG3464682-2	LCS							
Phosphorus (P)-Total	Dissolved		95.4		%		80-120	19-DEC-20
WG3464682-1	MB							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	19-DEC-20
PH-CL Water								
Batch	R5318462							
WG3463293-5	LCS							
pH			7.02		pH		6.9-7.1	16-DEC-20
PO4-DO-L-COL-CL Water								
Batch	R5310922							
WG3460084-6	LCS							
Orthophosphate-Dissolved (as P)			98.2		%		80-120	10-DEC-20
WG3460084-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-DEC-20
SO4-IC-N-CL Water								
Batch	R5311126							
WG3460411-10	LCS							
Sulfate (SO4)			102.5		%		90-110	10-DEC-20
WG3460411-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-DEC-20
SOLIDS-TDS-CL Water								
Batch	R5318634							
WG3462777-2	LCS							
Total Dissolved Solids			99.6		%		85-115	16-DEC-20
WG3462777-1	MB							
Total Dissolved Solids			<10		mg/L		10	16-DEC-20
TKN-L-F-CL Water								
Batch	R5313688							
WG3461104-10	LCS							
Total Kjeldahl Nitrogen			101.3		%		75-125	13-DEC-20
WG3461104-14	LCS							
Total Kjeldahl Nitrogen			102.1		%		75-125	13-DEC-20
WG3461104-2	LCS							
Total Kjeldahl Nitrogen			111.0		%		75-125	13-DEC-20
WG3461104-6	LCS							
Total Kjeldahl Nitrogen			109.3		%		75-125	13-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5313688							
WG3461104-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
WG3461104-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-20
TSS-L-CL		Water						
Batch	R5318568							
WG3462776-14 LCS								
Total Suspended Solids			99.9		%		85-115	16-DEC-20
WG3462776-13 MB								
Total Suspended Solids			<1.0		mg/L		1	16-DEC-20
TURBIDITY-CL		Water						
Batch	R5310940							
WG3460058-5 LCS								
Turbidity			95.9		%		85-115	10-DEC-20
WG3460058-4 MB								
Turbidity			<0.10		NTU		0.1	10-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	09-DEC-20 11:00	16-DEC-20 20:55	0.25	178	hours	EHTR-FM
	2	09-DEC-20 12:45	16-DEC-20 20:55	0.25	176	hours	EHTR-FM
	3	09-DEC-20 14:30	16-DEC-20 20:55	0.25	174	hours	EHTR-FM
	4	09-DEC-20 14:25	16-DEC-20 20:55	0.25	174	hours	EHTR-FM
pH	1	09-DEC-20 11:00	16-DEC-20 13:00	0.25	170	hours	EHTR-FM
	2	09-DEC-20 12:45	16-DEC-20 13:00	0.25	168	hours	EHTR-FM
	3	09-DEC-20 14:30	16-DEC-20 13:00	0.25	167	hours	EHTR-FM
	4	09-DEC-20 14:25	16-DEC-20 13:00	0.25	167	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2539048 were received on 10-DEC-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201209Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.Hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.ca	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None											
								NO	Yes	Yes	No	No	No	No	Yes	Yes			
								TECKCOAL-ROUTINE-VA (E305.1)	Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate	HCl	NaOH
								TKN/TOC (APHA 4500-NORG)	DOC (APHA 5310)	Dissolved Phosphorus		Total Nitrogen for BC (NO2 and NO3)		T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI	
EV_GV3GWS_WG_2020_Q4_NP	EV_GC3GWS	WG	N	12/09/20	11:00	G	5	1	1	1	1	1					1		
EV_MW_GCIB_WG_2020_Q4_NP	EV_MW_GCIB	WG	N	12/09/20	12:45	G	5	1	1	1	1						1		
EV_ERIGWS_WG_2020_Q4_NP	EV_ERIGWS	WG	N	12/09/20	14:30	G	5	1	1	1	1						1		
EV_ERIGWD_WG_2020_Q4_NP	EV_ERIGWD	WG	N	12/09/20	14:25	G	5	1	1	1	1						1		
							Total	20											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett/Jason Gravelle	December 9, 2020	<i>[Signature]</i>	12/9/20 8:45

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	Kimberley Hackett/Jason Gravelle
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>
Emergency (1 Business Day) - 100% surcharge		Date/Time	December 9, 2020
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



L2539048-COFC

3



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 15-DEC-20
Report Date: 28-DEC-20 17:19 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2540725
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201214Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2540725-1 WG 12-DEC-20 11:20 EV_MW_GV4A_W G_2020_Q4_NP	L2540725-2 WG 12-DEC-20 10:45 EV_MW_GV4B_W G_2020_Q4_NP	L2540725-3 WG 12-DEC-20 13:50 EV_MW_SPR1B_ WG_2020_Q4_NP	L2540725-4 WG 12-DEC-20 10:50 EV_EC5GW_WG_ 2020_Q4_NP	L2540725-5 WG 12-DEC-20 10:55 EV_EC6GW_WG_ 2020_Q4_NP	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (@ 25C) (uS/cm)	669	537	462	534	<2.0
	Hardness (as CaCO3) (mg/L)	330	312	138	313	<0.50
	pH (pH)	7.95	8.22	8.08	8.24	5.66
	ORP (mV)	274	305	404	428	414
	Total Suspended Solids (mg/L)	16.6	<1.0	1910 ^{DLHC}	3.0	<1.0
	Total Dissolved Solids (mg/L)	435 ^{DLHC}	345 ^{DLHC}	544 ^{DLHC}	343 ^{DLHC}	<10
	Turbidity (NTU)	5.94	0.14	4060	0.17	<0.10
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.7	1.1	2.4	<1.0	1.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	278	258	428	259	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	278	258	428	259	<1.0
	Ammonia as N (mg/L)	0.0116	<0.0050	0.185	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	340	315	523	316	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	2.96	0.87	1.02	0.87	<0.10
	Fluoride (F) (mg/L)	0.698	0.567	1.19	0.581	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	102	99.6	55.5 ^{RRV}	99.6	0.0
	Nitrate and Nitrite (as N) (mg/L)	0.0170	0.0404	<0.0051	0.0446	<0.0051
	Nitrate (as N) (mg/L)	0.0160 ^{HTA}	0.0404 ^{HTA}	<0.0050 ^{HTA}	0.0435 ^{HTA}	<0.0050 ^{HTA}
	Nitrite (as N) (mg/L)	0.0010 ^{HTA}	<0.0010 ^{HTA}	<0.0010 ^{HTA}	0.0011 ^{HTA}	<0.0010 ^{HTA}
	Total Kjeldahl Nitrogen (mg/L)	0.082	<0.050	1.45 ^{DLM}	<0.050	<0.050
	Total Nitrogen (mg/L)	0.099	<0.050	1.45	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010	0.0023	0.0018	0.0022	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	0.0020 ^{DLM}	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0092	<0.0020	2.02 ^{DLM}	0.0020	<0.0020
	Sulfate (SO4) (mg/L)	105	58.7	60.9	58.4	<0.30
	Anion Sum (meq/L)	7.87	6.44	9.91	6.46	<0.10
	Cation Sum (meq/L)	8.02	6.41	5.50	6.43	<0.10
	Cation - Anion Balance (%)	0.9	-0.2	-28.7	-0.2	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.61	0.59	3.02	1.01	<0.50
	Total Organic Carbon (mg/L)	3.55	0.90	29 ^{DLM}	0.99	<0.50
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2540725-6 WG 12-DEC-20 11:00 EV_EC7GW_WG_ 2020_Q4_NP			
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.55			
	ORP (mV)	344			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	<5.0			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	<0.10			
	Fluoride (F) (mg/L)	<0.020			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	0.0			
	Nitrate and Nitrite (as N) (mg/L)	<0.0051			
	Nitrate (as N) (mg/L)	<0.0050 ^{HTA}			
	Nitrite (as N) (mg/L)	<0.0010 ^{HTA}			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2540725-1 WG 12-DEC-20 11:20 EV_MW_GV4A_W G_2020_Q4_NP	L2540725-2 WG 12-DEC-20 10:45 EV_MW_GV4B_W G_2020_Q4_NP	L2540725-3 WG 12-DEC-20 13:50 EV_MW_SPR1B_ WG_2020_Q4_NP	L2540725-4 WG 12-DEC-20 10:50 EV_EC5GW_WG_ 2020_Q4_NP	L2540725-5 WG 12-DEC-20 10:55 EV_EC6GW_WG_ 2020_Q4_NP
Grouping	Analyte				
WATER					
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00044	<0.00010	0.00101	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0451	0.0615	0.0360	0.0611
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.015	<0.010	0.154	0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0057	<0.010 ^{DLM}	0.0080
	Calcium (Ca)-Dissolved (mg/L)	79.0	74.9	34.4	75.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.16	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.022	<0.010	0.245	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000074	<0.000050	0.000071
	Lithium (Li)-Dissolved (mg/L)	0.0124	0.0100	0.0125	0.0100
	Magnesium (Mg)-Dissolved (mg/L)	32.3	30.4	12.7	30.5
	Manganese (Mn)-Dissolved (mg/L)	0.0632	0.00030	0.101	0.00030
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00240	0.00158	0.0255	0.00160
	Nickel (Ni)-Dissolved (mg/L)	0.00089	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	1.51	1.14	1.19	1.14
	Selenium (Se)-Dissolved (ug/L)	4.59	3.61	<0.050	3.61
	Silicon (Si)-Dissolved (mg/L)	4.61	4.35	4.42	4.31
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	31.6	3.28	61.9	3.27
	Strontium (Sr)-Dissolved (mg/L)	0.336	0.269	0.795	0.272
	Thallium (Tl)-Dissolved (mg/L)	0.000017	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00254	0.00136	0.00221	0.00138
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2540725-6 WG 12-DEC-20 11:00 EV_EC7GW_WG_ 2020_Q4_NP			
Grouping	Analyte				
WATER					
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2540725-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2540725-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2540725-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2540725-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2540725-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTA	Analytical holding time was exceeded.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

Reference Information

F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
P-TD-L-COL-CL	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201214Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2540725

Report Date: 28-DEC-20

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5319830							
WG3464773-5	LCS							
Acidity (as CaCO3)			105.1		%		85-115	19-DEC-20
WG3464773-4	MB							
Acidity (as CaCO3)			1.2		mg/L		2	19-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5321499							
WG3466190-5	LCS							
Alkalinity, Total (as CaCO3)			103.4		%		85-115	21-DEC-20
WG3466190-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-3	DUP	L2540725-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-DEC-20
WG3463860-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	18-DEC-20
WG3463860-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-DEC-20
WG3463860-4	MS	L2540725-2						
Beryllium (Be)-Dissolved			95.4		%		70-130	18-DEC-20
BIC-CL								
	Water							
Batch	R5321499							
WG3466190-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5318696							
WG3463413-6	LCS							
Bromide (Br)			99.98		%		85-115	16-DEC-20
WG3463413-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	16-DEC-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5323639							
WG3466735-3	DUP	L2540725-6						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-DEC-20
WG3466735-2	LCS							
Dissolved Organic Carbon			113.4		%		80-120	22-DEC-20



Quality Control Report

Workorder: L2540725

Report Date: 28-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5323639							
WG3466735-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-DEC-20
WG3466735-4	MS	L2540725-6						
Dissolved Organic Carbon			94.5		%		70-130	22-DEC-20
C-TOT-ORG-LOW-CL Water								
Batch	R5323639							
WG3466735-3	DUP	L2540725-6						
Total Organic Carbon			<0.50	RPD-NA	mg/L	N/A	20	22-DEC-20
WG3466735-2	LCS							
Total Organic Carbon			117.2		%		80-120	22-DEC-20
WG3466735-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-DEC-20
WG3466735-4	MS	L2540725-6						
Total Organic Carbon			101.5		%		70-130	22-DEC-20
CL-L-IC-N-CL Water								
Batch	R5318696							
WG3463413-6	LCS							
Chloride (Cl)			100.9		%		85-115	16-DEC-20
WG3463413-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	16-DEC-20
CO3-CL Water								
Batch	R5321499							
WG3466190-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-DEC-20
EC-L-PCT-CL Water								
Batch	R5321499							
WG3466190-5	LCS							
Conductivity (@ 25C)			97.7		%		90-110	21-DEC-20
WG3466190-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-DEC-20
F-IC-N-CL Water								
Batch	R5318696							
WG3463413-6	LCS							
Fluoride (F)			93.7		%		90-110	16-DEC-20
WG3463413-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	16-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5319094							
WG3463949-2	LCS							
Mercury (Hg)-Dissolved			99.4		%		80-120	18-DEC-20
WG3463949-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-DEC-20
MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-3	DUP	L2540725-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-DEC-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-20
Arsenic (As)-Dissolved		0.00044	0.00045		mg/L	0.9	20	18-DEC-20
Barium (Ba)-Dissolved		0.0451	0.0445		mg/L	1.4	20	18-DEC-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-DEC-20
Boron (B)-Dissolved		0.015	0.015		mg/L	2.1	20	18-DEC-20
Cadmium (Cd)-Dissolved		<0.0000050	0.0000066	RPD-NA	mg/L	N/A	20	18-DEC-20
Calcium (Ca)-Dissolved		79.0	79.2		mg/L	0.2	20	18-DEC-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-20
Cobalt (Co)-Dissolved		0.00016	0.00015		mg/L	4.9	20	18-DEC-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-DEC-20
Iron (Fe)-Dissolved		0.022	0.022		mg/L	0.9	20	18-DEC-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-DEC-20
Lithium (Li)-Dissolved		0.0124	0.0120		mg/L	3.2	20	18-DEC-20
Magnesium (Mg)-Dissolved		32.3	31.6		mg/L	2.1	20	18-DEC-20
Manganese (Mn)-Dissolved		0.0632	0.0631		mg/L	0.1	20	18-DEC-20
Molybdenum (Mo)-Dissolved		0.00240	0.00243		mg/L	1.2	20	18-DEC-20
Nickel (Ni)-Dissolved		0.00089	0.00088		mg/L	1.1	20	18-DEC-20
Potassium (K)-Dissolved		1.51	1.52		mg/L	0.4	20	18-DEC-20
Selenium (Se)-Dissolved		0.00459	0.00454		mg/L	1.1	20	18-DEC-20
Silicon (Si)-Dissolved		4.61	4.62		mg/L	0.2	20	18-DEC-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-DEC-20
Sodium (Na)-Dissolved		31.6	31.2		mg/L	1.2	20	18-DEC-20
Strontium (Sr)-Dissolved		0.336	0.334		mg/L	0.5	20	18-DEC-20
Thallium (Tl)-Dissolved		0.000017	0.000017		mg/L	1.8	20	18-DEC-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-DEC-20
Uranium (U)-Dissolved		0.00254	0.00250		mg/L	1.4	20	18-DEC-20



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MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-3	DUP	L2540725-1						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-DEC-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-DEC-20
WG3463860-2	LCS							
Aluminum (Al)-Dissolved			99.6		%		80-120	18-DEC-20
Antimony (Sb)-Dissolved			101.9		%		80-120	18-DEC-20
Arsenic (As)-Dissolved			99.9		%		80-120	18-DEC-20
Barium (Ba)-Dissolved			107.4		%		80-120	18-DEC-20
Bismuth (Bi)-Dissolved			100.9		%		80-120	18-DEC-20
Boron (B)-Dissolved			96.5		%		80-120	18-DEC-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	18-DEC-20
Calcium (Ca)-Dissolved			100.7		%		80-120	18-DEC-20
Chromium (Cr)-Dissolved			99.0		%		80-120	18-DEC-20
Cobalt (Co)-Dissolved			100.7		%		80-120	18-DEC-20
Copper (Cu)-Dissolved			99.2		%		80-120	18-DEC-20
Iron (Fe)-Dissolved			102.3		%		80-120	18-DEC-20
Lead (Pb)-Dissolved			95.1		%		80-120	18-DEC-20
Lithium (Li)-Dissolved			102.8		%		80-120	18-DEC-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	18-DEC-20
Manganese (Mn)-Dissolved			99.7		%		80-120	18-DEC-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	18-DEC-20
Nickel (Ni)-Dissolved			98.2		%		80-120	18-DEC-20
Potassium (K)-Dissolved			103.0		%		80-120	18-DEC-20
Selenium (Se)-Dissolved			101.5		%		80-120	18-DEC-20
Silicon (Si)-Dissolved			98.0		%		60-140	18-DEC-20
Silver (Ag)-Dissolved			101.8		%		80-120	18-DEC-20
Sodium (Na)-Dissolved			108.8		%		80-120	18-DEC-20
Strontium (Sr)-Dissolved			104.5		%		80-120	18-DEC-20
Thallium (Tl)-Dissolved			97.6		%		80-120	18-DEC-20
Tin (Sn)-Dissolved			99.6		%		80-120	18-DEC-20
Titanium (Ti)-Dissolved			97.7		%		80-120	18-DEC-20
Uranium (U)-Dissolved			100.2		%		80-120	18-DEC-20
Vanadium (V)-Dissolved			101.9		%		80-120	18-DEC-20
Zinc (Zn)-Dissolved			100.9		%		80-120	18-DEC-20
WG3463860-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-1	MB	NP						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20
WG3463860-4	MS	L2540725-2						
Aluminum (Al)-Dissolved			96.1		%		70-130	18-DEC-20
Antimony (Sb)-Dissolved			99.0		%		70-130	18-DEC-20
Arsenic (As)-Dissolved			101.5		%		70-130	18-DEC-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	18-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-4 MS		L2540725-2						
Bismuth (Bi)-Dissolved			87.2		%		70-130	18-DEC-20
Boron (B)-Dissolved			97.8		%		70-130	18-DEC-20
Cadmium (Cd)-Dissolved			103.2		%		70-130	18-DEC-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-DEC-20
Chromium (Cr)-Dissolved			97.1		%		70-130	18-DEC-20
Cobalt (Co)-Dissolved			94.2		%		70-130	18-DEC-20
Copper (Cu)-Dissolved			91.9		%		70-130	18-DEC-20
Iron (Fe)-Dissolved			95.0		%		70-130	18-DEC-20
Lead (Pb)-Dissolved			89.6		%		70-130	18-DEC-20
Lithium (Li)-Dissolved			99.7		%		70-130	18-DEC-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	18-DEC-20
Manganese (Mn)-Dissolved			97.0		%		70-130	18-DEC-20
Molybdenum (Mo)-Dissolved			97.7		%		70-130	18-DEC-20
Nickel (Ni)-Dissolved			92.3		%		70-130	18-DEC-20
Potassium (K)-Dissolved			98.8		%		70-130	18-DEC-20
Selenium (Se)-Dissolved			105.4		%		70-130	18-DEC-20
Silicon (Si)-Dissolved			92.6		%		70-130	18-DEC-20
Silver (Ag)-Dissolved			95.0		%		70-130	18-DEC-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	18-DEC-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	18-DEC-20
Thallium (Tl)-Dissolved			91.8		%		70-130	18-DEC-20
Tin (Sn)-Dissolved			97.8		%		70-130	18-DEC-20
Titanium (Ti)-Dissolved			97.5		%		70-130	18-DEC-20
Uranium (U)-Dissolved			98.9		%		70-130	18-DEC-20
Vanadium (V)-Dissolved			100.8		%		70-130	18-DEC-20
Zinc (Zn)-Dissolved			100.7		%		70-130	18-DEC-20
NH3-L-F-CL								
	Water							
Batch	R5322235							
WG3466544-26 LCS								
Ammonia as N			91.9		%		85-115	23-DEC-20
WG3466544-25 MB								
Ammonia as N			<0.0050		mg/L		0.005	23-DEC-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5318696							
WG3463413-6	LCS							
Nitrite (as N)			97.9		%		90-110	16-DEC-20
WG3463413-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-DEC-20
NO3-L-IC-N-CL	Water							
Batch	R5318696							
WG3463413-6	LCS							
Nitrate (as N)			95.9		%		90-110	16-DEC-20
WG3463413-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-DEC-20
OH-CL	Water							
Batch	R5321499							
WG3466190-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-DEC-20
ORP-CL	Water							
Batch	R5321399							
WG3466050-3	CRM	CL-ORP						
ORP			223		mV		210-230	22-DEC-20
WG3466050-4	DUP	L2540725-1						
ORP		274	263	J	mV	10.5	15	22-DEC-20
P-T-L-COL-CL	Water							
Batch	R5320070							
WG3464789-14	LCS							
Phosphorus (P)-Total			97.8		%		80-120	20-DEC-20
WG3464789-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-DEC-20
P-TD-L-COL-CL	Water							
Batch	R5320070							
WG3464789-16	DUP	L2540725-1						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	21-DEC-20
WG3464789-14	LCS							
Phosphorus (P)-Total Dissolved			97.8		%		80-120	20-DEC-20
WG3464789-13	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	20-DEC-20
WG3464789-15	MS	L2540725-1						
Phosphorus (P)-Total Dissolved			104.3		%		70-130	20-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5321499							
WG3466190-5	LCS							
pH			7.02		pH		6.9-7.1	21-DEC-20
PO4-DO-L-COL-CL	Water							
Batch	R5317882							
WG3462606-14	LCS							
Orthophosphate-Dissolved (as P)			101.2		%		80-120	15-DEC-20
WG3462606-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-DEC-20
SO4-IC-N-CL	Water							
Batch	R5318696							
WG3463413-6	LCS							
Sulfate (SO4)			100.1		%		90-110	16-DEC-20
WG3463413-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5319808							
WG3464594-5	LCS							
Total Dissolved Solids			92.2		%		85-115	19-DEC-20
WG3464594-4	MB							
Total Dissolved Solids			<10		mg/L		10	19-DEC-20
TKN-L-F-CL	Water							
Batch	R5319840							
WG3464793-2	LCS							
Total Kjeldahl Nitrogen			110.0		%		75-125	20-DEC-20
WG3464793-6	LCS							
Total Kjeldahl Nitrogen			105.4		%		75-125	20-DEC-20
WG3464793-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-DEC-20
WG3464793-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-DEC-20
TSS-L-CL	Water							
Batch	R5319797							
WG3464595-4	LCS							
Total Suspended Solids			90.9		%		85-115	19-DEC-20
WG3464595-3	MB							
Total Suspended Solids			<1.0		mg/L		1	19-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R5318369							
WG3463155-3	DUP	L2540725-3						
Turbidity		4060	4090		NTU	0.6	15	16-DEC-20
WG3463155-2	LCS							
Turbidity			96.4		%		85-115	16-DEC-20
WG3463155-8	LCS							
Turbidity			95.4		%		85-115	16-DEC-20
WG3463155-1	MB							
Turbidity			<0.10		NTU		0.1	16-DEC-20
WG3463155-7	MB							
Turbidity			<0.10		NTU		0.1	16-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	12-DEC-20 11:20	22-DEC-20 14:00	0.25	243	hours	EHTR-FM
	2	12-DEC-20 10:45	22-DEC-20 14:00	0.25	243	hours	EHTR-FM
	3	12-DEC-20 13:50	22-DEC-20 14:00	0.25	240	hours	EHTR-FM
	4	12-DEC-20 10:50	22-DEC-20 14:00	0.25	243	hours	EHTR-FM
	5	12-DEC-20 10:55	22-DEC-20 14:00	0.25	243	hours	EHTR-FM
	6	12-DEC-20 11:00	22-DEC-20 14:00	0.25	243	hours	EHTR-FM
Turbidity							
	1	12-DEC-20 11:20	16-DEC-20 07:00	3	4	days	EHTL
	2	12-DEC-20 10:45	16-DEC-20 07:00	3	4	days	EHTL
	3	12-DEC-20 13:50	16-DEC-20 07:00	3	4	days	EHTL
	4	12-DEC-20 10:50	16-DEC-20 07:00	3	4	days	EHTL
	5	12-DEC-20 10:55	16-DEC-20 07:00	3	4	days	EHTL
	6	12-DEC-20 11:00	16-DEC-20 07:00	3	4	days	EHTL
pH							
	1	12-DEC-20 11:20	21-DEC-20 15:00	0.25	220	hours	EHTR-FM
	2	12-DEC-20 10:45	21-DEC-20 15:00	0.25	220	hours	EHTR-FM
	3	12-DEC-20 13:50	23-DEC-20 15:00	0.25	265	hours	EHTR-FM
	4	12-DEC-20 10:50	21-DEC-20 15:00	0.25	220	hours	EHTR-FM
	5	12-DEC-20 10:55	21-DEC-20 15:00	0.25	220	hours	EHTR-FM
	6	12-DEC-20 11:00	21-DEC-20 15:00	0.25	220	hours	EHTR-FM

Anions and Nutrients

Nitrate in Water by IC (Low Level)

1	12-DEC-20 11:20	16-DEC-20 15:03	3	4	days	EHTL
2	12-DEC-20 10:45	16-DEC-20 15:03	3	4	days	EHTL
3	12-DEC-20 13:50	16-DEC-20 15:03	3	4	days	EHTL
4	12-DEC-20 10:50	16-DEC-20 15:03	3	4	days	EHTL
5	12-DEC-20 10:55	16-DEC-20 15:03	3	4	days	EHTL
6	12-DEC-20 11:00	16-DEC-20 15:03	3	4	days	EHTL

Nitrite in Water by IC (Low Level)

1	12-DEC-20 11:20	16-DEC-20 15:03	3	4	days	EHTL
2	12-DEC-20 10:45	16-DEC-20 15:03	3	4	days	EHTL
3	12-DEC-20 13:50	16-DEC-20 15:03	3	4	days	EHTL
4	12-DEC-20 10:50	16-DEC-20 15:03	3	4	days	EHTL
5	12-DEC-20 10:55	16-DEC-20 15:03	3	4	days	EHTL
6	12-DEC-20 11:00	16-DEC-20 15:03	3	4	days	EHTL

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2540725 were received on 15-DEC-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

Quality Control Report

Workorder: L2540725

Report Date: 28-DEC-20

Page 12 of 12

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20201214Q4GW **TURNAROUND TIME:** **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filter	No	Yes	Yes	No	No	No	No	Yes	Yes			
								PRESERV	Nitric	Sulphuric	Sulphuric	NO	Sodium Bisulphate	HCl	NaOH					
								ANALYSIS	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MW_GV4A_WG_2020_Q4_NP	EV_MW_GC4A	WG	N	12/12/20	11:20	G	5		1	1	1	1					1			
EV_MW_GV4B_WG_2020_Q4_NP	EV_MW_GV4B	WG	N	12/12/20	10:45	G	5		1	1	1	1					1			
EV_MW_SPR1B_WG_2020_Q4_NP	EV_MW_SPR1B	WG	N	12/12/20	13:50	G	5		1	1	1	1					1			
EV_EC5GW_WG_2020_Q4_NP	EV_EC5GW	WG	N	12/12/20	10:50	G	5		1	1	1	1					1			
EV_EC6GW_WG_2020_Q4_NP	EV_EC6GW	WG	N	12/12/20	10:55	G	5		1	1	1	1					1			
EV_EC7GW_WG_2020_Q4_NP	EV_EC7GW	WG	N	12/12/20	11:00	G	5		1	1	1	1					1			
							Total	30												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett/Colby Bracken	December 14, 2020	<i>Sh</i>	12/15 900
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Kimberley Hackett/Colby Bracken	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	December 14, 2020
Emergency (1 Business Day) - 100% surcharge				4
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 16-DEC-20
Report Date: 29-DEC-20 10:30 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2541189
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201215Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

29-DEC-20 10:30 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2541189-1	L2541189-2	L2541189-3	L2541189-4	L2541189-5
					WG	WG	WG	WG	WG
					15-DEC-20	15-DEC-20	15-DEC-20	15-DEC-20	15-DEC-20
					11:45	11:50	11:55	12:00	11:30
					EV_MCGWS_WG_2020_Q4_NP	EV_MW_BC10A_WG_2020_Q4_NP	EV_MW_BC10B_WG_2020_Q4_NP	EV_MW_BC10C_WG_2020_Q4_NP	EV_MCGWD_WG_2020_Q4_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	753	754	<2.0	<2.0	540			
	Hardness (as CaCO3) (mg/L)	382	375	<0.50	<0.50	216			
	pH (pH)	8.04	8.07	6.08	5.56	8.29			
	ORP (mV)	310	314	458	412	274			
	Total Suspended Solids (mg/L)	5.1	3.4	<1.0	<1.0	514			
	Total Dissolved Solids (mg/L)	486 ^{DLHC}	490 ^{DLHC}	<10	<10	405 ^{DLHC}			
	Turbidity (NTU)	26.4	22.2	<0.10	<0.10	278			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	7.5	9.5	1.4	1.6	4.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	256	266	<1.0	<1.0	296			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	256	266	<1.0	<1.0	296			
	Ammonia as N (mg/L)	0.130	0.143	<0.0050	<0.0050	0.316			
	Bicarbonate (HCO3) (mg/L)	312	324	<5.0	<5.0	361			
	Bromide (Br) (mg/L)	0.219	0.230	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	40.7	40.5	<0.10	<0.10	2.00			
	Fluoride (F) (mg/L)	0.339	0.335	<0.020	<0.020	1.01			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	105	101	0.0	0.0	85.8 ^{BL:INT}			
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0091			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0020 ^{DLM}			
	Total Kjeldahl Nitrogen (mg/L)	0.073	0.156	<0.050	<0.050	2.11			
	Total Nitrogen (mg/L)	0.073	0.156	<0.050	<0.050	2.12			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0065			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0072	0.0058	0.0020	<0.0020	0.0055 ^{DLHC}			
	Phosphorus (P)-Total (mg/L)	0.0099	0.0096	<0.0020	<0.0020	0.840			
	Sulfate (SO4) (mg/L)	97.0	96.6	<0.30	<0.30	62.6			
	Anion Sum (meq/L)	8.29	8.48	<0.10	<0.10	7.33			
	Cation Sum (meq/L)	8.68	8.54	<0.10	<0.10	6.29			
Cation - Anion Balance (%)	2.3	0.4	0.0	0.0	-7.7				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.93	1.06	<0.50	<0.50	2.25			
	Total Organic Carbon (mg/L)	1.34	1.41	<0.50	<0.50	3.81			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2541189-1	L2541189-2	L2541189-3	L2541189-4	L2541189-5
					WG	WG	WG	WG	WG
		15-DEC-20	11:45		15-DEC-20	15-DEC-20	15-DEC-20	15-DEC-20	15-DEC-20
					11:50	11:50	11:55	12:00	11:30
					EV_MCGWS_WG_2020_Q4_NP	EV_MW_BC10A_WG_2020_Q4_NP	EV_MW_BC10B_WG_2020_Q4_NP	EV_MW_BC10C_WG_2020_Q4_NP	EV_MCGWD_WG_2020_Q4_NP
Grouping	Analyte								
WATER									
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00017
	Arsenic (As)-Dissolved (mg/L)	0.00158	0.00158	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00103
	Barium (Ba)-Dissolved (mg/L)	0.0243	0.0244	0.00020 ^{RRV}	<0.00010	<0.00010	<0.00010	<0.00010	0.0537
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.028	0.027	<0.010	<0.010	<0.010	<0.010	<0.010	0.074
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	97.7	95.4	<0.050	<0.050	<0.050	<0.050	<0.050	46.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.26
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00024
	Iron (Fe)-Dissolved (mg/L)	2.07	2.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0257	0.0251	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0107
	Magnesium (Mg)-Dissolved (mg/L)	33.6	33.2	<0.10	<0.10	<0.10	<0.10	<0.10	24.1
	Manganese (Mn)-Dissolved (mg/L)	0.127	0.125	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.385
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00317	0.00320	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.0155
	Nickel (Ni)-Dissolved (mg/L)	0.00060	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00262
	Potassium (K)-Dissolved (mg/L)	1.57	1.58	<0.050	<0.050	<0.050	<0.050	<0.050	1.39
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.054
	Silicon (Si)-Dissolved (mg/L)	5.07	5.07	0.063 ^{RRV}	<0.050	<0.050	<0.050	<0.050	5.18
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	20.3	20.6	0.190 ^{RRV}	<0.050	<0.050	<0.050	<0.050	44.1
	Strontium (Sr)-Dissolved (mg/L)	0.322	0.326	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.478
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00116 ^{RRV}	0.00012 ^{RRV}	0.00012 ^{RRV}	0.00012 ^{RRV}	0.00012 ^{RRV}	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00171	0.00172	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00355
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0070

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2541189-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2541189-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2541189-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2541189-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2541189-1, -2, -3, -4, -5
Matrix Spike	Ammonia as N	MS-B	L2541189-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO3)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

F-IC-N-CL Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201215Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2541189

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3
 Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5321502							
WG3466198-5	LCS							
Acidity (as CaCO3)			97.0		%		85-115	21-DEC-20
WG3466198-8	LCS							
Acidity (as CaCO3)			100.9		%		85-115	21-DEC-20
WG3466198-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-DEC-20
WG3466198-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5321499							
WG3466190-11	LCS							
Alkalinity, Total (as CaCO3)			99.0		%		85-115	21-DEC-20
WG3466190-14	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	21-DEC-20
WG3466190-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-DEC-20
WG3466190-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	18-DEC-20
WG3463860-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-DEC-20
BIC-CL								
	Water							
Batch	R5321499							
WG3466190-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-DEC-20
WG3466190-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5318696							
WG3463413-14	LCS							
Bromide (Br)			97.5		%		85-115	16-DEC-20
WG3463413-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	16-DEC-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5323997							
WG3466845-2	LCS							
Dissolved Organic Carbon			99.2		%		80-120	24-DEC-20
WG3466845-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-DEC-20
C-TOT-ORG-LOW-CL Water								
Batch	R5323997							
WG3466845-2	LCS							
Total Organic Carbon			101.7		%		80-120	24-DEC-20
WG3466845-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-DEC-20
CL-L-IC-N-CL Water								
Batch	R5318696							
WG3463413-14	LCS							
Chloride (Cl)			101.0		%		85-115	16-DEC-20
WG3463413-13	MB							
Chloride (Cl)			<0.10		mg/L		0.1	16-DEC-20
CO3-CL Water								
Batch	R5321499							
WG3466190-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-DEC-20
WG3466190-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-DEC-20
EC-L-PCT-CL Water								
Batch	R5321499							
WG3466190-11	LCS							
Conductivity (@ 25C)			103.1		%		90-110	21-DEC-20
WG3466190-14	LCS							
Conductivity (@ 25C)			100.7		%		90-110	21-DEC-20
WG3466190-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-DEC-20
WG3466190-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-DEC-20
F-IC-N-CL Water								
Batch	R5318696							
WG3463413-14	LCS							
Fluoride (F)			93.6		%		90-110	16-DEC-20
WG3463413-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch R5318696								
WG3463413-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	16-DEC-20
HG-D-CVAA-VA								
Water								
Batch R5319094								
WG3463949-10 LCS								
Mercury (Hg)-Dissolved			99.0		%		80-120	18-DEC-20
WG3463949-6 LCS								
Mercury (Hg)-Dissolved			95.8		%		80-120	18-DEC-20
WG3463949-5 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	18-DEC-20
WG3463949-9 MB								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	18-DEC-20
MET-D-CCMS-VA								
Water								
Batch R5318934								
WG3463860-2 LCS								
Aluminum (Al)-Dissolved			99.6		%		80-120	18-DEC-20
Antimony (Sb)-Dissolved			101.9		%		80-120	18-DEC-20
Arsenic (As)-Dissolved			99.9		%		80-120	18-DEC-20
Barium (Ba)-Dissolved			107.4		%		80-120	18-DEC-20
Bismuth (Bi)-Dissolved			100.9		%		80-120	18-DEC-20
Boron (B)-Dissolved			96.5		%		80-120	18-DEC-20
Cadmium (Cd)-Dissolved			104.2		%		80-120	18-DEC-20
Calcium (Ca)-Dissolved			100.7		%		80-120	18-DEC-20
Chromium (Cr)-Dissolved			99.0		%		80-120	18-DEC-20
Cobalt (Co)-Dissolved			100.7		%		80-120	18-DEC-20
Copper (Cu)-Dissolved			99.2		%		80-120	18-DEC-20
Iron (Fe)-Dissolved			102.3		%		80-120	18-DEC-20
Lead (Pb)-Dissolved			95.1		%		80-120	18-DEC-20
Lithium (Li)-Dissolved			102.8		%		80-120	18-DEC-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	18-DEC-20
Manganese (Mn)-Dissolved			99.7		%		80-120	18-DEC-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	18-DEC-20
Nickel (Ni)-Dissolved			98.2		%		80-120	18-DEC-20
Potassium (K)-Dissolved			103.0		%		80-120	18-DEC-20
Selenium (Se)-Dissolved			101.5		%		80-120	18-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-2	LCS							
Silicon (Si)-Dissolved			98.0		%		60-140	18-DEC-20
Silver (Ag)-Dissolved			101.8		%		80-120	18-DEC-20
Sodium (Na)-Dissolved			108.8		%		80-120	18-DEC-20
Strontium (Sr)-Dissolved			104.5		%		80-120	18-DEC-20
Thallium (Tl)-Dissolved			97.6		%		80-120	18-DEC-20
Tin (Sn)-Dissolved			99.6		%		80-120	18-DEC-20
Titanium (Ti)-Dissolved			97.7		%		80-120	18-DEC-20
Uranium (U)-Dissolved			100.2		%		80-120	18-DEC-20
Vanadium (V)-Dissolved			101.9		%		80-120	18-DEC-20
Zinc (Zn)-Dissolved			100.9		%		80-120	18-DEC-20
WG3463860-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5318934							
WG3463860-1	MB	NP						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-DEC-20
Batch	R5320334							
WG3464539-2	LCS							
Aluminum (Al)-Dissolved			103.8		%		80-120	21-DEC-20
Antimony (Sb)-Dissolved			106.3		%		80-120	21-DEC-20
Arsenic (As)-Dissolved			103.3		%		80-120	21-DEC-20
Barium (Ba)-Dissolved			97.9		%		80-120	21-DEC-20
Bismuth (Bi)-Dissolved			104.3		%		80-120	21-DEC-20
Boron (B)-Dissolved			104.1		%		80-120	21-DEC-20
Cadmium (Cd)-Dissolved			97.9		%		80-120	21-DEC-20
Calcium (Ca)-Dissolved			98.4		%		80-120	21-DEC-20
Chromium (Cr)-Dissolved			101.0		%		80-120	21-DEC-20
Cobalt (Co)-Dissolved			101.9		%		80-120	21-DEC-20
Copper (Cu)-Dissolved			99.9		%		80-120	21-DEC-20
Iron (Fe)-Dissolved			89.1		%		80-120	21-DEC-20
Lead (Pb)-Dissolved			103.0		%		80-120	21-DEC-20
Lithium (Li)-Dissolved			100.1		%		80-120	21-DEC-20
Magnesium (Mg)-Dissolved			104.7		%		80-120	21-DEC-20
Manganese (Mn)-Dissolved			100.9		%		80-120	21-DEC-20
Molybdenum (Mo)-Dissolved			98.0		%		80-120	21-DEC-20
Nickel (Ni)-Dissolved			99.1		%		80-120	21-DEC-20
Potassium (K)-Dissolved			101.9		%		80-120	21-DEC-20
Selenium (Se)-Dissolved			96.2		%		80-120	21-DEC-20
Silicon (Si)-Dissolved			97.5		%		60-140	21-DEC-20
Silver (Ag)-Dissolved			95.8		%		80-120	21-DEC-20
Sodium (Na)-Dissolved			106.0		%		80-120	21-DEC-20
Strontium (Sr)-Dissolved			104.2		%		80-120	21-DEC-20
Thallium (Tl)-Dissolved			103.3		%		80-120	21-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5320334							
WG3464539-2	LCS							
Tin (Sn)-Dissolved			99.1		%		80-120	21-DEC-20
Titanium (Ti)-Dissolved			98.3		%		80-120	21-DEC-20
Uranium (U)-Dissolved			99.99		%		80-120	21-DEC-20
Vanadium (V)-Dissolved			102.6		%		80-120	21-DEC-20
Zinc (Zn)-Dissolved			101.8		%		80-120	21-DEC-20
WG3464539-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-DEC-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5322219							
WG3466494-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-DEC-20
P-TD-L-COL-CL	Water							
Batch	R5322219							
WG3466494-10 LCS								
Phosphorus (P)-Total Dissolved			108.5		%		80-120	23-DEC-20
WG3466494-9 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	23-DEC-20
PH-CL	Water							
Batch	R5321499							
WG3466190-11 LCS								
pH			7.03		pH		6.9-7.1	21-DEC-20
WG3466190-14 LCS								
pH			7.03		pH		6.9-7.1	21-DEC-20
PO4-DO-L-COL-CL	Water							
Batch	R5318628							
WG3463086-18 LCS								
Orthophosphate-Dissolved (as P)			107.0		%		80-120	16-DEC-20
WG3463086-17 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-DEC-20
SO4-IC-N-CL	Water							
Batch	R5318696							
WG3463413-14 LCS								
Sulfate (SO4)			100.6		%		90-110	16-DEC-20
WG3463413-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	16-DEC-20
SOLIDS-TDS-CL	Water							
Batch	R5321702							
WG3465809-2 LCS								
Total Dissolved Solids			100.9		%		85-115	22-DEC-20
WG3465809-1 MB								
Total Dissolved Solids			<10		mg/L		10	22-DEC-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R5320752							
WG3465890-5	LCS							
Total Kjeldahl Nitrogen			77.2		%		75-125	21-DEC-20
WG3465890-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-DEC-20
TSS-L-CL	Water							
Batch	R5321596							
WG3465808-2	LCS							
Total Suspended Solids			92.2		%		85-115	22-DEC-20
WG3465808-1	MB							
Total Suspended Solids			<1.0		mg/L		1	22-DEC-20
TURBIDITY-CL	Water							
Batch	R5319066							
WG3463927-9	DUP	L2541189-5						
Turbidity		278	286		NTU	2.8	15	17-DEC-20
WG3463927-2	LCS							
Turbidity			94.9		%		85-115	17-DEC-20
WG3463927-5	LCS							
Turbidity			95.9		%		85-115	17-DEC-20
WG3463927-8	LCS							
Turbidity			94.9		%		85-115	17-DEC-20
WG3463927-1	MB							
Turbidity			<0.10		NTU		0.1	17-DEC-20
WG3463927-4	MB							
Turbidity			<0.10		NTU		0.1	17-DEC-20
WG3463927-7	MB							
Turbidity			<0.10		NTU		0.1	17-DEC-20

Quality Control Report

Workorder: L2541189

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2541189

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	15-DEC-20 11:45	23-DEC-20 13:35	0.25	194	hours	EHTR-FM
	2	15-DEC-20 11:50	23-DEC-20 13:35	0.25	194	hours	EHTR-FM
	3	15-DEC-20 11:55	23-DEC-20 13:35	0.25	194	hours	EHTR-FM
	4	15-DEC-20 12:00	23-DEC-20 13:35	0.25	194	hours	EHTR-FM
	5	15-DEC-20 11:30	23-DEC-20 13:35	0.25	194	hours	EHTR-FM
pH							
	1	15-DEC-20 11:45	21-DEC-20 15:00	0.25	147	hours	EHTR-FM
	2	15-DEC-20 11:50	21-DEC-20 15:00	0.25	147	hours	EHTR-FM
	3	15-DEC-20 11:55	21-DEC-20 15:00	0.25	147	hours	EHTR-FM
	4	15-DEC-20 12:00	21-DEC-20 15:00	0.25	147	hours	EHTR-FM
	5	15-DEC-20 11:30	21-DEC-20 15:00	0.25	148	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2541189 were received on 16-DEC-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20201215Q4GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Annie Larrivee			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Annie.Larrivee@teck.com	X	X	X
Email	Annie.Larrivee@teck.com			Address	2559 29 Street NE			Email 3:	kennedy.allan@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00678877			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FIL	No		Yes		No		No		Yes			
									Nitric		Sulphuric		Sulphuric		NO		Sodium Bisulphate		HCl	
								ANALYSIS	TECK COAL-ROUTINE-VA (E305.1)	Bicarbonate, BI-CL, Carbonate, CO3-CL Hydroxide, OH-CL	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	D-CrVI
EV_MCGWS_WG_2020_Q4_NP	EV_MCGWS	WG	N	12/15/20	11:45	G	5			1	1	1	1						1	
EV_MW_BC10A_WG_2020_Q4_NP	EV_MW_BC10A	WG	N	12/15/20	11:50	G	5		1	1	1	1						1		
EV_MW_BC10B_WG_2020_Q4_NP	EV_MW_BC10B	WG	N	12/15/20	11:55	G	5		1	1	1	1						1		
EV_MW_BC10C_WG_2020_Q4_NP	EV_MW_BC10C	WG	N	12/15/20	12:00	G	5		1	1	1	1						1		
EV_MCGWD_WG_2020_Q4_NP	EV_MCGWD	WG	N	12/15/20	11:30	G	5		1	1	1	1						1		
							Total	25												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	December 15, 2020		

A 12/16/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/>	Jason Gravelle		<i>Jason Gravelle</i>	December 15, 2020
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



Teck Coal Ltd. (Elkview)
ATTN: Annie Larrivee
RR#1 HIGHWAY #3
SPARWOOD BC V1C 4C3

Date Received: 18-DEC-20
Report Date: 30-DEC-20 10:56 (MT)
Version: FINAL

Client Phone: 250-425-8746

Certificate of Analysis

Lab Work Order #: L2541983
Project P.O. #: VPO00678877
Job Reference: ELKVIEW OPERATIONS
C of C Numbers: 20201217Q4GW
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2541983-1	L2541983-2	L2541983-3	L2541983-4	L2541983-5
					WG	WG	WG	WG	WG
					17-DEC-20	17-DEC-20	17-DEC-20	17-DEC-20	17-DEC-20
					10:50	12:10	10:40	13:40	14:25
					EV_MW_SP1A_W G_2020-12-17_NP	EV_MW_SP1B_W G_2020-12-17_NP	EV_MW_SP1C_W G_2020-12-17_NP	EV_MW_MCGWA_ WG_2020-12- 17_NP	EV_MW_MCGWB_ WG_2020-12- 17_NP
Grouping	Analyte								
WATER									
Physical Tests	Conductivity (@ 25C) (uS/cm)	543	432	425	683	704			
	Hardness (as CaCO3) (mg/L)	296	228	217	375	407			
	pH (pH)	8.22	8.13	8.32	8.07	8.13			
	ORP (mV)	214	476	461	371	419			
	Total Suspended Solids (mg/L)	1.6	<1.0	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	342 ^{DLHC}	272 ^{DLHC}	245 ^{DLHC}	396 ^{DLHC}	404 ^{DLHC}			
	Turbidity (NTU)	6.87	<0.10	<0.10	1.02	<0.10			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1.5	1.7	<1.0	4.6	3.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	276	167	177	316	304			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	3.2	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	276	167	180	316	304			
	Ammonia as N (mg/L)	0.690 ^{DLHC}	<0.0050	<0.0050	0.0114	<0.0050			
	Bicarbonate (HCO3) (mg/L)	337	203	215	386	371			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.203	0.127			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	4.28	3.70	6.48	39.1	35.1			
	Fluoride (F) (mg/L)	0.273	0.110	0.107	0.175	0.172			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	97.4	93.9	94.3	101	109			
	Nitrate (as N) (mg/L)	0.0081	1.32	0.381	0.627	3.78			
	Nitrite (as N) (mg/L)	0.0011	<0.0010	<0.0010	0.0030	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.446	0.094	0.071	0.179	0.113			
	Total Nitrogen (mg/L)	0.455	1.42	0.452	0.809	3.89			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	0.0031	0.0032	0.0018	0.0057			
	Phosphorus (P)-Total Dissolved (mg/L)	0.013 ^{DLM}	0.0036	0.0035	0.0033	0.0062 ^{DLM}			
	Phosphorus (P)-Total (mg/L)	0.012 ^{DLM}	0.0042	0.0039	0.0044	0.0071 ^{DLM}			
	Sulfate (SO4) (mg/L)	44.8	76.3	54.1	28.0	39.2			
	Anion Sum (meq/L)	6.59	5.13	4.93	8.06	8.16			
	Cation Sum (meq/L)	6.42	4.81	4.65	8.16	8.86			
Cation - Anion Balance (%)	-1.3	-3.2	-2.9	0.6	4.1				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.81	0.93	0.83	0.89	1.30			
	Total Organic Carbon (mg/L)	0.88	0.90	0.75	0.75	1.07			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2541983-1 WG 17-DEC-20 10:50 EV_MW_SP1A_W G_2020-12-17_NP	L2541983-2 WG 17-DEC-20 12:10 EV_MW_SP1B_W G_2020-12-17_NP	L2541983-3 WG 17-DEC-20 10:40 EV_MW_SP1C_W G_2020-12-17_NP	L2541983-4 WG 17-DEC-20 13:40 EV_MW_MCGWA_ WG_2020-12- 17_NP	L2541983-5 WG 17-DEC-20 14:25 EV_MW_MCGWB_ WG_2020-12- 17_NP
Grouping	Analyte				
WATER					
Dissolved Metals					
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00016	<0.00010
Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00016	0.00012
Barium (Ba)-Dissolved (mg/L)	0.644	0.168	0.162	0.465	0.237
Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.026	<0.010	<0.010	0.033	0.042
Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0085	0.0260	0.0139	0.0845
Calcium (Ca)-Dissolved (mg/L)	75.4	60.2	57.9	94.9	108
Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00016	0.00018	<0.00010	0.00013
Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	0.15	<0.10
Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00033	<0.00020	<0.00020	0.00040
Iron (Fe)-Dissolved (mg/L)	0.578	<0.010	<0.010	0.107	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000068
Lithium (Li)-Dissolved (mg/L)	0.0869	0.0070	0.0083	0.0217	0.0176
Magnesium (Mg)-Dissolved (mg/L)	26.2	18.7	17.4	33.5	33.5
Manganese (Mn)-Dissolved (mg/L)	0.0586	<0.00010	<0.00010	0.0310	0.00024
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.000405	0.000906	0.000807	0.00348	0.00374
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00131	0.00175
Potassium (K)-Dissolved (mg/L)	3.10	0.789	0.796	2.32	2.52
Selenium (Se)-Dissolved (ug/L)	<0.050	5.56	3.38	0.984	1.47
Silicon (Si)-Dissolved (mg/L)	3.03	2.85	2.75	5.44	5.06
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	8.89	5.68	7.08	13.7	15.3
Strontium (Sr)-Dissolved (mg/L)	0.283	0.158	0.153	0.439	0.348
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000016	0.000017
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved (mg/L)	0.000110	0.000720	0.000696	0.000651	0.000768
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0013	0.0015

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2541983-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-BC-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-CALC-CL Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

NH3-L-F-CL Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-CL Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-CL Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OH-CL Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

ORP-CL Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

P-T-L-COL-CL Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-L-COL-CL Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PH-CL Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

PO4-DO-L-COL-CL Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-CL Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-CL Water Total Dissolved Solids APHA 2540 C

Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

TECKCOAL-IONBAL-CL Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

20201217Q4GW

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2541983

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Client: Teck Coal Ltd. (Elkview)
 RR#1 HIGHWAY #3
 SPARWOOD BC V1C 4C3

Contact: Annie Larrivee

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5325236							
WG3467235-11	LCS							
Acidity (as CaCO3)			111.8		%		85-115	28-DEC-20
WG3467235-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	28-DEC-20
ALK-MAN-CL								
	Water							
Batch	R5325222							
WG3467227-20	LCS							
Alkalinity, Total (as CaCO3)			101.2		%		85-115	29-DEC-20
WG3467227-19	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-DEC-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5322757							
WG3465406-3	DUP	L2541983-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	24-DEC-20
WG3465406-2	LCS							
Beryllium (Be)-Dissolved			101.3		%		80-120	24-DEC-20
WG3465406-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-DEC-20
WG3465406-4	MS	L2541983-1						
Beryllium (Be)-Dissolved			103.0		%		70-130	24-DEC-20
BIC-CL								
	Water							
Batch	R5325222							
WG3467227-19	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-DEC-20
BR-L-IC-N-CL								
	Water							
Batch	R5320962							
WG3465851-10	LCS							
Bromide (Br)			98.7		%		85-115	18-DEC-20
WG3465851-6	LCS							
Bromide (Br)			98.2		%		85-115	18-DEC-20
WG3465851-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-DEC-20
WG3465851-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-DEC-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5325795							
WG3467408-6	LCS							
Dissolved Organic Carbon			107.1		%		80-120	28-DEC-20
WG3467408-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-DEC-20
C-TOT-ORG-LOW-CL Water								
Batch	R5325795							
WG3467408-6	LCS							
Total Organic Carbon			114.3		%		80-120	28-DEC-20
WG3467408-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-DEC-20
CL-L-IC-N-CL Water								
Batch	R5320962							
WG3465851-10	LCS							
Chloride (Cl)			102.6		%		85-115	18-DEC-20
WG3465851-6	LCS							
Chloride (Cl)			102.0		%		85-115	18-DEC-20
WG3465851-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	18-DEC-20
WG3465851-9	MB							
Chloride (Cl)			<0.10		mg/L		0.1	18-DEC-20
CO3-CL Water								
Batch	R5325222							
WG3467227-19	MB							
Carbonate (CO3)			<5.0		mg/L		5	29-DEC-20
EC-L-PCT-CL Water								
Batch	R5325222							
WG3467227-20	LCS							
Conductivity (@ 25C)			101.5		%		90-110	29-DEC-20
WG3467227-19	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-DEC-20
F-IC-N-CL Water								
Batch	R5320962							
WG3465851-10	LCS							
Fluoride (F)			101.4		%		90-110	18-DEC-20
WG3465851-6	LCS							
Fluoride (F)			98.4		%		90-110	18-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL		Water						
Batch	R5320962							
WG3465851-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	18-DEC-20
WG3465851-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	18-DEC-20
HG-D-CVAA-VA		Water						
Batch	R5323682							
WG3466788-3	DUP	L2541983-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-DEC-20
WG3466788-2	LCS							
Mercury (Hg)-Dissolved			107.4		%		80-120	24-DEC-20
WG3466788-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-DEC-20
MET-D-CCMS-VA		Water						
Batch	R5322757							
WG3465406-3	DUP	L2541983-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	24-DEC-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-DEC-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-DEC-20
Barium (Ba)-Dissolved		0.644	0.646		mg/L	0.3	20	24-DEC-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-DEC-20
Boron (B)-Dissolved		0.026	0.028		mg/L	5.9	20	24-DEC-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-DEC-20
Calcium (Ca)-Dissolved		75.4	75.4		mg/L	0.0	20	24-DEC-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-DEC-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-DEC-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	24-DEC-20
Iron (Fe)-Dissolved		0.578	0.571		mg/L	1.3	20	24-DEC-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-DEC-20
Lithium (Li)-Dissolved		0.0869	0.0861		mg/L	0.9	20	24-DEC-20
Magnesium (Mg)-Dissolved		26.2	25.7		mg/L	2.2	20	24-DEC-20
Manganese (Mn)-Dissolved		0.0586	0.0583		mg/L	0.4	20	24-DEC-20
Molybdenum (Mo)-Dissolved		0.000405	0.000428		mg/L	5.6	20	24-DEC-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-DEC-20
Potassium (K)-Dissolved		3.10	3.05		mg/L	1.5	20	24-DEC-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-DEC-20
Silicon (Si)-Dissolved		3.03	3.09		mg/L	2.2	20	24-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5322757							
WG3465406-3	DUP	L2541983-1						
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-DEC-20
Sodium (Na)-Dissolved		8.89	8.62		mg/L	3.1	20	24-DEC-20
Strontium (Sr)-Dissolved		0.283	0.283		mg/L	0.1	20	24-DEC-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-DEC-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-DEC-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-DEC-20
Uranium (U)-Dissolved		0.000110	0.000108		mg/L	1.2	20	24-DEC-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-DEC-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-DEC-20
WG3465406-2	LCS							
Aluminum (Al)-Dissolved			102.5		%		80-120	24-DEC-20
Antimony (Sb)-Dissolved			110.8		%		80-120	24-DEC-20
Arsenic (As)-Dissolved			106.4		%		80-120	24-DEC-20
Barium (Ba)-Dissolved			104.1		%		80-120	24-DEC-20
Bismuth (Bi)-Dissolved			104.1		%		80-120	24-DEC-20
Boron (B)-Dissolved			101.0		%		80-120	24-DEC-20
Cadmium (Cd)-Dissolved			102.4		%		80-120	24-DEC-20
Calcium (Ca)-Dissolved			94.3		%		80-120	24-DEC-20
Chromium (Cr)-Dissolved			104.5		%		80-120	24-DEC-20
Cobalt (Co)-Dissolved			105.1		%		80-120	24-DEC-20
Copper (Cu)-Dissolved			102.9		%		80-120	24-DEC-20
Iron (Fe)-Dissolved			106.5		%		80-120	24-DEC-20
Lead (Pb)-Dissolved			100.0		%		80-120	24-DEC-20
Lithium (Li)-Dissolved			93.3		%		80-120	24-DEC-20
Magnesium (Mg)-Dissolved			103.9		%		80-120	24-DEC-20
Manganese (Mn)-Dissolved			103.2		%		80-120	24-DEC-20
Molybdenum (Mo)-Dissolved			102.9		%		80-120	24-DEC-20
Nickel (Ni)-Dissolved			102.8		%		80-120	24-DEC-20
Potassium (K)-Dissolved			106.9		%		80-120	24-DEC-20
Selenium (Se)-Dissolved			95.9		%		80-120	24-DEC-20
Silicon (Si)-Dissolved			101.4		%		60-140	24-DEC-20
Silver (Ag)-Dissolved			105.2		%		80-120	24-DEC-20
Sodium (Na)-Dissolved			105.1		%		80-120	24-DEC-20
Strontium (Sr)-Dissolved			103.9		%		80-120	24-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5322757							
WG3465406-2	LCS							
Thallium (Tl)-Dissolved			101.2		%		80-120	24-DEC-20
Tin (Sn)-Dissolved			101.1		%		80-120	24-DEC-20
Titanium (Ti)-Dissolved			97.6		%		80-120	24-DEC-20
Uranium (U)-Dissolved			99.6		%		80-120	24-DEC-20
Vanadium (V)-Dissolved			103.7		%		80-120	24-DEC-20
Zinc (Zn)-Dissolved			100.9		%		80-120	24-DEC-20
WG3465406-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-DEC-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-DEC-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-DEC-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-DEC-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-DEC-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-DEC-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-DEC-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-DEC-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-DEC-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-DEC-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-DEC-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-DEC-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-DEC-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-DEC-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-DEC-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-DEC-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-DEC-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-DEC-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-DEC-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-DEC-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5322757							
WG3465406-1	MB	NP						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-DEC-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-DEC-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-DEC-20
WG3465406-4	MS	L2541983-1						
Aluminum (Al)-Dissolved			96.8		%		70-130	24-DEC-20
Antimony (Sb)-Dissolved			102.1		%		70-130	24-DEC-20
Arsenic (As)-Dissolved			101.0		%		70-130	24-DEC-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Bismuth (Bi)-Dissolved			87.9		%		70-130	24-DEC-20
Boron (B)-Dissolved			110.2		%		70-130	24-DEC-20
Cadmium (Cd)-Dissolved			101.1		%		70-130	24-DEC-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Chromium (Cr)-Dissolved			96.3		%		70-130	24-DEC-20
Cobalt (Co)-Dissolved			92.3		%		70-130	24-DEC-20
Copper (Cu)-Dissolved			91.3		%		70-130	24-DEC-20
Iron (Fe)-Dissolved			90.2		%		70-130	24-DEC-20
Lead (Pb)-Dissolved			94.3		%		70-130	24-DEC-20
Lithium (Li)-Dissolved			94.0		%		70-130	24-DEC-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Molybdenum (Mo)-Dissolved			100.6		%		70-130	24-DEC-20
Nickel (Ni)-Dissolved			92.6		%		70-130	24-DEC-20
Potassium (K)-Dissolved			91.3		%		70-130	24-DEC-20
Selenium (Se)-Dissolved			103.3		%		70-130	24-DEC-20
Silicon (Si)-Dissolved			88.2		%		70-130	24-DEC-20
Silver (Ag)-Dissolved			93.5		%		70-130	24-DEC-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	24-DEC-20
Thallium (Tl)-Dissolved			95.6		%		70-130	24-DEC-20
Tin (Sn)-Dissolved			98.8		%		70-130	24-DEC-20
Titanium (Ti)-Dissolved			93.5		%		70-130	24-DEC-20
Uranium (U)-Dissolved			98.4		%		70-130	24-DEC-20
Vanadium (V)-Dissolved			98.1		%		70-130	24-DEC-20
Zinc (Zn)-Dissolved			96.0		%		70-130	24-DEC-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch	R5326667							
WG3467287-18	LCS							
Ammonia as N			97.0		%		85-115	28-DEC-20
WG3467287-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	28-DEC-20
NO2-L-IC-N-CL								
Water								
Batch	R5320962							
WG3465851-10	LCS							
Nitrite (as N)			104.3		%		90-110	18-DEC-20
WG3465851-6	LCS							
Nitrite (as N)			104.2		%		90-110	18-DEC-20
WG3465851-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-DEC-20
WG3465851-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	18-DEC-20
NO3-L-IC-N-CL								
Water								
Batch	R5320962							
WG3465851-10	LCS							
Nitrate (as N)			99.1		%		90-110	18-DEC-20
WG3465851-6	LCS							
Nitrate (as N)			99.3		%		90-110	18-DEC-20
WG3465851-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-DEC-20
WG3465851-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	18-DEC-20
OH-CL								
Water								
Batch	R5325222							
WG3467227-19	MB							
Hydroxide (OH)			<5.0		mg/L		5	29-DEC-20
ORP-CL								
Water								
Batch	R5326998							
WG3467771-7	CRM	CL-ORP						
ORP			217		mV		210-230	29-DEC-20
P-T-L-COL-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5324820							
WG3467013-18 LCS								
Phosphorus (P)-Total			93.6		%		80-120	28-DEC-20
WG3467013-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-DEC-20
P-TD-L-COL-CL	Water							
Batch	R5324820							
WG3467013-18 LCS								
Phosphorus (P)-Total Dissolved			93.6		%		80-120	28-DEC-20
WG3467013-17 MB								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	28-DEC-20
PH-CL	Water							
Batch	R5325222							
WG3467227-20 LCS								
pH			7.00		pH		6.9-7.1	29-DEC-20
PO4-DO-L-COL-CL	Water							
Batch	R5319708							
WG3464529-11 DUP		L2541983-4						
Orthophosphate-Dissolved (as P)		0.0018	0.0020		mg/L	9.6	20	18-DEC-20
WG3464529-10 LCS								
Orthophosphate-Dissolved (as P)			99.2		%		80-120	18-DEC-20
WG3464529-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-DEC-20
WG3464529-12 MS		L2541983-5						
Orthophosphate-Dissolved (as P)			108.1		%		70-130	18-DEC-20
SO4-IC-N-CL	Water							
Batch	R5320962							
WG3465851-10 LCS								
Sulfate (SO4)			100.5		%		90-110	18-DEC-20
WG3465851-6 LCS								
Sulfate (SO4)			100.6		%		90-110	18-DEC-20
WG3465851-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	18-DEC-20
WG3465851-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	18-DEC-20
SOLIDS-TDS-CL	Water							



Quality Control Report

Workorder: L2541983

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5324096							
WG3466715-8	LCS							
Total Dissolved Solids			103.5		%		85-115	24-DEC-20
WG3466715-7	MB							
Total Dissolved Solids			<10		mg/L		10	24-DEC-20
TKN-L-F-CL		Water						
Batch	R5323601							
WG3466732-14	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	24-DEC-20
WG3466732-16	LCS							
Total Kjeldahl Nitrogen			81.1		%		75-125	24-DEC-20
WG3466732-2	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	24-DEC-20
WG3466732-4	LCS							
Total Kjeldahl Nitrogen			80.0		%		75-125	24-DEC-20
WG3466732-6	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	24-DEC-20
WG3466732-8	LCS							
Total Kjeldahl Nitrogen			81.1		%		75-125	24-DEC-20
WG3466732-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
WG3466732-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
WG3466732-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
WG3466732-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
WG3466732-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
WG3466732-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-DEC-20
TSS-L-CL		Water						
Batch	R5324037							
WG3466690-4	LCS							
Total Suspended Solids			109.0		%		85-115	24-DEC-20
WG3466690-3	MB							
Total Suspended Solids			<1.0		mg/L		1	24-DEC-20
TURBIDITY-CL		Water						



Quality Control Report

Workorder: L2541983

Report Date: 30-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5319785							
WG3464679-11	LCS							
Turbidity			96.4		%		85-115	19-DEC-20
WG3464679-10	MB							
Turbidity			<0.10		NTU		0.1	19-DEC-20

Quality Control Report

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Report Date: 30-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2541983

Report Date: 30-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.							
	1	17-DEC-20 10:50	29-DEC-20 11:00	0.25	288	hours	EHTR-FM
	2	17-DEC-20 12:10	29-DEC-20 11:00	0.25	287	hours	EHTR-FM
	3	17-DEC-20 10:40	29-DEC-20 11:00	0.25	288	hours	EHTR-FM
	4	17-DEC-20 13:40	29-DEC-20 11:00	0.25	285	hours	EHTR-FM
	5	17-DEC-20 14:25	29-DEC-20 11:00	0.25	285	hours	EHTR-FM
pH							
	1	17-DEC-20 10:50	29-DEC-20 11:00	0.25	288	hours	EHTR-FM
	2	17-DEC-20 12:10	29-DEC-20 11:00	0.25	287	hours	EHTR-FM
	3	17-DEC-20 10:40	29-DEC-20 11:00	0.25	288	hours	EHTR-FM
	4	17-DEC-20 13:40	29-DEC-20 11:00	0.25	285	hours	EHTR-FM
	5	17-DEC-20 14:25	29-DEC-20 11:00	0.25	285	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2541983 were received on 18-DEC-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20201217Q4GW	TURNAROUND TIME:		RUSH:			
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO		
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel	PDF	
Job Description	Q4 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.Hackett@teck.com	X X X	
Project Manager	Annie Larrivee	Email	lyudmyla.shvets@alsglobal.com	Email 2:	Annie.Larrivee@teck.com	X X X	
Email	Annie.Larrivee@teck.com	Address	2559 29 Street NE	Email 3:	kennedy.allan@teck.com	X X X	
Address	RR#1 HWY# 3			Email 4:	Teck.Lab.Results@sharepoint.teck.com	X X X	
				Email 5:	teckcoal@equisonline.com	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-865-5289	Phone Number	403-407-1800	PO number	VPO00678877		

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2541983-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								TECK COAL-ROUTINE-VA (E305.1)		TECK COAL-MET-D-VA (SW6020)		DOC (APHA 5310)		TKN/TOC (APHA 4500-NORG)		Total Nitrogen for BC (NO2 and NO3)		T-ULTRA MERCURY (SW6020)		D-ULTRA MERCURY (SW6020)
EV_MW_SP1A_WG_2020-12-17_NP	EV_MW_SP1A	WG	N	12/17/20	10:50	G	5	1	1	1	1									
EV_MW_SP1B_WG_2020-12-17_NP	EV_MW_SP1B	WG	N	12/17/20	12:10	G	5	1	1	1	1									
EV_MW_SP1C_WG_2020-12-17_NP	EV_MW_SP1C	WG	N	12/17/20	10:40	G	5	1	1	1	1									
EV_MW_MCGWA_WG_2020-12-17_NP	EV_MW_MCGWA	WG	N	12/17/20	13:40	G	5	1	1	1	1									
EV_MW_MCGWB_WG_2020-12-17_NP	EV_MW_MCGWB	WG	N	12/17/20	14:25	G	5	1	1	1	1									
Total							25													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	December 17, 2020	<i>JG</i>	12/18 8:35

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Jason Gravelle	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>Jason Gravelle</i>	Date/Time	December 17, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

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Coal Mountain Mine





TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 21-JAN-20
Report Date: 29-DEC-20 11:59 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2407320
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200120
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2407320-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407320-1 CM_MW6-DP_WG_2020-01-14_N							
Sampled By: SH/JD on 20-JAN-20 @ 15:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	842		5.0	mg/L		21-JAN-20	R4974297
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-20	R4974297
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-JAN-20	R4977467
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-20	R4974297
Total Kjeldahl Nitrogen	0.539		0.050	mg/L		22-JAN-20	R4974626
Total Organic Carbon	<0.50		0.50	mg/L		22-JAN-20	R4977467
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	25-JAN-20	R4980726
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4978311
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	22-JAN-20	22-JAN-20	R4973971
Dissolved Mercury Filtration Location	FIELD					22-JAN-20	R4975526
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4978311
Aluminum (Al)-Dissolved	0.0045		0.0030	mg/L	24-JAN-20	25-JAN-20	R4980726
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Arsenic (As)-Dissolved	0.00028		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Barium (Ba)-Dissolved	0.370		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Boron (B)-Dissolved	0.373		0.010	mg/L	24-JAN-20	28-JAN-20	R4982760
Cadmium (Cd)-Dissolved	0.0121		0.0050	ug/L	24-JAN-20	25-JAN-20	R4980726
Calcium (Ca)-Dissolved	10.2		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	24-JAN-20	25-JAN-20	R4980726
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	25-JAN-20	R4980726
Iron (Fe)-Dissolved	0.236		0.010	mg/L	24-JAN-20	25-JAN-20	R4980726
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Lithium (Li)-Dissolved	0.405		0.0010	mg/L	24-JAN-20	28-JAN-20	R4982760
Magnesium (Mg)-Dissolved	3.23		0.10	mg/L	24-JAN-20	25-JAN-20	R4980726
Manganese (Mn)-Dissolved	0.0587		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Molybdenum (Mo)-Dissolved	0.000841		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	25-JAN-20	R4980726
Potassium (K)-Dissolved	2.23		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-JAN-20	25-JAN-20	R4980726
Silicon (Si)-Dissolved	4.17		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Sodium (Na)-Dissolved	348		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Strontium (Sr)-Dissolved	1.17		0.00020	mg/L	24-JAN-20	25-JAN-20	R4980726
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Tin (Sn)-Dissolved	0.00026		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	25-JAN-20	R4980726
Uranium (U)-Dissolved	0.000317		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	25-JAN-20	R4980726
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	25-JAN-20	R4980726
Hardness							
Hardness (as CaCO3)	38.9		0.50			20-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		21-JAN-20	R4973853
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407320-1 CM_MW6-DP_WG_2020-01-14_N Sampled By: SH/JD on 20-JAN-20 @ 15:00 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	690		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Total (as CaCO3)	690		1.0	mg/L		21-JAN-20	R4974297
Ammonia, Total (as N)							
Ammonia as N	0.438		0.0050	mg/L		24-JAN-20	R4979573
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-JAN-20	R4974737
Chloride in Water by IC							
Chloride (Cl)	36.0	DLHC	2.5	mg/L		21-JAN-20	R4974737
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1180		2.0	uS/cm		21-JAN-20	R4974297
Fluoride in Water by IC							
Fluoride (F)	0.46	DLHC	0.10	mg/L		21-JAN-20	R4974737
Ion Balance Calculation							
Ion Balance	108		-100	%		28-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	3.7			%		28-JAN-20	
Anion Sum	14.9			meq/L		28-JAN-20	
Cation Sum	16.0			meq/L		28-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.051	DLHC	0.025	mg/L		21-JAN-20	R4974737
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-JAN-20	R4974737
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0137		0.0010	mg/L		21-JAN-20	R4973835
Oxidation redution potential by elect.							
ORP	438		-1000	mV		21-JAN-20	R4973794
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0192		0.0020	mg/L		22-JAN-20	R4974631
Sulfate in Water by IC							
Sulfate (SO4)	2.6	DLHC	1.5	mg/L		21-JAN-20	R4974737
Total Dissolved Solids							
Total Dissolved Solids	736	DLHC	20	mg/L		23-JAN-20	R4978680
Total Suspended Solids							
Total Suspended Solids	1.1		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	3.24		0.10	NTU		21-JAN-20	R4973772
pH							
pH	8.26		0.10	pH		21-JAN-20	R4974297
L2407320-2 CM_MW6-SH_WG_2020-01-14_N Sampled By: SH/JD on 20-JAN-20 @ 14:15 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	251		5.0	mg/L		21-JAN-20	R4974297
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-20	R4974297
Dissolved Organic Carbon	2.54		0.50	mg/L		24-JAN-20	R4977467
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-20	R4974297
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		22-JAN-20	R4974626
Total Organic Carbon	2.35		0.50	mg/L		24-JAN-20	R4977467
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407320-2 CM_MW6-SH_WG_2020-01-14_N							
Sampled By: SH/JD on 20-JAN-20 @ 14:15							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	25-JAN-20	R4980726
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4978311
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	22-JAN-20	22-JAN-20	R4973971
Dissolved Mercury Filtration Location	FIELD					22-JAN-20	R4975526
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4978311
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	25-JAN-20	R4980726
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Arsenic (As)-Dissolved	0.00058		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Barium (Ba)-Dissolved	0.145		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Boron (B)-Dissolved	0.045		0.010	mg/L	24-JAN-20	28-JAN-20	R4982760
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	24-JAN-20	25-JAN-20	R4980726
Calcium (Ca)-Dissolved	20.6		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Cobalt (Co)-Dissolved	0.17		0.10	ug/L	24-JAN-20	25-JAN-20	R4980726
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	25-JAN-20	R4980726
Iron (Fe)-Dissolved	0.113		0.010	mg/L	24-JAN-20	25-JAN-20	R4980726
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Lithium (Li)-Dissolved	0.0425		0.0010	mg/L	24-JAN-20	28-JAN-20	R4982760
Magnesium (Mg)-Dissolved	7.58		0.10	mg/L	24-JAN-20	25-JAN-20	R4980726
Manganese (Mn)-Dissolved	0.262		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Molybdenum (Mo)-Dissolved	0.00556		0.000050	mg/L	24-JAN-20	25-JAN-20	R4980726
Nickel (Ni)-Dissolved	0.00057		0.00050	mg/L	24-JAN-20	25-JAN-20	R4980726
Potassium (K)-Dissolved	0.340		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-JAN-20	25-JAN-20	R4980726
Silicon (Si)-Dissolved	3.36		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Sodium (Na)-Dissolved	77.7		0.050	mg/L	24-JAN-20	25-JAN-20	R4980726
Strontium (Sr)-Dissolved	0.222		0.00020	mg/L	24-JAN-20	25-JAN-20	R4980726
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	25-JAN-20	R4980726
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	25-JAN-20	R4980726
Uranium (U)-Dissolved	0.000498		0.000010	mg/L	24-JAN-20	25-JAN-20	R4980726
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	25-JAN-20	R4980726
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	25-JAN-20	R4980726
Hardness							
Hardness (as CaCO3)	82.6		0.50			20-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.8		1.0	mg/L		21-JAN-20	R4973853
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	205		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-20	R4974297
Alkalinity, Total (as CaCO3)	205		1.0	mg/L		21-JAN-20	R4974297
Ammonia, Total (as N)							
Ammonia as N	0.0214		0.0050	mg/L		24-JAN-20	R4979573
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.078		0.050	mg/L		21-JAN-20	R4974737
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407320-2 CM_MW6-SH_WG_2020-01-14_N							
Sampled By: SH/JD on 20-JAN-20 @ 14:15							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	19.5		0.50	mg/L		21-JAN-20	R4974737
Electrical Conductivity (EC)							
Conductivity (@ 25C)	413		2.0	uS/cm		21-JAN-20	R4974297
Fluoride in Water by IC							
Fluoride (F)	1.61		0.020	mg/L		21-JAN-20	R4974737
Ion Balance Calculation							
Ion Balance	105		-100	%		28-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	2.3			%		28-JAN-20	
Anion Sum	4.83			meq/L		28-JAN-20	
Cation Sum	5.06			meq/L		28-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		21-JAN-20	R4974737
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-JAN-20	R4974737
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0034		0.0010	mg/L		21-JAN-20	R4973835
Oxidation redution potential by elect.							
ORP	312		-1000	mV		21-JAN-20	R4973794
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0064		0.0020	mg/L		22-JAN-20	R4974631
Sulfate in Water by IC							
Sulfate (SO4)	4.50		0.30	mg/L		21-JAN-20	R4974737
Total Dissolved Solids							
Total Dissolved Solids	263	DLHC	20	mg/L		23-JAN-20	R4978680
Total Suspended Solids							
Total Suspended Solids	1.4		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	1.13		0.10	NTU		21-JAN-20	R4973772
pH							
pH	8.05		0.10	pH		21-JAN-20	R4974297

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200120

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2407320

Report Date: 29-DEC-20

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4973853							
WG3261278-2	LCS							
Acidity (as CaCO3)			104.5		%		85-115	21-JAN-20
WG3261278-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	21-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4974297							
WG3261642-1	LCS							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	21-JAN-20
WG3261642-3	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4980726							
WG3263064-2	LCS							
Beryllium (Be)-Dissolved			90.5		%		80-120	25-JAN-20
WG3263064-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-JAN-20
BIC-CL								
	Water							
Batch	R4974297							
WG3261642-3	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4974737							
WG3261818-2	LCS							
Bromide (Br)			102.5		%		85-115	21-JAN-20
WG3261818-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4977467							
WG3262255-2	LCS							
Dissolved Organic Carbon			110.3		%		80-120	22-JAN-20
WG3262255-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-JAN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2407320

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4977467							
WG3262255-2	LCS							
Total Organic Carbon			113.0		%		80-120	22-JAN-20
WG3262255-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	22-JAN-20
CL-IC-N-CL	Water							
Batch	R4974737							
WG3261818-2	LCS							
Chloride (Cl)			102.8		%		90-110	21-JAN-20
WG3261818-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-JAN-20
CO3-CL	Water							
Batch	R4974297							
WG3261642-3	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-JAN-20
EC-L-PCT-CL	Water							
Batch	R4974297							
WG3261642-1	LCS							
Conductivity (@ 25C)			96.9		%		90-110	21-JAN-20
WG3261642-3	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JAN-20
F-IC-N-CL	Water							
Batch	R4974737							
WG3261818-2	LCS							
Fluoride (F)			103.8		%		90-110	21-JAN-20
WG3261818-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4973971							
WG3262053-2	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	22-JAN-20
WG3262053-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-JAN-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2407320

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980726							
WG3263064-2	LCS							
Aluminum (Al)-Dissolved			95.2		%		80-120	25-JAN-20
Antimony (Sb)-Dissolved			90.4		%		80-120	25-JAN-20
Arsenic (As)-Dissolved			91.5		%		80-120	25-JAN-20
Barium (Ba)-Dissolved			89.0		%		80-120	25-JAN-20
Bismuth (Bi)-Dissolved			99.7		%		80-120	25-JAN-20
Boron (B)-Dissolved			97.6		%		80-120	25-JAN-20
Cadmium (Cd)-Dissolved			88.1		%		80-120	25-JAN-20
Calcium (Ca)-Dissolved			94.7		%		80-120	25-JAN-20
Chromium (Cr)-Dissolved			91.1		%		80-120	25-JAN-20
Cobalt (Co)-Dissolved			92.3		%		80-120	25-JAN-20
Copper (Cu)-Dissolved			92.2		%		80-120	25-JAN-20
Iron (Fe)-Dissolved			92.3		%		80-120	25-JAN-20
Lead (Pb)-Dissolved			97.5		%		80-120	25-JAN-20
Lithium (Li)-Dissolved			89.5		%		80-120	25-JAN-20
Magnesium (Mg)-Dissolved			94.9		%		80-120	25-JAN-20
Manganese (Mn)-Dissolved			93.8		%		80-120	25-JAN-20
Molybdenum (Mo)-Dissolved			96.7		%		80-120	25-JAN-20
Nickel (Ni)-Dissolved			92.1		%		80-120	25-JAN-20
Potassium (K)-Dissolved			97.0		%		80-120	25-JAN-20
Selenium (Se)-Dissolved			108.0		%		80-120	25-JAN-20
Silicon (Si)-Dissolved			110.1		%		60-140	25-JAN-20
Silver (Ag)-Dissolved			92.6		%		80-120	25-JAN-20
Sodium (Na)-Dissolved			97.2		%		80-120	25-JAN-20
Strontium (Sr)-Dissolved			98.7		%		80-120	25-JAN-20
Thallium (Tl)-Dissolved			97.3		%		80-120	25-JAN-20
Tin (Sn)-Dissolved			87.4		%		80-120	25-JAN-20
Titanium (Ti)-Dissolved			89.8		%		80-120	25-JAN-20
Uranium (U)-Dissolved			95.2		%		80-120	25-JAN-20
Vanadium (V)-Dissolved			94.8		%		80-120	25-JAN-20
Zinc (Zn)-Dissolved			91.9		%		80-120	25-JAN-20
WG3263064-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20



Quality Control Report

Workorder: L2407320

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980726							
WG3263064-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979573							
WG3263621-2	LCS							
Ammonia as N			100.9		%		85-115	24-JAN-20
WG3263621-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	24-JAN-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2407320

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R4974737							
WG3261818-2	LCS							
Nitrite (as N)			99.8		%		90-110	21-JAN-20
WG3261818-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-JAN-20
NO3-L-IC-N-CL	Water							
Batch	R4974737							
WG3261818-2	LCS							
Nitrate (as N)			103.6		%		90-110	21-JAN-20
WG3261818-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-JAN-20
OH-CL	Water							
Batch	R4974297							
WG3261642-3	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-JAN-20
ORP-CL	Water							
Batch	R4973794							
WG3261190-1	CRM	CL-ORP						
ORP			219		mV		210-230	21-JAN-20
P-T-L-COL-CL	Water							
Batch	R4974631							
WG3261721-2	LCS							
Phosphorus (P)-Total			99.2		%		80-120	22-JAN-20
WG3261721-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-JAN-20
PH-CL	Water							
Batch	R4974297							
WG3261642-1	LCS							
pH			7.00		pH		6.9-7.1	21-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4973835							
WG3261002-2	LCS							
Orthophosphate-Dissolved (as P)			106.3		%		80-120	21-JAN-20
WG3261002-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-JAN-20



Quality Control Report

Workorder: L2407320

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch	R4974737							
WG3261818-2	LCS							
Sulfate (SO4)			106.7		%		90-110	21-JAN-20
WG3261818-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-JAN-20
SOLIDS-TDS-CL								
Batch	R4978680							
WG3262280-8	LCS							
Total Dissolved Solids			90.1		%		85-115	23-JAN-20
WG3262280-7	MB							
Total Dissolved Solids			<10		mg/L		10	23-JAN-20
TKN-L-F-CL								
Batch	R4974626							
WG3261578-2	LCS							
Total Kjeldahl Nitrogen			99.8		%		75-125	22-JAN-20
WG3261578-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JAN-20
TSS-L-CL								
Batch	R4977068							
WG3262389-2	LCS							
Total Suspended Solids			97.4		%		85-115	23-JAN-20
WG3262389-1	MB							
Total Suspended Solids			<1.0		mg/L		1	23-JAN-20
TURBIDITY-CL								
Batch	R4973772							
WG3261156-2	LCS							
Turbidity			105.5		%		85-115	21-JAN-20
WG3261156-1	MB							
Turbidity			<0.10		NTU		0.1	21-JAN-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-JAN-20 15:00	21-JAN-20 10:00	0.25	19	hours	EHTR-FM
	2	20-JAN-20 14:15	21-JAN-20 10:00	0.25	20	hours	EHTR-FM
pH	1	20-JAN-20 15:00	21-JAN-20 14:00	0.25	23	hours	EHTR-FM
	2	20-JAN-20 14:15	21-JAN-20 14:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2407320 were received on 21-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck



L2407320-COFC

COC ID: COC_WG_Q1_20200120 TURI

RUSH: NO

PROJECT/CLIENT INFO				OTHER INFO			
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets		
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com		
Address	PO Box 3000			Address	2559 29th St. NE		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-425-7321			Phone Number	403 407 1800		
				PO number	VPO00683186		

SAMPLE DETAILS							ANALYSIS REQUESTED					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HIG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
CM_MW6-DP_WG_2020-01-14_N	CM_MW6-DP	WG	No	2020/01/20	15:00	5	1	1	1	1	1	
CM_MW6-SH_WG_2020-01-14_N	CM_MW6-SH	WG	No	2020/01/20	14:15	5	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	1/21/20

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	SH#ID	Mobile #
Regular (default) <input checked="" type="checkbox"/>			250-425-7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>		January 20, 2020 <i>[Signature]</i>

[Handwritten mark]



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 22-JAN-20
Report Date: 21-DEC-20 16:12 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2407930
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200121
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2407930-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407930-1 CM_MW4-SH_WG_2020-01-14_N							
Sampled By: VS/SH/JB on 21-JAN-20 @ 13:11							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	778		5.0	mg/L		22-JAN-20	R4977087
Carbonate (CO3)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Dissolved Organic Carbon	0.86		0.50	mg/L		23-JAN-20	R4978226
Hydroxide (OH)	<5.0		5.0	mg/L		22-JAN-20	R4977087
Total Kjeldahl Nitrogen	0.400		0.050	mg/L		23-JAN-20	R4976428
Total Organic Carbon	0.77		0.50	mg/L		23-JAN-20	R4978226
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-JAN-20	24-JAN-20	R4979401
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-JAN-20	24-JAN-20	R4978847
Dissolved Mercury Filtration Location	FIELD					24-JAN-20	R4978687
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-JAN-20	R4979441
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-JAN-20	24-JAN-20	R4979401
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Barium (Ba)-Dissolved	0.362		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Boron (B)-Dissolved	0.366		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	24-JAN-20	24-JAN-20	R4979401
Calcium (Ca)-Dissolved	7.42		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-JAN-20	24-JAN-20	R4979401
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Iron (Fe)-Dissolved	0.109		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Lithium (Li)-Dissolved	0.462		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Magnesium (Mg)-Dissolved	2.44		0.10	mg/L	24-JAN-20	24-JAN-20	R4979401
Manganese (Mn)-Dissolved	0.00591		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Molybdenum (Mo)-Dissolved	0.000850		0.000050	mg/L	24-JAN-20	24-JAN-20	R4979401
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Potassium (K)-Dissolved	1.09		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-JAN-20	24-JAN-20	R4979401
Silicon (Si)-Dissolved	4.26		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Sodium (Na)-Dissolved	374		0.050	mg/L	24-JAN-20	24-JAN-20	R4979401
Strontium (Sr)-Dissolved	0.882		0.00020	mg/L	24-JAN-20	24-JAN-20	R4979401
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-JAN-20	24-JAN-20	R4979401
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-JAN-20	24-JAN-20	R4979401
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-JAN-20	24-JAN-20	R4979401
Uranium (U)-Dissolved	0.000017		0.000010	mg/L	24-JAN-20	25-JAN-20	R4979607
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-JAN-20	24-JAN-20	R4979401
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-JAN-20	24-JAN-20	R4979401
Hardness							
Hardness (as CaCO3)	28.6		0.50	mg/L		26-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.9		1.0	mg/L		22-JAN-20	R4976661
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2407930-1 CM_MW4-SH_WG_2020-01-14_N							
Sampled By: VS/SH/JB on 21-JAN-20 @ 13:11							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	637		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		22-JAN-20	R4977087
Alkalinity, Total (as CaCO3)	637		1.0	mg/L		22-JAN-20	R4977087
Ammonia, Total (as N)							
Ammonia as N	0.436		0.0050	mg/L		24-JAN-20	R4979573
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.56	DLHC	0.25	mg/L		22-JAN-20	R4976758
Chloride in Water by IC							
Chloride (Cl)	159	DLHC	2.5	mg/L		22-JAN-20	R4976758
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1460		2.0	uS/cm		22-JAN-20	R4977087
Fluoride in Water by IC							
Fluoride (F)	0.49	DLHC	0.10	mg/L		22-JAN-20	R4976758
Ion Balance Calculation							
Cation - Anion Balance	-1.3			%		26-JAN-20	
Anion Sum	17.3			meq/L		26-JAN-20	
Cation Sum	16.9			meq/L		26-JAN-20	
Ion Balance Calculation							
Ion Balance	97.5		-100	%		26-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		22-JAN-20	R4976758
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		22-JAN-20	R4976758
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0101		0.0010	mg/L		22-JAN-20	R4976234
Oxidation redution potential by elect.							
ORP	498		-1000	mV		23-JAN-20	R4979313
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0186		0.0020	mg/L		23-JAN-20	R4976751
Sulfate in Water by IC							
Sulfate (SO4)	3.5	DLHC	1.5	mg/L		22-JAN-20	R4976758
Total Dissolved Solids							
Total Dissolved Solids	899	DLHC	20	mg/L		24-JAN-20	R4980015
Total Suspended Solids							
Total Suspended Solids	7.2		1.0	mg/L		23-JAN-20	R4977068
Turbidity							
Turbidity	13.5		0.10	NTU		23-JAN-20	R4976908
pH							
pH	8.21		0.10	pH		22-JAN-20	R4977087

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200121

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4976661							
WG3262448-5	LCS							
Acidity (as CaCO3)			104.5		%		85-115	22-JAN-20
WG3262448-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	22-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4977087							
WG3262536-5	LCS							
Alkalinity, Total (as CaCO3)			103.8		%		85-115	22-JAN-20
WG3262536-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-2	LCS							
Beryllium (Be)-Dissolved			99.2		%		80-120	24-JAN-20
WG3263561-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-JAN-20
BIC-CL								
	Water							
Batch	R4977087							
WG3262536-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	22-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4976758							
WG3262500-6	LCS							
Bromide (Br)			95.6		%		85-115	22-JAN-20
WG3262500-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4978226							
WG3263012-6	LCS							
Dissolved Organic Carbon			106.8		%		80-120	23-JAN-20
WG3263012-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-JAN-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4978226							
WG3263012-6	LCS							
Total Organic Carbon			108.0		%		80-120	23-JAN-20
WG3263012-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-JAN-20
CL-IC-N-CL	Water							
Batch	R4976758							
WG3262500-6	LCS							
Chloride (Cl)			102.4		%		90-110	22-JAN-20
WG3262500-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-JAN-20
CO3-CL	Water							
Batch	R4977087							
WG3262536-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	22-JAN-20
EC-L-PCT-CL	Water							
Batch	R4977087							
WG3262536-5	LCS							
Conductivity (@ 25C)			96.4		%		90-110	22-JAN-20
WG3262536-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-JAN-20
F-IC-N-CL	Water							
Batch	R4976758							
WG3262500-6	LCS							
Fluoride (F)			103.6		%		90-110	22-JAN-20
WG3262500-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	22-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4978847							
WG3263251-2	LCS							
Mercury (Hg)-Dissolved			96.4		%		80-120	24-JAN-20
WG3263251-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-JAN-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-2	LCS							
Aluminum (Al)-Dissolved			93.7		%		80-120	24-JAN-20
Antimony (Sb)-Dissolved			96.4		%		80-120	24-JAN-20
Arsenic (As)-Dissolved			101.7		%		80-120	24-JAN-20
Barium (Ba)-Dissolved			103.5		%		80-120	24-JAN-20
Bismuth (Bi)-Dissolved			95.4		%		80-120	24-JAN-20
Boron (B)-Dissolved			102.8		%		80-120	24-JAN-20
Cadmium (Cd)-Dissolved			98.4		%		80-120	24-JAN-20
Calcium (Ca)-Dissolved			99.7		%		80-120	24-JAN-20
Chromium (Cr)-Dissolved			95.7		%		80-120	24-JAN-20
Cobalt (Co)-Dissolved			96.8		%		80-120	24-JAN-20
Copper (Cu)-Dissolved			96.3		%		80-120	24-JAN-20
Iron (Fe)-Dissolved			96.5		%		80-120	24-JAN-20
Lead (Pb)-Dissolved			94.2		%		80-120	24-JAN-20
Lithium (Li)-Dissolved			93.2		%		80-120	24-JAN-20
Magnesium (Mg)-Dissolved			96.4		%		80-120	24-JAN-20
Manganese (Mn)-Dissolved			96.1		%		80-120	24-JAN-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	24-JAN-20
Nickel (Ni)-Dissolved			95.7		%		80-120	24-JAN-20
Potassium (K)-Dissolved			105.2		%		80-120	24-JAN-20
Selenium (Se)-Dissolved			97.3		%		80-120	24-JAN-20
Silicon (Si)-Dissolved			94.7		%		60-140	24-JAN-20
Silver (Ag)-Dissolved			97.9		%		80-120	24-JAN-20
Sodium (Na)-Dissolved			101.1		%		80-120	24-JAN-20
Strontium (Sr)-Dissolved			99.97		%		80-120	24-JAN-20
Thallium (Tl)-Dissolved			96.0		%		80-120	24-JAN-20
Tin (Sn)-Dissolved			96.0		%		80-120	24-JAN-20
Titanium (Ti)-Dissolved			97.7		%		80-120	24-JAN-20
Uranium (U)-Dissolved			95.5		%		80-120	24-JAN-20
Vanadium (V)-Dissolved			98.2		%		80-120	24-JAN-20
Zinc (Zn)-Dissolved			97.4		%		80-120	24-JAN-20
WG3263561-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4979401							
WG3263561-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-JAN-20
Batch	R4979607							
WG3263561-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979573							
WG3263621-14	LCS							
Ammonia as N			98.3		%		85-115	24-JAN-20
WG3263621-13	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R4979573							
WG3263621-13 MB								
Ammonia as N			<0.0050		mg/L		0.005	24-JAN-20
NO2-L-IC-N-CL	Water							
Batch	R4976758							
WG3262500-6 LCS								
Nitrite (as N)			98.4		%		90-110	22-JAN-20
WG3262500-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-20
NO3-L-IC-N-CL	Water							
Batch	R4976758							
WG3262500-6 LCS								
Nitrate (as N)			102.6		%		90-110	22-JAN-20
WG3262500-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-20
OH-CL	Water							
Batch	R4977087							
WG3262536-4 MB								
Hydroxide (OH)			<5.0		mg/L		5	22-JAN-20
ORP-CL	Water							
Batch	R4979313							
WG3263456-5 CRM		CL-ORP						
ORP			221		mV		210-230	23-JAN-20
P-T-L-COL-CL	Water							
Batch	R4976751							
WG3262381-10 LCS								
Phosphorus (P)-Total			102.6		%		80-120	23-JAN-20
WG3262381-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-JAN-20
PH-CL	Water							
Batch	R4977087							
WG3262536-5 LCS								
pH			7.02		pH		6.9-7.1	22-JAN-20
PO4-DO-L-COL-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch	R4976234							
WG3261840-6	LCS							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	22-JAN-20
WG3261840-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-20
SO4-IC-N-CL Water								
Batch	R4976758							
WG3262500-6	LCS							
Sulfate (SO4)			101.5		%		90-110	22-JAN-20
WG3262500-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-20
SOLIDS-TDS-CL Water								
Batch	R4980015							
WG3263078-2	LCS							
Total Dissolved Solids			101.0		%		85-115	24-JAN-20
WG3263078-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-JAN-20
TKN-L-F-CL Water								
Batch	R4976428							
WG3262296-2	LCS							
Total Kjeldahl Nitrogen			97.9		%		75-125	23-JAN-20
WG3262296-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-JAN-20
TSS-L-CL Water								
Batch	R4977068							
WG3262389-11	LCS							
Total Suspended Solids			92.1		%		85-115	23-JAN-20
WG3262389-10	MB							
Total Suspended Solids			<1.0		mg/L		1	23-JAN-20
TURBIDITY-CL Water								
Batch	R4976908							
WG3262525-5	LCS							
Turbidity			102.5		%		85-115	23-JAN-20
WG3262525-4	MB							
Turbidity			<0.10		NTU		0.1	23-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	21-JAN-20 13:11	23-JAN-20 09:45	0.25	45	hours	EHTR-FM
pH	1	21-JAN-20 13:11	22-JAN-20 15:00	0.25	26	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2407930 were received on 22-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q1_20200121		TURNAROUND TIME: Regular		RUSH: No					
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO			
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager Jay Jones		Lab Contact Lyudmyla Shvets		Email 1: Scott.Holmgren@teck.com		X	X	X	
Email Jay.Jones@teck.com		Email Lyudmyla.Shvets@aisglobal.com		Email 2: teckcoal@equisonline.com					
Address PO Box 3000		Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X	
City Sparwood		Province BC	City Calgary	Province AB	Email 4: victoria.sharpe@teck.com		X	X	X
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5	Country Canada	Email 5: don.sacino@teck.com		X	X	X
Phone Number 1-250-425-7321		Phone Number 403 407 1800		PO number		VPO00683186			

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered: F Field, L Lab, PL Field & Lab, S Sample				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
CM_MW4-SH_WG_2020-01-14_N	CM_MW4-SH	WG	No	2020/01/21	13:11	G	5	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	<i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	X	Sampler's Name	VS/SH/IB	Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	January 21, 2020
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

[Handwritten mark]



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 23-JAN-20
Report Date: 21-DEC-20 16:14 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2408975
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200122
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2408975-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2408975-1 CM_MW4-DP_WG_2020-01-14_N							
Sampled By: DS/JD on 22-JAN-20 @ 14:40							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	966		5.0	mg/L		23-JAN-20	R4979409
Carbonate (CO3)	16.3		5.0	mg/L		23-JAN-20	R4979409
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-JAN-20	R4979529
Hydroxide (OH)	<5.0		5.0	mg/L		23-JAN-20	R4979409
Total Kjeldahl Nitrogen	0.549		0.050	mg/L		24-JAN-20	R4978609
Total Organic Carbon	<0.50		0.50	mg/L		24-JAN-20	R4979529
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	25-JAN-20	27-JAN-20	R4980366
Dissolved Metals Filtration Location	FIELD					25-JAN-20	R4979462
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-JAN-20	25-JAN-20	R4979466
Dissolved Mercury Filtration Location	FIELD					25-JAN-20	R4979534
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					25-JAN-20	R4979462
Aluminum (Al)-Dissolved	0.0031		0.0030	mg/L	25-JAN-20	27-JAN-20	R4980366
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Barium (Ba)-Dissolved	0.504		0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	25-JAN-20	27-JAN-20	R4980366
Boron (B)-Dissolved	0.461		0.020	mg/L	25-JAN-20	27-JAN-20	R4980366
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	25-JAN-20	27-JAN-20	R4980366
Calcium (Ca)-Dissolved	7.85		0.10	mg/L	25-JAN-20	27-JAN-20	R4980366
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	25-JAN-20	27-JAN-20	R4980366
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	25-JAN-20	27-JAN-20	R4980366
Iron (Fe)-Dissolved	0.065		0.020	mg/L	25-JAN-20	27-JAN-20	R4980366
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	25-JAN-20	27-JAN-20	R4980366
Lithium (Li)-Dissolved	1.09		0.0020	mg/L	25-JAN-20	27-JAN-20	R4980366
Magnesium (Mg)-Dissolved	1.84		0.10	mg/L	25-JAN-20	27-JAN-20	R4980366
Manganese (Mn)-Dissolved	0.00321		0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Molybdenum (Mo)-Dissolved	0.00053		0.00010	mg/L	25-JAN-20	27-JAN-20	R4980366
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	25-JAN-20	27-JAN-20	R4980366
Potassium (K)-Dissolved	1.25		0.10	mg/L	25-JAN-20	27-JAN-20	R4980366
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	25-JAN-20	27-JAN-20	R4980366
Silicon (Si)-Dissolved	4.23		0.10	mg/L	25-JAN-20	27-JAN-20	R4980366
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-JAN-20	27-JAN-20	R4980366
Sodium (Na)-Dissolved	673		0.10	mg/L	25-JAN-20	27-JAN-20	R4980366
Strontium (Sr)-Dissolved	1.08		0.00040	mg/L	25-JAN-20	27-JAN-20	R4980366
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-JAN-20	27-JAN-20	R4980366
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-JAN-20	27-JAN-20	R4980366
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-JAN-20	27-JAN-20	R4980366
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-JAN-20	27-JAN-20	R4980366
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	25-JAN-20	27-JAN-20	R4980366
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	25-JAN-20	27-JAN-20	R4980366
Hardness							
Hardness (as CaCO3)	27.2		0.50	mg/L		27-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.1		1.0	mg/L		23-JAN-20	R4979403
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2408975-1 CM_MW4-DP_WG_2020-01-14_N							
Sampled By: DS/JD on 22-JAN-20 @ 14:40							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	792		1.0	mg/L		23-JAN-20	R4979409
Alkalinity, Carbonate (as CaCO3)	27.2		1.0	mg/L		23-JAN-20	R4979409
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-JAN-20	R4979409
Alkalinity, Total (as CaCO3)	819		1.0	mg/L		23-JAN-20	R4979409
Ammonia, Total (as N)							
Ammonia as N	0.685	DLHC	0.050	mg/L		25-JAN-20	R4979931
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.68	DLHC	0.25	mg/L		23-JAN-20	R4983287
Chloride in Water by IC							
Chloride (Cl)	456	DLHC	2.5	mg/L		23-JAN-20	R4983287
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2650		2.0	uS/cm		23-JAN-20	R4979409
Fluoride in Water by IC							
Fluoride (F)	0.52	DLHC	0.10	mg/L		23-JAN-20	R4983287
Ion Balance Calculation							
Cation - Anion Balance	1.0			%		29-JAN-20	
Anion Sum	29.3			meq/L		29-JAN-20	
Cation Sum	29.9			meq/L		29-JAN-20	
Ion Balance Calculation							
Ion Balance	102		-100	%		29-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		23-JAN-20	R4983287
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-JAN-20	R4983287
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0105		0.0010	mg/L		23-JAN-20	R4978288
Oxidation redution potential by elect.							
ORP	315		-1000	mV		25-JAN-20	R4981547
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0102		0.0020	mg/L		24-JAN-20	R4978672
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		23-JAN-20	R4983287
Total Dissolved Solids							
Total Dissolved Solids	1710	DLHC	20	mg/L		27-JAN-20	R4981936
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		27-JAN-20	R4982648
Turbidity							
Turbidity	5.52		0.10	NTU		24-JAN-20	R4979688
pH							
pH	8.45		0.10	pH		23-JAN-20	R4979409

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200122

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2408975

Report Date: 21-DEC-20

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4979403							
WG3263280-2	LCS							
Acidity (as CaCO3)			104.3		%		85-115	23-JAN-20
WG3263280-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	23-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4979409							
WG3263286-8	LCS							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	23-JAN-20
WG3263286-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4980366							
WG3263616-3	DUP	L2408975-1						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	27-JAN-20
WG3263616-2	LCS							
Beryllium (Be)-Dissolved			103.4		%		80-120	27-JAN-20
WG3263616-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-JAN-20
BIC-CL								
	Water							
Batch	R4979409							
WG3263286-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Bromide (Br)			101.6		%		85-115	23-JAN-20
WG3265995-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4979529							
WG3263672-2	LCS							
Dissolved Organic Carbon			112.7		%		80-120	24-JAN-20
WG3263672-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2408975

Report Date: 21-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4979529							
WG3263672-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	24-JAN-20
CL-IC-N-CL	Water							
Batch	R4983287							
WG3265995-6 LCS								
Chloride (Cl)			101.8		%		90-110	23-JAN-20
WG3265995-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-JAN-20
CO3-CL	Water							
Batch	R4979409							
WG3263286-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	23-JAN-20
EC-L-PCT-CL	Water							
Batch	R4979409							
WG3263286-8 LCS								
Conductivity (@ 25C)			99.0		%		90-110	23-JAN-20
WG3263286-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	23-JAN-20
F-IC-N-CL	Water							
Batch	R4983287							
WG3265995-6 LCS								
Fluoride (F)			102.7		%		90-110	23-JAN-20
WG3265995-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4979466							
WG3263698-2 LCS								
Mercury (Hg)-Dissolved			96.4		%		80-120	25-JAN-20
WG3263698-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-JAN-20
MET-D-CCMS-VA	Water							
Batch	R4980366							
WG3263616-3 DUP		L2408975-1						
Aluminum (Al)-Dissolved		0.0031	0.0031		mg/L	0.2	20	27-JAN-20
Antimony (Sb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JAN-20



Quality Control Report

Workorder: L2408975

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980366							
WG3263616-3	DUP	L2408975-1						
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JAN-20
Barium (Ba)-Dissolved		0.504	0.500		mg/L	1.0	20	27-JAN-20
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Boron (B)-Dissolved		0.461	0.476		mg/L	3.2	20	27-JAN-20
Cadmium (Cd)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-JAN-20
Calcium (Ca)-Dissolved		7.85	8.15		mg/L	3.8	20	27-JAN-20
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JAN-20
Cobalt (Co)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JAN-20
Copper (Cu)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	27-JAN-20
Iron (Fe)-Dissolved		0.065	0.065		mg/L	0.3	20	27-JAN-20
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Lithium (Li)-Dissolved		1.09	1.13		mg/L	3.6	20	27-JAN-20
Magnesium (Mg)-Dissolved		1.84	1.85		mg/L	0.2	20	27-JAN-20
Manganese (Mn)-Dissolved		0.00321	0.00318		mg/L	1.1	20	27-JAN-20
Molybdenum (Mo)-Dissolved		0.00053	0.00051		mg/L	2.7	20	27-JAN-20
Nickel (Ni)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JAN-20
Potassium (K)-Dissolved		1.25	1.24		mg/L	0.3	20	27-JAN-20
Selenium (Se)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-JAN-20
Silicon (Si)-Dissolved		4.23	4.30		mg/L	1.6	20	27-JAN-20
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-JAN-20
Sodium (Na)-Dissolved		673	673		mg/L	0.1	20	27-JAN-20
Strontium (Sr)-Dissolved		1.08	1.07		mg/L	1.1	20	27-JAN-20
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-JAN-20
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-JAN-20
Uranium (U)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-JAN-20
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JAN-20
Zinc (Zn)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	27-JAN-20
WG3263616-2	LCS							
Aluminum (Al)-Dissolved			96.8		%		80-120	27-JAN-20
Antimony (Sb)-Dissolved			107.6		%		80-120	27-JAN-20
Arsenic (As)-Dissolved			98.4		%		80-120	27-JAN-20
Barium (Ba)-Dissolved			100.2		%		80-120	27-JAN-20
Bismuth (Bi)-Dissolved			97.4		%		80-120	27-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980366							
WG3263616-2	LCS							
Boron (B)-Dissolved			109.7		%		80-120	27-JAN-20
Cadmium (Cd)-Dissolved			98.1		%		80-120	27-JAN-20
Calcium (Ca)-Dissolved			109.3		%		80-120	27-JAN-20
Chromium (Cr)-Dissolved			102.8		%		80-120	27-JAN-20
Cobalt (Co)-Dissolved			98.7		%		80-120	27-JAN-20
Copper (Cu)-Dissolved			98.8		%		80-120	27-JAN-20
Iron (Fe)-Dissolved			94.6		%		80-120	27-JAN-20
Lead (Pb)-Dissolved			95.2		%		80-120	27-JAN-20
Lithium (Li)-Dissolved			97.8		%		80-120	27-JAN-20
Magnesium (Mg)-Dissolved			99.7		%		80-120	27-JAN-20
Manganese (Mn)-Dissolved			97.0		%		80-120	27-JAN-20
Molybdenum (Mo)-Dissolved			101.7		%		80-120	27-JAN-20
Nickel (Ni)-Dissolved			98.2		%		80-120	27-JAN-20
Potassium (K)-Dissolved			97.2		%		80-120	27-JAN-20
Selenium (Se)-Dissolved			104.4		%		80-120	27-JAN-20
Silicon (Si)-Dissolved			101.9		%		60-140	27-JAN-20
Silver (Ag)-Dissolved			92.7		%		80-120	27-JAN-20
Sodium (Na)-Dissolved			100.1		%		80-120	27-JAN-20
Strontium (Sr)-Dissolved			96.2		%		80-120	27-JAN-20
Thallium (Tl)-Dissolved			95.9		%		80-120	27-JAN-20
Tin (Sn)-Dissolved			98.9		%		80-120	27-JAN-20
Titanium (Ti)-Dissolved			96.5		%		80-120	27-JAN-20
Uranium (U)-Dissolved			90.4		%		80-120	27-JAN-20
Vanadium (V)-Dissolved			99.1		%		80-120	27-JAN-20
Zinc (Zn)-Dissolved			97.1		%		80-120	27-JAN-20
WG3263616-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-JAN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4980366							
WG3263616-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979931							
WG3263860-10	LCS							
Ammonia as N			91.3		%		85-115	25-JAN-20
WG3263860-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4983287							
WG3265995-6	LCS							
Nitrite (as N)			99.3		%		90-110	23-JAN-20
WG3265995-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-JAN-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R4983287							
WG3265995-6	LCS							
Nitrate (as N)			103.0		%		90-110	23-JAN-20
WG3265995-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-JAN-20
OH-CL	Water							
Batch	R4979409							
WG3263286-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	23-JAN-20
ORP-CL	Water							
Batch	R4981547							
WG3263751-1	CRM	CL-ORP						
ORP			220		mV		210-230	25-JAN-20
P-T-L-COL-CL	Water							
Batch	R4978672							
WG3263143-6	LCS							
Phosphorus (P)-Total			105.5		%		80-120	24-JAN-20
WG3263143-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-JAN-20
PH-CL	Water							
Batch	R4979409							
WG3263286-8	LCS							
pH			7.01		pH		6.9-7.1	23-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4978288							
WG3262611-2	LCS							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	23-JAN-20
WG3262611-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	23-JAN-20
SO4-IC-N-CL	Water							
Batch	R4983287							
WG3265995-6	LCS							
Sulfate (SO4)			102.2		%		90-110	23-JAN-20
WG3265995-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R4981936							
WG3264177-5	LCS							
Total Dissolved Solids			100.3		%		85-115	27-JAN-20
Batch	R4981936							
WG3264177-4	MB							
Total Dissolved Solids			<10		mg/L		10	27-JAN-20
TKN-L-F-CL		Water						
Batch	R4978609							
WG3263076-6	LCS							
Total Kjeldahl Nitrogen			94.2		%		75-125	24-JAN-20
Batch	R4978609							
WG3263076-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-JAN-20
TSS-L-CL		Water						
Batch	R4982648							
WG3264264-2	LCS							
Total Suspended Solids			88.5		%		85-115	27-JAN-20
Batch	R4982648							
WG3264264-1	MB							
Total Suspended Solids			<1.0		mg/L		1	27-JAN-20
TURBIDITY-CL		Water						
Batch	R4979688							
WG3263446-2	LCS							
Turbidity			105.0		%		85-115	24-JAN-20
Batch	R4979688							
WG3263446-1	MB							
Turbidity			<0.10		NTU		0.1	24-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	22-JAN-20 14:40	25-JAN-20 07:00	0.25	64	hours	EHTR-FM
pH	1	22-JAN-20 14:40	23-JAN-20 15:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2408975 were received on 23-JAN-20 09:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck



L2408975-COFC

COC ID: COC_WG_Q1_20200122

RUSH: No

PROJECT/CLIENT INFO				FURTHER INFO			
Facility Name / Job#	Coal Mountain Operations			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jay Jones			Email 1:	Scott.Holmgren@teck.com	X	X
Email	Jay.Jones@teck.com			Email 2:	teckcoal@equisonline.com		X
Address	PO Box 3000			Email 3:	Jay.Jones@teck.com	X	X
City	Sparwood	Province	BC	Email 4:	victoria.sharpe@teck.com	X	X
Postal Code	V0B 2G0	Country	Canada	Email 5:	don.sadno@teck.com	X	X
Phone Number	1-250-425-7321			PO number	VPO00683186		

SAMPLE DETAILS							ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
CM_MW4-DP_WG_2020-01-14_N	CM_MW4-DP	WG	No	2020/01/22	14:40	G	5	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Dr</i>	<i>1/23/20</i>

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	DS/JD	Mobile #	250-425-7522
Regular (default)	<input checked="" type="checkbox"/>	<i>Jagudin</i>			
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>				
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>				
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>				
		Sampler's Signature	Date/Time		January 22, 2020

J



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 25-JAN-20
Report Date: 29-DEC-20 12:01 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2409793
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200124
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2409793-1 to -3.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-1 CM_MW7-DP_WG_2020-01-14_N							
Sampled By: VS/JD on 24-JAN-20 @ 13:20							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	463		5.0	mg/L		28-JAN-20	R4983052
Carbonate (CO3)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-JAN-20	R4979882
Hydroxide (OH)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Total Kjeldahl Nitrogen	0.342		0.050	mg/L		27-JAN-20	R4980012
Total Organic Carbon	0.92		0.50	mg/L		26-JAN-20	R4979882
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	30-JAN-20	30-JAN-20	R4984617
Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-20	29-JAN-20	R4982896
Dissolved Mercury Filtration Location	FIELD					29-JAN-20	R4983330
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-JAN-20	30-JAN-20	R4984617
Antimony (Sb)-Dissolved	0.00021		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Barium (Ba)-Dissolved	0.0135		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Boron (B)-Dissolved	0.055		0.020	mg/L	30-JAN-20	30-JAN-20	R4984617
Cadmium (Cd)-Dissolved	0.056		0.010	ug/L	30-JAN-20	30-JAN-20	R4984617
Calcium (Ca)-Dissolved	367		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Cobalt (Co)-Dissolved	1.17		0.20	ug/L	30-JAN-20	30-JAN-20	R4984617
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	30-JAN-20	30-JAN-20	R4984617
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	30-JAN-20	30-JAN-20	R4984617
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Lithium (Li)-Dissolved	0.0738		0.0020	mg/L	30-JAN-20	30-JAN-20	R4984617
Magnesium (Mg)-Dissolved	139		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Manganese (Mn)-Dissolved	0.424		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Molybdenum (Mo)-Dissolved	<0.00010	DLA	0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Nickel (Ni)-Dissolved	0.0157		0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Potassium (K)-Dissolved	2.63		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Selenium (Se)-Dissolved	6.38		0.10	ug/L	30-JAN-20	30-JAN-20	R4984617
Silicon (Si)-Dissolved	2.39		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	30-JAN-20	30-JAN-20	R4984617
Sodium (Na)-Dissolved	30.4		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Strontium (Sr)-Dissolved	0.861		0.00040	mg/L	30-JAN-20	30-JAN-20	R4984617
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	30-JAN-20	30-JAN-20	R4984617
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Uranium (U)-Dissolved	0.00511		0.000020	mg/L	30-JAN-20	30-JAN-20	R4984617
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Zinc (Zn)-Dissolved	0.0048		0.0020	mg/L	30-JAN-20	30-JAN-20	R4984617
Hardness							
Hardness (as CaCO3)	1490		0.50	mg/L		30-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	17.5		1.0	mg/L		29-JAN-20	R4983968
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-1 CM_MW7-DP_WG_2020-01-14_N Sampled By: VS/JD on 24-JAN-20 @ 13:20 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	380		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Total (as CaCO3)	380		1.0	mg/L		28-JAN-20	R4983052
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		26-JAN-20	R4979959
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-JAN-20	R4981868
Chloride in Water by IC							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		25-JAN-20	R4981868
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2040		2.0	uS/cm		28-JAN-20	R4983052
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		25-JAN-20	R4981868
Ion Balance Calculation							
Ion Balance	104		-100	%		30-JAN-20	
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		30-JAN-20	
Anion Sum	30.0			meq/L		30-JAN-20	
Cation Sum	31.2			meq/L		30-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	2.08	DLHC	0.025	mg/L		25-JAN-20	R4981868
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.191	DLHC	0.0050	mg/L		25-JAN-20	R4981868
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		25-JAN-20	R4979663
Oxidation redution potential by elect.							
ORP	485		-1000	mV		25-JAN-20	R4981547
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		27-JAN-20	R4980066
Sulfate in Water by IC							
Sulfate (SO4)	1070	DLHC	1.5	mg/L		25-JAN-20	R4981868
Total Dissolved Solids							
Total Dissolved Solids	2030	DLHC	20	mg/L		28-JAN-20	R4983033
Total Suspended Solids							
Total Suspended Solids	3.2		1.0	mg/L		28-JAN-20	R4983100
Turbidity							
Turbidity	2.39		0.10	NTU		25-JAN-20	R4979687
pH							
pH	7.90		0.10	pH		28-JAN-20	R4983052
L2409793-2 CM_MW7-SH_WG_2020-01-14_N Sampled By: VS/JD on 24-JAN-20 @ 13:36 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	340		5.0	mg/L		28-JAN-20	R4983052
Carbonate (CO3)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Dissolved Organic Carbon	2.18		0.50	mg/L		26-JAN-20	R4979882
Hydroxide (OH)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Total Kjeldahl Nitrogen	0.162		0.050	mg/L		27-JAN-20	R4980012
Total Organic Carbon	2.94		0.50	mg/L		26-JAN-20	R4979882
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-2 CM_MW7-SH_WG_2020-01-14_N							
Sampled By: VS/JD on 24-JAN-20 @ 13:36							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-JAN-20	30-JAN-20	R4984617
Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-JAN-20	29-JAN-20	R4982896
Dissolved Mercury Filtration Location	FIELD					29-JAN-20	R4983330
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-JAN-20	30-JAN-20	R4984617
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Arsenic (As)-Dissolved	0.00112		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Barium (Ba)-Dissolved	0.0352		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Boron (B)-Dissolved	0.037		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-JAN-20	30-JAN-20	R4984617
Calcium (Ca)-Dissolved	150		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Cobalt (Co)-Dissolved	0.75		0.10	ug/L	30-JAN-20	30-JAN-20	R4984617
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Iron (Fe)-Dissolved	1.55		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Lithium (Li)-Dissolved	0.0075		0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Magnesium (Mg)-Dissolved	48.3		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Manganese (Mn)-Dissolved	0.191		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Molybdenum (Mo)-Dissolved	0.00132		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Nickel (Ni)-Dissolved	0.00149		0.00050	mg/L	30-JAN-20	30-JAN-20	R4984617
Potassium (K)-Dissolved	1.76		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Selenium (Se)-Dissolved	0.080		0.050	ug/L	30-JAN-20	30-JAN-20	R4984617
Silicon (Si)-Dissolved	4.94		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Sodium (Na)-Dissolved	17.4		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Strontium (Sr)-Dissolved	0.493		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Tin (Sn)-Dissolved	0.00017		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Uranium (U)-Dissolved	0.00100		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-JAN-20	30-JAN-20	R4984617
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Hardness							
Hardness (as CaCO3)	574		0.50	mg/L		30-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.2		1.0	mg/L		29-JAN-20	R4983968
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	279		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Total (as CaCO3)	279		1.0	mg/L		28-JAN-20	R4983052
Ammonia, Total (as N)							
Ammonia as N	0.0860		0.0050	mg/L		26-JAN-20	R4979959
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-JAN-20	R4981868
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-2 CM_MW7-SH_WG_2020-01-14_N Sampled By: VS/JD on 24-JAN-20 @ 13:36 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	12.0	DLHC	2.5	mg/L		25-JAN-20	R4981868
Electrical Conductivity (EC) Conductivity (@ 25C)	972		2.0	uS/cm		28-JAN-20	R4983052
Fluoride in Water by IC Fluoride (F)	0.17	DLHC	0.10	mg/L		25-JAN-20	R4981868
Ion Balance Calculation Ion Balance	100		-100	%		30-JAN-20	
Ion Balance Calculation Cation - Anion Balance	0.0			%		30-JAN-20	
Anion Sum	12.4			meq/L		30-JAN-20	
Cation Sum	12.4			meq/L		30-JAN-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.222	DLHC	0.025	mg/L		25-JAN-20	R4981868
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-JAN-20	R4981868
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-JAN-20	R4979663
Oxidation redution potential by elect. ORP	185		-1000	mV		25-JAN-20	R4981547
Phosphorus (P)-Total Phosphorus (P)-Total	0.0125		0.0020	mg/L		27-JAN-20	R4980066
Sulfate in Water by IC Sulfate (SO4)	309	DLHC	1.5	mg/L		25-JAN-20	R4981868
Total Dissolved Solids Total Dissolved Solids	748	DLHC	40	mg/L		28-JAN-20	R4983033
Total Suspended Solids Total Suspended Solids	63.6		1.0	mg/L		28-JAN-20	R4983100
Turbidity Turbidity	33.0		0.10	NTU		25-JAN-20	R4979687
pH pH	7.93		0.10	pH		28-JAN-20	R4983052
L2409793-3 CM_MW8_WG_2020-01-14_N Sampled By: VS/JD on 24-JAN-20 @ 12:30 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	369		5.0	mg/L		28-JAN-20	R4983052
Carbonate (CO3)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Dissolved Organic Carbon	0.77		0.50	mg/L		26-JAN-20	R4979882
Hydroxide (OH)	<5.0		5.0	mg/L		28-JAN-20	R4983052
Total Kjeldahl Nitrogen	0.679		0.050	mg/L		27-JAN-20	R4980012
Total Organic Carbon	1.46		0.50	mg/L		26-JAN-20	R4979882
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-JAN-20	30-JAN-20	R4984617
Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-20	29-JAN-20	R4982896
Dissolved Mercury Filtration Location	FIELD					29-JAN-20	R4983330
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					30-JAN-20	R4983507
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-JAN-20	30-JAN-20	R4984617

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-3 CM_MW8_WG_2020-01-14_N							
Sampled By: VS/JD on 24-JAN-20 @ 12:30							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Barium (Ba)-Dissolved	0.108		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Boron (B)-Dissolved	0.313		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Cadmium (Cd)-Dissolved	0.0051		0.0050	ug/L	30-JAN-20	30-JAN-20	R4984617
Calcium (Ca)-Dissolved	66.5		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	30-JAN-20	30-JAN-20	R4984617
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Lithium (Li)-Dissolved	0.0752		0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Magnesium (Mg)-Dissolved	18.9		0.10	mg/L	30-JAN-20	30-JAN-20	R4984617
Manganese (Mn)-Dissolved	0.134		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Molybdenum (Mo)-Dissolved	0.000874		0.000050	mg/L	30-JAN-20	30-JAN-20	R4984617
Nickel (Ni)-Dissolved	0.00076		0.00050	mg/L	30-JAN-20	30-JAN-20	R4984617
Potassium (K)-Dissolved	2.75		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	30-JAN-20	30-JAN-20	R4984617
Silicon (Si)-Dissolved	5.98		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Sodium (Na)-Dissolved	55.6		0.050	mg/L	30-JAN-20	30-JAN-20	R4984617
Strontium (Sr)-Dissolved	4.92		0.00020	mg/L	30-JAN-20	30-JAN-20	R4984617
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Tin (Sn)-Dissolved	0.00043		0.00010	mg/L	30-JAN-20	30-JAN-20	R4984617
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-JAN-20	30-JAN-20	R4984617
Uranium (U)-Dissolved	0.000507		0.000010	mg/L	30-JAN-20	30-JAN-20	R4984617
Vanadium (V)-Dissolved	<0.000050		0.00050	mg/L	30-JAN-20	30-JAN-20	R4984617
Zinc (Zn)-Dissolved	0.0158		0.0010	mg/L	30-JAN-20	30-JAN-20	R4984617
Hardness							
Hardness (as CaCO3)	244		0.50	mg/L		30-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		29-JAN-20	R4983968
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	302		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-20	R4983052
Alkalinity, Total (as CaCO3)	302		1.0	mg/L		28-JAN-20	R4983052
Ammonia, Total (as N)							
Ammonia as N	0.599	DLHC	0.025	mg/L		26-JAN-20	R4979959
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		25-JAN-20	R4981868
Chloride in Water by IC							
Chloride (Cl)	2.16		0.50	mg/L		25-JAN-20	R4981868
Electrical Conductivity (EC)							
Conductivity (@ 25C)	592		2.0	uS/cm		28-JAN-20	R4983052
Fluoride in Water by IC							
Fluoride (F)	0.312		0.020	mg/L		25-JAN-20	R4981868
Ion Balance Calculation							
Cation - Anion Balance	2.5			%		30-JAN-20	
Anion Sum	7.05			meq/L		30-JAN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2409793-3 CM_MW8_WG_2020-01-14_N							
Sampled By: VS/JD on 24-JAN-20 @ 12:30							
Matrix: WG							
Ion Balance Calculation							
Cation Sum	7.41			meq/L		30-JAN-20	
Ion Balance Calculation							
Ion Balance	105		-100	%		30-JAN-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.219		0.0050	mg/L		25-JAN-20	R4981868
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0067		0.0010	mg/L		25-JAN-20	R4981868
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-JAN-20	R4979663
Oxidation redution potential by elect.							
ORP	413		-1000	mV		25-JAN-20	R4981547
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0235		0.0020	mg/L		27-JAN-20	R4980066
Sulfate in Water by IC							
Sulfate (SO4)	43.9		0.30	mg/L		25-JAN-20	R4981868
Total Dissolved Solids							
Total Dissolved Solids	414	DLHC	20	mg/L		28-JAN-20	R4983033
Total Suspended Solids							
Total Suspended Solids	10.8		1.0	mg/L		28-JAN-20	R4983100
Turbidity							
Turbidity	11.6		0.10	NTU		25-JAN-20	R4979687
pH							
pH	8.07		0.10	pH		28-JAN-20	R4983052

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200124

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2409793

Report Date: 29-DEC-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4983968							
WG3266824-2	LCS							
Acidity (as CaCO3)			86.2		%		85-115	29-JAN-20
WG3266824-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	29-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4983052							
WG3265758-5	LCS							
Alkalinity, Total (as CaCO3)			98.1		%		85-115	28-JAN-20
WG3265758-8	LCS							
Alkalinity, Total (as CaCO3)			99.0		%		85-115	28-JAN-20
WG3265758-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-20
WG3265758-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4984617							
WG3266293-3	DUP	L2409793-1						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	30-JAN-20
WG3266293-2	LCS							
Beryllium (Be)-Dissolved			100.0		%		80-120	30-JAN-20
WG3266293-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JAN-20
WG3266293-4	MS	L2409793-2						
Beryllium (Be)-Dissolved			98.8		%		70-130	30-JAN-20
BIC-CL								
	Water							
Batch	R4983052							
WG3265758-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4981868							
WG3265069-14	LCS							
Bromide (Br)			103.9		%		85-115	25-JAN-20
WG3265069-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	25-JAN-20
C-DIS-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL	Water							
Batch	R4979882							
WG3263952-2 LCS								
Dissolved Organic Carbon			112.1		%		80-120	26-JAN-20
WG3263952-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JAN-20
C-TOT-ORG-LOW-CL	Water							
Batch	R4979882							
WG3263952-2 LCS								
Total Organic Carbon			108.7		%		80-120	26-JAN-20
WG3263952-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-JAN-20
CL-IC-N-CL	Water							
Batch	R4981868							
WG3265069-14 LCS								
Chloride (Cl)			102.7		%		90-110	25-JAN-20
WG3265069-13 MB								
Chloride (Cl)			<0.50		mg/L		0.5	25-JAN-20
CO3-CL	Water							
Batch	R4983052							
WG3265758-7 MB								
Carbonate (CO3)			<5.0		mg/L		5	28-JAN-20
EC-L-PCT-CL	Water							
Batch	R4983052							
WG3265758-5 LCS								
Conductivity (@ 25C)			96.3		%		90-110	28-JAN-20
WG3265758-8 LCS								
Conductivity (@ 25C)			98.1		%		90-110	28-JAN-20
WG3265758-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-20
WG3265758-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-20
F-IC-N-CL	Water							
Batch	R4981868							
WG3265069-14 LCS								
Fluoride (F)			104.1		%		90-110	25-JAN-20
WG3265069-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	25-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R4982896							
WG3265868-2	LCS							
Mercury (Hg)-Dissolved			94.2		%		80-120	29-JAN-20
WG3265868-1	MB	NP						
Mercury (Hg)-Dissolved			<0.00005C		mg/L		0.000005	29-JAN-20
MET-D-CCMS-VA								
	Water							
Batch	R4984617							
WG3266293-3	DUP	L2409793-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	30-JAN-20
Antimony (Sb)-Dissolved		0.00021	0.00022		mg/L	3.6	20	30-JAN-20
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-JAN-20
Barium (Ba)-Dissolved		0.0135	0.0128		mg/L	5.1	20	30-JAN-20
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JAN-20
Boron (B)-Dissolved		0.055	0.054		mg/L	3.0	20	30-JAN-20
Cadmium (Cd)-Dissolved		0.000056	0.000071	J	mg/L	0.000015	0.00002	30-JAN-20
Calcium (Ca)-Dissolved		367	359		mg/L	2.1	20	30-JAN-20
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-JAN-20
Cobalt (Co)-Dissolved		0.00117	0.00114		mg/L	2.8	20	30-JAN-20
Copper (Cu)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	30-JAN-20
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	30-JAN-20
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JAN-20
Lithium (Li)-Dissolved		0.0738	0.0716		mg/L	3.0	20	30-JAN-20
Magnesium (Mg)-Dissolved		139	136		mg/L	2.5	20	30-JAN-20
Manganese (Mn)-Dissolved		0.424	0.418		mg/L	1.5	20	30-JAN-20
Molybdenum (Mo)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-JAN-20
Nickel (Ni)-Dissolved		0.0157	0.0157		mg/L	0.1	20	30-JAN-20
Potassium (K)-Dissolved		2.63	2.55		mg/L	3.0	20	30-JAN-20
Selenium (Se)-Dissolved		0.00638	0.00617		mg/L	3.3	20	30-JAN-20
Silicon (Si)-Dissolved		2.39	2.35		mg/L	1.4	20	30-JAN-20
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-JAN-20
Sodium (Na)-Dissolved		30.4	29.7		mg/L	2.1	20	30-JAN-20
Strontium (Sr)-Dissolved		0.861	0.884		mg/L	2.6	20	30-JAN-20
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-JAN-20
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	30-JAN-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-JAN-20
Uranium (U)-Dissolved		0.00511	0.00516		mg/L	0.9	20	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4984617							
WG3266293-3	DUP	L2409793-1						
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JAN-20
Zinc (Zn)-Dissolved		0.0048	0.0050		mg/L	4.8	20	30-JAN-20
WG3266293-2	LCS							
Aluminum (Al)-Dissolved			96.6		%		80-120	30-JAN-20
Antimony (Sb)-Dissolved			99.97		%		80-120	30-JAN-20
Arsenic (As)-Dissolved			100.5		%		80-120	30-JAN-20
Barium (Ba)-Dissolved			96.4		%		80-120	30-JAN-20
Bismuth (Bi)-Dissolved			101.1		%		80-120	30-JAN-20
Boron (B)-Dissolved			101.8		%		80-120	30-JAN-20
Cadmium (Cd)-Dissolved			95.6		%		80-120	30-JAN-20
Calcium (Ca)-Dissolved			104.8		%		80-120	30-JAN-20
Chromium (Cr)-Dissolved			95.8		%		80-120	30-JAN-20
Cobalt (Co)-Dissolved			97.6		%		80-120	30-JAN-20
Copper (Cu)-Dissolved			93.8		%		80-120	30-JAN-20
Iron (Fe)-Dissolved			92.7		%		80-120	30-JAN-20
Lead (Pb)-Dissolved			96.8		%		80-120	30-JAN-20
Lithium (Li)-Dissolved			104.1		%		80-120	30-JAN-20
Magnesium (Mg)-Dissolved			96.9		%		80-120	30-JAN-20
Manganese (Mn)-Dissolved			97.3		%		80-120	30-JAN-20
Molybdenum (Mo)-Dissolved			105.8		%		80-120	30-JAN-20
Nickel (Ni)-Dissolved			95.2		%		80-120	30-JAN-20
Potassium (K)-Dissolved			99.4		%		80-120	30-JAN-20
Selenium (Se)-Dissolved			98.4		%		80-120	30-JAN-20
Silicon (Si)-Dissolved			98.4		%		60-140	30-JAN-20
Silver (Ag)-Dissolved			103.2		%		80-120	30-JAN-20
Sodium (Na)-Dissolved			103.5		%		80-120	30-JAN-20
Strontium (Sr)-Dissolved			102.6		%		80-120	30-JAN-20
Thallium (Tl)-Dissolved			99.8		%		80-120	30-JAN-20
Tin (Sn)-Dissolved			98.8		%		80-120	30-JAN-20
Titanium (Ti)-Dissolved			95.1		%		80-120	30-JAN-20
Uranium (U)-Dissolved			97.5		%		80-120	30-JAN-20
Vanadium (V)-Dissolved			96.1		%		80-120	30-JAN-20
Zinc (Zn)-Dissolved			97.0		%		80-120	30-JAN-20
WG3266293-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4984617							
WG3266293-1	MB	NP						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JAN-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JAN-20
WG3266293-4	MS	L2409793-2						
Aluminum (Al)-Dissolved			94.1		%		70-130	30-JAN-20
Antimony (Sb)-Dissolved			99.0		%		70-130	30-JAN-20
Arsenic (As)-Dissolved			104.8		%		70-130	30-JAN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4984617							
WG3266293-4	MS	L2409793-2						
Bismuth (Bi)-Dissolved			89.2		%		70-130	30-JAN-20
Boron (B)-Dissolved			102.9		%		70-130	30-JAN-20
Cadmium (Cd)-Dissolved			97.1		%		70-130	30-JAN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-JAN-20
Chromium (Cr)-Dissolved			94.3		%		70-130	30-JAN-20
Cobalt (Co)-Dissolved			93.6		%		70-130	30-JAN-20
Copper (Cu)-Dissolved			89.0		%		70-130	30-JAN-20
Iron (Fe)-Dissolved			96.4		%		70-130	30-JAN-20
Lead (Pb)-Dissolved			94.6		%		70-130	30-JAN-20
Lithium (Li)-Dissolved			103.8		%		70-130	30-JAN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-JAN-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	30-JAN-20
Molybdenum (Mo)-Dissolved			103.7		%		70-130	30-JAN-20
Nickel (Ni)-Dissolved			90.3		%		70-130	30-JAN-20
Potassium (K)-Dissolved			96.1		%		70-130	30-JAN-20
Selenium (Se)-Dissolved			122.0		%		70-130	30-JAN-20
Silicon (Si)-Dissolved			90.6		%		70-130	30-JAN-20
Silver (Ag)-Dissolved			80.9		%		70-130	30-JAN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-JAN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-JAN-20
Thallium (Tl)-Dissolved			94.3		%		70-130	30-JAN-20
Tin (Sn)-Dissolved			99.5		%		70-130	30-JAN-20
Titanium (Ti)-Dissolved			99.8		%		70-130	30-JAN-20
Uranium (U)-Dissolved			100.8		%		70-130	30-JAN-20
Vanadium (V)-Dissolved			97.8		%		70-130	30-JAN-20
Zinc (Zn)-Dissolved			94.4		%		70-130	30-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4979959							
WG3264171-11	DUP	L2409793-1						
Ammonia as N			<0.0050	RPD-NA	mg/L	N/A	20	26-JAN-20
WG3264171-10	LCS							
Ammonia as N			107.7		%		85-115	26-JAN-20
WG3264171-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-JAN-20
WG3264171-12	MS	L2409793-1						



Quality Control Report

Workorder: L2409793

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch R4979959								
WG3264171-12 MS		L2409793-1						
Ammonia as N			106.5		%		75-125	26-JAN-20
NO2-L-IC-N-CL	Water							
Batch R4981868								
WG3265069-14 LCS								
Nitrite (as N)			97.8		%		90-110	25-JAN-20
WG3265069-13 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	25-JAN-20
NO3-L-IC-N-CL	Water							
Batch R4981868								
WG3265069-14 LCS								
Nitrate (as N)			102.7		%		90-110	25-JAN-20
WG3265069-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	25-JAN-20
OH-CL	Water							
Batch R4983052								
WG3265758-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	28-JAN-20
ORP-CL	Water							
Batch R4981547								
WG3263751-3 CRM		CL-ORP						
ORP			222		mV		210-230	25-JAN-20
P-T-L-COL-CL	Water							
Batch R4980066								
WG3264299-10 LCS								
Phosphorus (P)-Total			101.6		%		80-120	27-JAN-20
WG3264299-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JAN-20
PH-CL	Water							
Batch R4983052								
WG3265758-5 LCS								
pH			7.03		pH		6.9-7.1	28-JAN-20
WG3265758-8 LCS								
pH			7.01		pH		6.9-7.1	28-JAN-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL								
	Water							
Batch	R4979663							
WG3263756-3	LCS							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	25-JAN-20
WG3263756-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-JAN-20
WG3263756-5	MS	L2409793-3						
Orthophosphate-Dissolved (as P)			100.8		%		70-130	25-JAN-20
SO4-IC-N-CL								
	Water							
Batch	R4981868							
WG3265069-14	LCS							
Sulfate (SO4)			101.7		%		90-110	25-JAN-20
WG3265069-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	25-JAN-20
SOLIDS-TDS-CL								
	Water							
Batch	R4983033							
WG3264940-6	DUP	L2409793-2						
Total Dissolved Solids		748	766		mg/L	2.4	20	28-JAN-20
WG3264940-5	LCS							
Total Dissolved Solids			100.4		%		85-115	28-JAN-20
WG3264940-4	MB							
Total Dissolved Solids			<10		mg/L		10	28-JAN-20
TKN-L-F-CL								
	Water							
Batch	R4980012							
WG3264166-3	DUP	L2409793-3						
Total Kjeldahl Nitrogen		0.679	0.674		mg/L	0.7	20	27-JAN-20
WG3264166-2	LCS							
Total Kjeldahl Nitrogen			97.4		%		75-125	27-JAN-20
WG3264166-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-JAN-20
WG3264166-4	MS	L2409793-3						
Total Kjeldahl Nitrogen			110.0		%		70-130	27-JAN-20
TSS-L-CL								
	Water							
Batch	R4983100							
WG3264988-2	LCS							
Total Suspended Solids			96.0		%		85-115	28-JAN-20
WG3264988-1	MB							
Total Suspended Solids			<1.0		mg/L		1	28-JAN-20
TURBIDITY-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4979687							
WG3263754-8	LCS							
Turbidity			99.0		%		85-115	25-JAN-20
WG3263754-7	MB							
Turbidity			<0.10		NTU		0.1	25-JAN-20

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Report Date: 29-DEC-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	24-JAN-20 13:20	25-JAN-20 09:30	0.25	20	hours	EHTR-FM
	2	24-JAN-20 13:36	25-JAN-20 09:30	0.25	20	hours	EHTR-FM
	3	24-JAN-20 12:30	25-JAN-20 09:30	0.25	21	hours	EHTR-FM
pH	1	24-JAN-20 13:20	28-JAN-20 14:00	0.25	97	hours	EHTR-FM
	2	24-JAN-20 13:36	28-JAN-20 14:00	0.25	96	hours	EHTR-FM
	3	24-JAN-20 12:30	28-JAN-20 14:00	0.25	97	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2409793 were received on 25-JAN-20 08:35.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q1_20200124		TURNAROUND TIME: REGULAR			RUSH: NO				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Project Manager Jay Jones		Lab Contact Lyudmyla Shvets		Email 1: Victoria.Sharpe@teck.com			X	X	X
Email Jay.Jones@teck.com		Email Lyudmyla.Shvets@alsglobal.com		Email 2: teckcoal@equisonline.com					X
Address PO Box 3000		Address 2559 29th St. NE		Email 3: jay.jones@teck.com			X	X	X
City Sparwood		Province BC	City Calgary	Province AB	Email 4: don.sacino@teck.com			X	X
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5	Country Canada					
Phone Number 1-250-425-7321		Phone Number 403 407 1800		PO number VPO00683186					

SAMPLE DETAILS Filtered: F, Field, L, Lab, FL, Field & Lab, N, None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED					OTHER INFO					
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N	
 L2409793-COFC																		
CM_MW7-DP_WG_2020-01-14_N	CM_MW7-DP	WG	No	2020/01/24	13:20	G	5	1	1	1	1	1						
CM_MW7-SH_WG_2020-01-14_N	CM_MW7-SH	WG	No	2020/01/24	13:36	G	5	1	1	1	1	1						
CM_MW8_WG_2020-01-14_N	CM_MW8	WG	No	2020/01/24	12:30	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINODISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	1/23/20

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>		Priority (2-3 business days) - 50% surcharge		Emergency (1 Business Day) - 100% surcharge		For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name		VS/MSD		Mobile #		250-425-7522			
Sampler's Signature		<i>[Signature]</i>		Date/Time		January 24, 2020			

[Handwritten mark]



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 28-JAN-20
Report Date: 29-DEC-20 12:04 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2410735
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200127
Legal Site Desc:

Comments:

29-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2410735-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2410735-1 CM_MW10_WS_2020-01-14_N							
Sampled By: SH on 27-JAN-20 @ 15:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	320		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	1.22	DTC	0.50	mg/L		30-JAN-20	R4985586
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	0.109		0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	0.84		0.50	mg/L		30-JAN-20	R4985586
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-JAN-20	31-JAN-20	R4985944
Dissolved Metals Filtration Location	FIELD					31-JAN-20	R4984706
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-JAN-20	30-JAN-20	R4983529
Dissolved Mercury Filtration Location	FIELD					30-JAN-20	R4984112
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					31-JAN-20	R4984706
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-JAN-20	31-JAN-20	R4985944
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Arsenic (As)-Dissolved	0.00237		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Barium (Ba)-Dissolved	0.153		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-20	31-JAN-20	R4985944
Boron (B)-Dissolved	0.021		0.010	mg/L	31-JAN-20	31-JAN-20	R4985944
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-JAN-20	31-JAN-20	R4985944
Calcium (Ca)-Dissolved	77.9		0.050	mg/L	31-JAN-20	31-JAN-20	R4985944
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-JAN-20	31-JAN-20	R4985944
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	31-JAN-20	31-JAN-20	R4985944
Iron (Fe)-Dissolved	2.65		0.010	mg/L	31-JAN-20	31-JAN-20	R4985944
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-20	31-JAN-20	R4985944
Lithium (Li)-Dissolved	0.0104		0.0010	mg/L	31-JAN-20	31-JAN-20	R4985944
Magnesium (Mg)-Dissolved	21.1		0.10	mg/L	31-JAN-20	31-JAN-20	R4985944
Manganese (Mn)-Dissolved	0.100		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Molybdenum (Mo)-Dissolved	0.00356		0.000050	mg/L	31-JAN-20	31-JAN-20	R4985944
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-20	31-JAN-20	R4985944
Potassium (K)-Dissolved	0.784		0.050	mg/L	31-JAN-20	31-JAN-20	R4985944
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-JAN-20	31-JAN-20	R4985944
Silicon (Si)-Dissolved	5.10		0.050	mg/L	31-JAN-20	31-JAN-20	R4985944
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-20	31-JAN-20	R4985944
Sodium (Na)-Dissolved	24.5		0.050	mg/L	31-JAN-20	31-JAN-20	R4985944
Strontium (Sr)-Dissolved	0.244		0.00020	mg/L	31-JAN-20	31-JAN-20	R4985944
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-20	31-JAN-20	R4985944
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-20	31-JAN-20	R4985944
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-JAN-20	31-JAN-20	R4985944
Uranium (U)-Dissolved	0.000302		0.000010	mg/L	31-JAN-20	31-JAN-20	R4985944
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-20	31-JAN-20	R4985944
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-JAN-20	31-JAN-20	R4985944
Hardness							
Hardness (as CaCO3)	281		0.50	mg/L		31-JAN-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.6		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2410735-1 CM_MW10_WS_2020-01-14_N							
Sampled By: SH on 27-JAN-20 @ 15:10							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	262		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	262		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	0.0867		0.0050	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		28-JAN-20	R4983120
Chloride in Water by IC							
Chloride (Cl)	0.88		0.50	mg/L		28-JAN-20	R4983120
Electrical Conductivity (EC)							
Conductivity (@ 25C)	607		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC							
Fluoride (F)	1.04		0.020	mg/L		28-JAN-20	R4983120
Ion Balance Calculation							
Ion Balance	94.6		-100	%		01-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		01-FEB-20	
Anion Sum	7.25			meq/L		01-FEB-20	
Cation Sum	6.86			meq/L		01-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		28-JAN-20	R4983120
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-JAN-20	R4983120
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		28-JAN-20	R4982569
Oxidation redution potential by elect.							
ORP	323		-1000	mV		29-JAN-20	R4985048
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0075		0.0020	mg/L		29-JAN-20	R4983128
Sulfate in Water by IC							
Sulfate (SO4)	92.6		0.30	mg/L		28-JAN-20	R4983120
Total Dissolved Solids							
Total Dissolved Solids	411	DLHC	20	mg/L		30-JAN-20	R4985408
Total Suspended Solids							
Total Suspended Solids	3.6		1.0	mg/L		30-JAN-20	R4985815
Turbidity							
Turbidity	25.3		0.10	NTU		28-JAN-20	R4981686
pH							
pH	7.75		0.10	pH		30-JAN-20	R4985627

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200127

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2410735

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4986307							
WG3268004-2	LCS							
Acidity (as CaCO3)			103.4		%		85-115	31-JAN-20
WG3268004-1	MB							
Acidity (as CaCO3)			2.0		mg/L		2	31-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4985627							
WG3267435-2	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	30-JAN-20
WG3267435-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-2	LCS							
Beryllium (Be)-Dissolved			100.3		%		80-120	31-JAN-20
WG3267066-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-JAN-20
WG3267066-4	MS	L2410735-1						
Beryllium (Be)-Dissolved			95.7		%		70-130	31-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4983120							
WG3265851-8	LCS							
Bromide (Br)			103.7		%		85-115	28-JAN-20
WG3265851-7	MB							
Bromide (Br)			<0.050		mg/L		0.05	28-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4985586							
WG3267222-2	LCS							
Dissolved Organic Carbon			107.1		%		80-120	30-JAN-20
WG3267222-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-JAN-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4985586							
WG3267222-2	LCS							
Total Organic Carbon			101.8		%		80-120	30-JAN-20
WG3267222-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-JAN-20
CL-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Batch R4983120								
WG3265851-8	LCS							
Chloride (Cl)			104.3		%		90-110	28-JAN-20
WG3265851-7	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-JAN-20
EC-L-PCT-CL								
Batch R4985627								
WG3267435-2	LCS							
Conductivity (@ 25C)			99.8		%		90-110	30-JAN-20
WG3267435-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-20
F-IC-N-CL								
Batch R4983120								
WG3265851-8	LCS							
Fluoride (F)			107.6		%		90-110	28-JAN-20
WG3265851-7	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-JAN-20
HG-D-CVAA-VA								
Batch R4983529								
WG3266899-3	DUP	L2410735-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-JAN-20
WG3266899-2	LCS							
Mercury (Hg)-Dissolved			96.2		%		80-120	30-JAN-20
WG3266899-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-20
MET-D-CCMS-VA								
Batch R4985944								
WG3267066-2	LCS							
Aluminum (Al)-Dissolved			105.8		%		80-120	31-JAN-20
Antimony (Sb)-Dissolved			97.5		%		80-120	31-JAN-20
Arsenic (As)-Dissolved			99.8		%		80-120	31-JAN-20
Barium (Ba)-Dissolved			98.3		%		80-120	31-JAN-20
Bismuth (Bi)-Dissolved			100.1		%		80-120	31-JAN-20
Boron (B)-Dissolved			100.8		%		80-120	31-JAN-20
Cadmium (Cd)-Dissolved			98.8		%		80-120	31-JAN-20
Calcium (Ca)-Dissolved			99.0		%		80-120	31-JAN-20
Chromium (Cr)-Dissolved			105.4		%		80-120	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-2	LCS							
Cobalt (Co)-Dissolved			101.5		%		80-120	31-JAN-20
Copper (Cu)-Dissolved			102.5		%		80-120	31-JAN-20
Iron (Fe)-Dissolved			104.2		%		80-120	31-JAN-20
Lead (Pb)-Dissolved			102.4		%		80-120	31-JAN-20
Lithium (Li)-Dissolved			99.4		%		80-120	31-JAN-20
Magnesium (Mg)-Dissolved			99.5		%		80-120	31-JAN-20
Manganese (Mn)-Dissolved			101.9		%		80-120	31-JAN-20
Molybdenum (Mo)-Dissolved			95.6		%		80-120	31-JAN-20
Nickel (Ni)-Dissolved			101.5		%		80-120	31-JAN-20
Potassium (K)-Dissolved			101.8		%		80-120	31-JAN-20
Selenium (Se)-Dissolved			110.2		%		80-120	31-JAN-20
Silicon (Si)-Dissolved			111.1		%		60-140	31-JAN-20
Silver (Ag)-Dissolved			98.6		%		80-120	31-JAN-20
Sodium (Na)-Dissolved			104.7		%		80-120	31-JAN-20
Strontium (Sr)-Dissolved			101.0		%		80-120	31-JAN-20
Thallium (Tl)-Dissolved			101.6		%		80-120	31-JAN-20
Tin (Sn)-Dissolved			98.8		%		80-120	31-JAN-20
Titanium (Ti)-Dissolved			94.1		%		80-120	31-JAN-20
Uranium (U)-Dissolved			100.1		%		80-120	31-JAN-20
Vanadium (V)-Dissolved			103.7		%		80-120	31-JAN-20
Zinc (Zn)-Dissolved			97.2		%		80-120	31-JAN-20
WG3267066-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-JAN-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-JAN-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-1 MB		NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-JAN-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-JAN-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-JAN-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-JAN-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-JAN-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-JAN-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-JAN-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-JAN-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-JAN-20
WG3267066-4 MS		L2410735-1						
Aluminum (Al)-Dissolved			96.6		%		70-130	31-JAN-20
Antimony (Sb)-Dissolved			96.5		%		70-130	31-JAN-20
Arsenic (As)-Dissolved			96.4		%		70-130	31-JAN-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Bismuth (Bi)-Dissolved			88.5		%		70-130	31-JAN-20
Boron (B)-Dissolved			95.8		%		70-130	31-JAN-20
Cadmium (Cd)-Dissolved			93.0		%		70-130	31-JAN-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Chromium (Cr)-Dissolved			94.4		%		70-130	31-JAN-20
Cobalt (Co)-Dissolved			90.6		%		70-130	31-JAN-20
Copper (Cu)-Dissolved			89.2		%		70-130	31-JAN-20
Iron (Fe)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Lead (Pb)-Dissolved			92.3		%		70-130	31-JAN-20
Lithium (Li)-Dissolved			90.5		%		70-130	31-JAN-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	31-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4985944							
WG3267066-4	MS	L2410735-1						
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Molybdenum (Mo)-Dissolved			90.4		%		70-130	31-JAN-20
Nickel (Ni)-Dissolved			89.6		%		70-130	31-JAN-20
Potassium (K)-Dissolved			98.0		%		70-130	31-JAN-20
Selenium (Se)-Dissolved			109.1		%		70-130	31-JAN-20
Silicon (Si)-Dissolved			97.1		%		70-130	31-JAN-20
Silver (Ag)-Dissolved			80.6		%		70-130	31-JAN-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	31-JAN-20
Thallium (Tl)-Dissolved			89.1		%		70-130	31-JAN-20
Tin (Sn)-Dissolved			94.2		%		70-130	31-JAN-20
Titanium (Ti)-Dissolved			93.9		%		70-130	31-JAN-20
Uranium (U)-Dissolved			92.7		%		70-130	31-JAN-20
Vanadium (V)-Dissolved			96.2		%		70-130	31-JAN-20
Zinc (Zn)-Dissolved			88.2		%		70-130	31-JAN-20
NH3-L-F-CL								
	Water							
Batch	R4986982							
WG3267704-2	LCS							
Ammonia as N			104.8		%		85-115	31-JAN-20
WG3267704-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4983120							
WG3265851-8	LCS							
Nitrite (as N)			100.6		%		90-110	28-JAN-20
WG3265851-7	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4983120							
WG3265851-8	LCS							
Nitrate (as N)			105.7		%		90-110	28-JAN-20
WG3265851-7	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-JAN-20
ORP-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R4985048							
WG3265673-1	CRM	CL-ORP						
ORP			224		mV		210-230	29-JAN-20
P-T-L-COL-CL	Water							
Batch	R4983128							
WG3265762-10	LCS							
Phosphorus (P)-Total			105.7		%		80-120	29-JAN-20
WG3265762-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-JAN-20
PH-CL	Water							
Batch	R4985627							
WG3267435-2	LCS							
pH			6.99		pH		6.9-7.1	30-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4982569							
WG3265217-6	LCS							
Orthophosphate-Dissolved (as P)			100.3		%		80-120	28-JAN-20
WG3265217-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-JAN-20
SO4-IC-N-CL	Water							
Batch	R4983120							
WG3265851-8	LCS							
Sulfate (SO4)			102.0		%		90-110	28-JAN-20
WG3265851-7	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	28-JAN-20
SOLIDS-TDS-CL	Water							
Batch	R4985408							
WG3266483-2	LCS							
Total Dissolved Solids			100.5		%		85-115	30-JAN-20
WG3266483-1	MB							
Total Dissolved Solids			<10		mg/L		10	30-JAN-20
TKN-L-F-CL	Water							
Batch	R4985736							
WG3267323-2	LCS							
Total Kjeldahl Nitrogen			101.8		%		75-125	31-JAN-20
WG3267323-1	MB							



Quality Control Report

Workorder: L2410735

Report Date: 29-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL	Water							
Batch	R4985736							
WG3267323-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-JAN-20
TSS-L-CL	Water							
Batch	R4985815							
WG3266485-2 LCS								
Total Suspended Solids			103.4		%		85-115	30-JAN-20
WG3266485-1 MB								
Total Suspended Solids			<1.0		mg/L		1	30-JAN-20
TURBIDITY-CL	Water							
Batch	R4981686							
WG3264913-8 LCS								
Turbidity			101.5		%		85-115	28-JAN-20
WG3264913-7 MB								
Turbidity			<0.10		NTU		0.1	28-JAN-20

Quality Control Report

Workorder: L2410735

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2410735

Report Date: 29-DEC-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	27-JAN-20 15:10	29-JAN-20 07:45	0.25	41	hours	EHTR-FM
pH	1	27-JAN-20 15:10	30-JAN-20 11:00	0.25	68	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2410735 were received on 28-JAN-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 30-JAN-20
Report Date: 11-DEC-20 15:13 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2411499
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200129
Legal Site Desc:

Comments:

11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-1 CM_MW1-DP_WG_2020-01-14_N							
Sampled By: SH on 29-JAN-20 @ 15:20							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	465		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	1.70		0.50	mg/L		01-FEB-20	R4986463
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	0.675		0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	2.05		0.50	mg/L		01-FEB-20	R4986463
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	01-FEB-20	01-FEB-20	R4986399
Dissolved Metals Filtration Location	FIELD					01-FEB-20	R4986136
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-FEB-20	02-FEB-20	R4986471
Dissolved Mercury Filtration Location	FIELD					02-FEB-20	R4986421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986625
Aluminum (Al)-Dissolved	0.0034		0.0030	mg/L	01-FEB-20	01-FEB-20	R4986399
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Arsenic (As)-Dissolved	0.00148		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Barium (Ba)-Dissolved	9.60		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Boron (B)-Dissolved	0.232		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cadmium (Cd)-Dissolved	<0.00050		0.00050	ug/L	01-FEB-20	01-FEB-20	R4986399
Calcium (Ca)-Dissolved	28.0		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cobalt (Co)-Dissolved	0.43		0.10	ug/L	01-FEB-20	01-FEB-20	R4986399
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	03-FEB-20	03-FEB-20	R4987023
Iron (Fe)-Dissolved	0.110		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Lithium (Li)-Dissolved	0.605		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Magnesium (Mg)-Dissolved	17.5		0.10	mg/L	01-FEB-20	01-FEB-20	R4986399
Manganese (Mn)-Dissolved	0.112		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Molybdenum (Mo)-Dissolved	0.00359		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Potassium (K)-Dissolved	5.14		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	01-FEB-20	01-FEB-20	R4986399
Silicon (Si)-Dissolved	4.86		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Sodium (Na)-Dissolved	231		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Strontium (Sr)-Dissolved	2.24		0.00020	mg/L	01-FEB-20	01-FEB-20	R4986399
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Tin (Sn)-Dissolved	0.00021		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Uranium (U)-Dissolved	0.000517		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Zinc (Zn)-Dissolved	0.0043		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Hardness							
Hardness (as CaCO3)	142		0.50	mg/L		03-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-1 CM_MW1-DP_WG_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 15:20 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	381		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	381		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	0.623	DLHC	0.025	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.87	DLHC	0.25	mg/L		30-JAN-20	R4985922
Chloride in Water by IC							
Chloride (Cl)	239	DLHC	2.5	mg/L		30-JAN-20	R4985922
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1290		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC							
Fluoride (F)	0.20	DLHC	0.10	mg/L		30-JAN-20	R4985922
Ion Balance Calculation							
Cation - Anion Balance	-4.7			%		03-FEB-20	
Anion Sum	14.4			meq/L		03-FEB-20	
Cation Sum	13.1			meq/L		03-FEB-20	
Ion Balance Calculation							
Ion Balance	91.1		-100	%		03-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		30-JAN-20	R4985922
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-JAN-20	R4985922
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0263		0.0010	mg/L		30-JAN-20	R4984187
Oxidation redution potential by elect.							
ORP	323		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0397		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		30-JAN-20	R4985922
Total Dissolved Solids							
Total Dissolved Solids	744	DLHC	20	mg/L		04-FEB-20	R4990224
Total Suspended Solids							
Total Suspended Solids	5.9		1.0	mg/L		04-FEB-20	R4990118
Turbidity							
Turbidity	6.05		0.10	NTU		30-JAN-20	R4985026
pH							
pH	8.07		0.10	pH		30-JAN-20	R4985627
L2411499-2 CM_MW1-OB_WG_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 14:15 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	339		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	0.65		0.50	mg/L		01-FEB-20	R4986463
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	0.129	TKNI	0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	0.74		0.50	mg/L		01-FEB-20	R4986463
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-2 CM_MW1-OB_WG_2020-01-14_N							
Sampled By: SH on 29-JAN-20 @ 14:15							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	01-FEB-20	01-FEB-20	R4986399
Dissolved Metals Filtration Location	FIELD					01-FEB-20	R4986136
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-FEB-20	02-FEB-20	R4986471
Dissolved Mercury Filtration Location	FIELD					02-FEB-20	R4986421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986625
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	01-FEB-20	01-FEB-20	R4986399
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Barium (Ba)-Dissolved	0.0910		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Boron (B)-Dissolved	0.033		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cadmium (Cd)-Dissolved	0.0749		0.0050	ug/L	01-FEB-20	01-FEB-20	R4986399
Calcium (Ca)-Dissolved	154		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Chromium (Cr)-Dissolved	0.00038		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	01-FEB-20	01-FEB-20	R4986399
Copper (Cu)-Dissolved	0.00152		0.00020	mg/L	03-FEB-20	03-FEB-20	R4987023
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Lead (Pb)-Dissolved	0.000061		0.000050	mg/L	03-FEB-20	03-FEB-20	R4987023
Lithium (Li)-Dissolved	0.0225		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Magnesium (Mg)-Dissolved	52.8		0.10	mg/L	01-FEB-20	01-FEB-20	R4986399
Manganese (Mn)-Dissolved	0.00014		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Molybdenum (Mo)-Dissolved	0.000238		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Nickel (Ni)-Dissolved	0.00061		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Potassium (K)-Dissolved	1.90		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Selenium (Se)-Dissolved	6.87		0.050	ug/L	01-FEB-20	01-FEB-20	R4986399
Silicon (Si)-Dissolved	3.14		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Sodium (Na)-Dissolved	52.0		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Strontium (Sr)-Dissolved	0.428		0.00020	mg/L	01-FEB-20	01-FEB-20	R4986399
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Uranium (U)-Dissolved	0.00143		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Zinc (Zn)-Dissolved	0.0419		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Hardness							
Hardness (as CaCO3)	603		0.50	mg/L		03-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	278		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	278		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-JAN-20	R4985922
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-2 CM_MW1-OB_WG_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 14:15 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	81.9	DLHC	2.5	mg/L		30-JAN-20	R4985922
Electrical Conductivity (EC) Conductivity (@ 25C)	1280		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC Fluoride (F)	<0.10	DLHC	0.10	mg/L		30-JAN-20	R4985922
Ion Balance Calculation Ion Balance	93.2		-100	%		03-FEB-20	
Ion Balance Calculation Cation - Anion Balance	-3.5			%		03-FEB-20	
Anion Sum	15.4			meq/L		03-FEB-20	
Cation Sum	14.4			meq/L		03-FEB-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	1.64	DLHC	0.025	mg/L		30-JAN-20	R4985922
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-JAN-20	R4985922
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0024		0.0010	mg/L		30-JAN-20	R4984187
Oxidation redution potential by elect. ORP	419		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC Sulfate (SO4)	356	DLHC	1.5	mg/L		30-JAN-20	R4985922
Total Dissolved Solids Total Dissolved Solids	916	DLHC	20	mg/L		04-FEB-20	R4990224
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		04-FEB-20	R4990118
Turbidity Turbidity	0.18		0.10	NTU		30-JAN-20	R4985026
pH pH	7.59		0.10	pH		30-JAN-20	R4985627
L2411499-3 CM_MW1-SH_WG_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:25 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	255		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	0.78		0.50	mg/L		01-FEB-20	R4986463
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	0.057		0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	0.75		0.50	mg/L		01-FEB-20	R4986463
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	01-FEB-20	01-FEB-20	R4986399
Dissolved Metals Filtration Location	FIELD					01-FEB-20	R4986136
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-FEB-20	02-FEB-20	R4986471
Dissolved Mercury Filtration Location	FIELD					02-FEB-20	R4986421
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					01-FEB-20	R4986136
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	01-FEB-20	01-FEB-20	R4986399

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-3 CM_MW1-SH_WG_2020-01-14_N							
Sampled By: SH on 29-JAN-20 @ 12:25							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Arsenic (As)-Dissolved	0.00205		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Barium (Ba)-Dissolved	0.321		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Boron (B)-Dissolved	0.055		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	01-FEB-20	01-FEB-20	R4986399
Calcium (Ca)-Dissolved	26.6		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Cobalt (Co)-Dissolved	0.23		0.10	ug/L	01-FEB-20	01-FEB-20	R4986399
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	01-FEB-20	01-FEB-20	R4986399
Iron (Fe)-Dissolved	0.661		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Lithium (Li)-Dissolved	0.0181		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Magnesium (Mg)-Dissolved	11.1		0.10	mg/L	01-FEB-20	01-FEB-20	R4986399
Manganese (Mn)-Dissolved	0.171		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Molybdenum (Mo)-Dissolved	0.0544		0.000050	mg/L	01-FEB-20	01-FEB-20	R4986399
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Potassium (K)-Dissolved	1.14		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	01-FEB-20	01-FEB-20	R4986399
Silicon (Si)-Dissolved	3.66		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Sodium (Na)-Dissolved	179		0.050	mg/L	01-FEB-20	01-FEB-20	R4986399
Strontium (Sr)-Dissolved	0.298		0.00020	mg/L	01-FEB-20	01-FEB-20	R4986399
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-20	01-FEB-20	R4986399
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	01-FEB-20	01-FEB-20	R4986399
Uranium (U)-Dissolved	0.000596		0.000010	mg/L	01-FEB-20	01-FEB-20	R4986399
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-20	01-FEB-20	R4986399
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	01-FEB-20	01-FEB-20	R4986399
Hardness							
Hardness (as CaCO3)	112		0.50	mg/L		02-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	209		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	209		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	0.0436		0.0050	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.67	DLHC	0.25	mg/L		30-JAN-20	R4985922
Chloride in Water by IC							
Chloride (Cl)	213	DLHC	2.5	mg/L		30-JAN-20	R4985922
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1010		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC							
Fluoride (F)	0.90	DLHC	0.10	mg/L		30-JAN-20	R4985922
Ion Balance Calculation							
Ion Balance	97.2		-100	%		02-FEB-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-3 CM_MW1-SH_WG_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:25 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	-1.4			%		02-FEB-20	
Anion Sum	10.4			meq/L		02-FEB-20	
Cation Sum	10.1			meq/L		02-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		30-JAN-20	R4985922
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-JAN-20	R4985922
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		30-JAN-20	R4984187
Oxidation redution potential by elect.							
ORP	254		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0076		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	7.0	DLHC	1.5	mg/L		30-JAN-20	R4985922
Total Dissolved Solids							
Total Dissolved Solids	543	DLHC	20	mg/L		04-FEB-20	R4990224
Total Suspended Solids							
Total Suspended Solids	2.1		1.0	mg/L		04-FEB-20	R4990118
Turbidity							
Turbidity	6.63		0.10	NTU		30-JAN-20	R4985026
pH							
pH	8.07		0.10	pH		30-JAN-20	R4985627
L2411499-4 CM_NNP2_WS_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	253		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	0.86		0.50	mg/L		01-FEB-20	R4986463
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	0.81		0.50	mg/L		01-FEB-20	R4986463
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-FEB-20	10-FEB-20	R4992827
Dissolved Metals Filtration Location	FIELD					10-FEB-20	R4992804
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-FEB-20	02-FEB-20	R4986471
Dissolved Mercury Filtration Location	FIELD					02-FEB-20	R4986421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-FEB-20	R4992804
Aluminum (Al)-Dissolved	0.0031		0.0030	mg/L	10-FEB-20	10-FEB-20	R4992827
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Arsenic (As)-Dissolved	0.00194		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Barium (Ba)-Dissolved	0.331		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827
Boron (B)-Dissolved	0.054		0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Cadmium (Cd)-Dissolved	0.0149		0.0050	ug/L	10-FEB-20	10-FEB-20	R4992827
Calcium (Ca)-Dissolved	26.6		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-4 CM_NNP2_WS_2020-01-14_N							
Sampled By: SH on 29-JAN-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	0.23		0.10	ug/L	10-FEB-20	10-FEB-20	R4992827
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-FEB-20	10-FEB-20	R4992827
Iron (Fe)-Dissolved	0.670		0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827
Lithium (Li)-Dissolved	0.0188		0.0010	mg/L	10-FEB-20	10-FEB-20	R4992827
Magnesium (Mg)-Dissolved	11.1		0.10	mg/L	10-FEB-20	10-FEB-20	R4992827
Manganese (Mn)-Dissolved	0.172		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Molybdenum (Mo)-Dissolved	0.0540		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-FEB-20	10-FEB-20	R4992827
Potassium (K)-Dissolved	1.16		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-FEB-20	10-FEB-20	R4992827
Silicon (Si)-Dissolved	3.49		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Sodium (Na)-Dissolved	179		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Strontium (Sr)-Dissolved	0.301		0.00020	mg/L	10-FEB-20	10-FEB-20	R4992827
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Tin (Sn)-Dissolved	0.00019		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Uranium (U)-Dissolved	0.000613		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-FEB-20	10-FEB-20	R4992827
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-FEB-20	10-FEB-20	R4992827
Hardness							
Hardness (as CaCO3)	112		0.50	mg/L		12-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	208		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	208		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	0.0418		0.0050	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.79	DLHC	0.25	mg/L		30-JAN-20	R4985922
Chloride in Water by IC							
Chloride (Cl)	216	DLHC	2.5	mg/L		30-JAN-20	R4985922
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1010		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC							
Fluoride (F)	0.83	DLHC	0.10	mg/L		30-JAN-20	R4985922
Ion Balance Calculation							
Cation - Anion Balance	-1.6			%		12-FEB-20	
Anion Sum	10.4			meq/L		12-FEB-20	
Cation Sum	10.1			meq/L		12-FEB-20	
Ion Balance Calculation							
Ion Balance	96.9		-100	%		12-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		30-JAN-20	R4985922
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-JAN-20	R4985922
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-4 CM_NNP2_WS_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:00 Matrix: WG							
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0011		0.0010	mg/L		30-JAN-20	R4984187
Oxidation redution potential by elect. ORP	269		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total Phosphorus (P)-Total	0.0104		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC Sulfate (SO4)	7.4	DLHC	1.5	mg/L		30-JAN-20	R4985922
Total Dissolved Solids Total Dissolved Solids	561	DLHC	20	mg/L		04-FEB-20	R4990224
Total Suspended Solids Total Suspended Solids	2.9		1.0	mg/L		04-FEB-20	R4990118
Turbidity Turbidity	6.38		0.10	NTU		30-JAN-20	R4985026
pH pH	8.12		0.10	pH		30-JAN-20	R4985627
L2411499-5 CM_TRP_WS_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Carbonate (CO3)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Dissolved Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986463
Hydroxide (OH)	<5.0		5.0	mg/L		30-JAN-20	R4985627
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		31-JAN-20	R4985736
Total Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986463
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-FEB-20	10-FEB-20	R4992827
Dissolved Metals Filtration Location	FIELD					10-FEB-20	R4992804
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-FEB-20	02-FEB-20	R4986471
Dissolved Mercury Filtration Location	FIELD					02-FEB-20	R4986421
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-FEB-20	R4992804
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-FEB-20	10-FEB-20	R4992827
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827
Boron (B)-Dissolved	<0.010		0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-FEB-20	10-FEB-20	R4992827
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-FEB-20	10-FEB-20	R4992827
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-FEB-20	10-FEB-20	R4992827
Iron (Fe)-Dissolved	0.028	RRV	0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	10-FEB-20	10-FEB-20	R4992827
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	10-FEB-20	10-FEB-20	R4992827
Manganese (Mn)-Dissolved	0.00011	RRV	0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	10-FEB-20	10-FEB-20	R4992827

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-5 CM_TRP_WS_2020-01-14_N							
Sampled By: SH on 29-JAN-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-FEB-20	10-FEB-20	R4992827
Potassium (K)-Dissolved	<0.050		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-FEB-20	10-FEB-20	R4992827
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	10-FEB-20	10-FEB-20	R4992827
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	10-FEB-20	10-FEB-20	R4992827
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Tin (Sn)-Dissolved	0.00051	RRV	0.00010	mg/L	10-FEB-20	10-FEB-20	R4992827
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-FEB-20	10-FEB-20	R4992827
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	10-FEB-20	10-FEB-20	R4992827
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-FEB-20	10-FEB-20	R4992827
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-FEB-20	10-FEB-20	R4992827
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		12-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		30-JAN-20	R4985627
Ammonia, Total (as N)							
Ammonia as N	0.0642	RRV	0.0050	mg/L		31-JAN-20	R4986982
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		30-JAN-20	R4985922
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		30-JAN-20	R4985922
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		30-JAN-20	R4985627
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		30-JAN-20	R4985922
Ion Balance Calculation							
Ion Balance	0.0		-100	%		12-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		12-FEB-20	
Anion Sum	<0.10			meq/L		12-FEB-20	
Cation Sum	<0.10			meq/L		12-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-JAN-20	R4985922
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-JAN-20	R4985922
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-JAN-20	R4984187
Oxidation redution potential by elect.							
ORP	507		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		30-JAN-20	R4985922
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2411499-5 CM_TRP_WS_2020-01-14_N Sampled By: SH on 29-JAN-20 @ 12:00 Matrix: WG							
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		04-FEB-20	R4990224
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		04-FEB-20	R4990118
Turbidity Turbidity	<0.10		0.10	NTU		30-JAN-20	R4985026
pH pH	5.37		0.10	pH		30-JAN-20	R4985627

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200129

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2411499

Report Date: 11-DEC-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4986307							
WG3268004-8	LCS							
Acidity (as CaCO3)			102.6		%		85-115	31-JAN-20
WG3268004-7	MB							
Acidity (as CaCO3)			2.0		mg/L		2	31-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4985627							
WG3267435-8	LCS							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	30-JAN-20
WG3267435-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4986399							
WG3267826-2	LCS							
Beryllium (Be)-Dissolved			103.2		%		80-120	01-FEB-20
WG3267826-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-FEB-20
BIC-CL								
	Water							
Batch	R4985627							
WG3267435-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	30-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Bromide (Br)			103.2		%		85-115	30-JAN-20
WG3267575-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4986463							
WG3267859-6	LCS							
Dissolved Organic Carbon			100.8		%		80-120	01-FEB-20
WG3267859-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-FEB-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2411499

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R4986463							
WG3267859-6	LCS							
Total Organic Carbon			103.3		%		80-120	01-FEB-20
WG3267859-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	01-FEB-20
CL-IC-N-CL	Water							
Batch	R4985922							
WG3267575-2	LCS							
Chloride (Cl)			102.3		%		90-110	30-JAN-20
WG3267575-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-JAN-20
CO3-CL	Water							
Batch	R4985627							
WG3267435-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	30-JAN-20
EC-L-PCT-CL	Water							
Batch	R4985627							
WG3267435-8	LCS							
Conductivity (@ 25C)			98.8		%		90-110	30-JAN-20
WG3267435-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-20
F-IC-N-CL	Water							
Batch	R4985922							
WG3267575-2	LCS							
Fluoride (F)			101.9		%		90-110	30-JAN-20
WG3267575-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-JAN-20
HG-D-CVAA-VA	Water							
Batch	R4986471							
WG3268139-2	LCS							
Mercury (Hg)-Dissolved			94.9		%		80-120	02-FEB-20
WG3268139-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	02-FEB-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2411499

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986399							
WG3267826-2	LCS							
Aluminum (Al)-Dissolved			104.1		%		80-120	01-FEB-20
Antimony (Sb)-Dissolved			103.0		%		80-120	01-FEB-20
Arsenic (As)-Dissolved			98.3		%		80-120	01-FEB-20
Barium (Ba)-Dissolved			94.8		%		80-120	01-FEB-20
Bismuth (Bi)-Dissolved			103.4		%		80-120	01-FEB-20
Boron (B)-Dissolved			95.9		%		80-120	01-FEB-20
Cadmium (Cd)-Dissolved			103.9		%		80-120	01-FEB-20
Calcium (Ca)-Dissolved			100.1		%		80-120	01-FEB-20
Chromium (Cr)-Dissolved			100.1		%		80-120	01-FEB-20
Cobalt (Co)-Dissolved			100.2		%		80-120	01-FEB-20
Copper (Cu)-Dissolved			99.0		%		80-120	01-FEB-20
Iron (Fe)-Dissolved			104.7		%		80-120	01-FEB-20
Lead (Pb)-Dissolved			103.2		%		80-120	01-FEB-20
Lithium (Li)-Dissolved			99.1		%		80-120	01-FEB-20
Magnesium (Mg)-Dissolved			101.6		%		80-120	01-FEB-20
Manganese (Mn)-Dissolved			100.7		%		80-120	01-FEB-20
Molybdenum (Mo)-Dissolved			102.3		%		80-120	01-FEB-20
Nickel (Ni)-Dissolved			98.9		%		80-120	01-FEB-20
Potassium (K)-Dissolved			99.8		%		80-120	01-FEB-20
Selenium (Se)-Dissolved			103.4		%		80-120	01-FEB-20
Silicon (Si)-Dissolved			101.0		%		60-140	01-FEB-20
Silver (Ag)-Dissolved			103.0		%		80-120	01-FEB-20
Sodium (Na)-Dissolved			100.9		%		80-120	01-FEB-20
Strontium (Sr)-Dissolved			102.6		%		80-120	01-FEB-20
Thallium (Tl)-Dissolved			107.5		%		80-120	01-FEB-20
Tin (Sn)-Dissolved			101.5		%		80-120	01-FEB-20
Titanium (Ti)-Dissolved			98.7		%		80-120	01-FEB-20
Uranium (U)-Dissolved			101.7		%		80-120	01-FEB-20
Vanadium (V)-Dissolved			101.5		%		80-120	01-FEB-20
Zinc (Zn)-Dissolved			98.8		%		80-120	01-FEB-20
WG3267826-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20



Quality Control Report

Workorder: L2411499

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4986399							
WG3267826-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Copper (Cu)-Dissolved			0.00156	B	mg/L		0.0002	01-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-FEB-20
Lead (Pb)-Dissolved			0.000087	B	mg/L		0.00005	01-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-FEB-20
Batch	R4987023							
WG3268429-2	LCS							
Aluminum (Al)-Dissolved			98.5		%		80-120	03-FEB-20
Antimony (Sb)-Dissolved			100.4		%		80-120	03-FEB-20
Arsenic (As)-Dissolved			94.6		%		80-120	03-FEB-20
Barium (Ba)-Dissolved			98.1		%		80-120	03-FEB-20
Bismuth (Bi)-Dissolved			99.6		%		80-120	03-FEB-20



Quality Control Report

Workorder: L2411499

Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4987023							
WG3268429-2	LCS							
Boron (B)-Dissolved			96.4		%		80-120	03-FEB-20
Cadmium (Cd)-Dissolved			98.2		%		80-120	03-FEB-20
Calcium (Ca)-Dissolved			102.9		%		80-120	03-FEB-20
Chromium (Cr)-Dissolved			98.0		%		80-120	03-FEB-20
Cobalt (Co)-Dissolved			97.8		%		80-120	03-FEB-20
Copper (Cu)-Dissolved			95.9		%		80-120	03-FEB-20
Iron (Fe)-Dissolved			94.8		%		80-120	03-FEB-20
Lead (Pb)-Dissolved			98.1		%		80-120	03-FEB-20
Lithium (Li)-Dissolved			102.1		%		80-120	03-FEB-20
Magnesium (Mg)-Dissolved			94.6		%		80-120	03-FEB-20
Manganese (Mn)-Dissolved			102.1		%		80-120	03-FEB-20
Molybdenum (Mo)-Dissolved			103.3		%		80-120	03-FEB-20
Nickel (Ni)-Dissolved			95.5		%		80-120	03-FEB-20
Potassium (K)-Dissolved			102.9		%		80-120	03-FEB-20
Selenium (Se)-Dissolved			101.5		%		80-120	03-FEB-20
Silicon (Si)-Dissolved			102.2		%		60-140	03-FEB-20
Silver (Ag)-Dissolved			104.0		%		80-120	03-FEB-20
Sodium (Na)-Dissolved			100.8		%		80-120	03-FEB-20
Strontium (Sr)-Dissolved			102.5		%		80-120	03-FEB-20
Thallium (Tl)-Dissolved			99.7		%		80-120	03-FEB-20
Tin (Sn)-Dissolved			100.2		%		80-120	03-FEB-20
Titanium (Ti)-Dissolved			93.3		%		80-120	03-FEB-20
Uranium (U)-Dissolved			94.9		%		80-120	03-FEB-20
Vanadium (V)-Dissolved			99.6		%		80-120	03-FEB-20
Zinc (Zn)-Dissolved			97.9		%		80-120	03-FEB-20
WG3268429-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4987023							
WG3268429-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-20
Batch	R4992827							
WG3273090-2	LCS							
Aluminum (Al)-Dissolved			112.1		%		80-120	10-FEB-20
Antimony (Sb)-Dissolved			92.0		%		80-120	10-FEB-20
Arsenic (As)-Dissolved			97.1		%		80-120	10-FEB-20
Barium (Ba)-Dissolved			98.1		%		80-120	10-FEB-20
Bismuth (Bi)-Dissolved			100.6		%		80-120	10-FEB-20
Boron (B)-Dissolved			100.0		%		80-120	10-FEB-20
Cadmium (Cd)-Dissolved			96.0		%		80-120	10-FEB-20
Calcium (Ca)-Dissolved			102.4		%		80-120	10-FEB-20
Chromium (Cr)-Dissolved			99.8		%		80-120	10-FEB-20
Cobalt (Co)-Dissolved			95.0		%		80-120	10-FEB-20



Quality Control Report

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Report Date: 11-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4992827							
WG3273090-2	LCS							
Copper (Cu)-Dissolved			93.9		%		80-120	10-FEB-20
Iron (Fe)-Dissolved			103.7		%		80-120	10-FEB-20
Lead (Pb)-Dissolved			99.0		%		80-120	10-FEB-20
Lithium (Li)-Dissolved			99.9		%		80-120	10-FEB-20
Magnesium (Mg)-Dissolved			103.3		%		80-120	10-FEB-20
Manganese (Mn)-Dissolved			100.7		%		80-120	10-FEB-20
Molybdenum (Mo)-Dissolved			97.3		%		80-120	10-FEB-20
Nickel (Ni)-Dissolved			96.8		%		80-120	10-FEB-20
Potassium (K)-Dissolved			108.2		%		80-120	10-FEB-20
Selenium (Se)-Dissolved			97.4		%		80-120	10-FEB-20
Silicon (Si)-Dissolved			100.8		%		60-140	10-FEB-20
Silver (Ag)-Dissolved			95.1		%		80-120	10-FEB-20
Sodium (Na)-Dissolved			106.5		%		80-120	10-FEB-20
Strontium (Sr)-Dissolved			102.6		%		80-120	10-FEB-20
Thallium (Tl)-Dissolved			98.1		%		80-120	10-FEB-20
Tin (Sn)-Dissolved			91.1		%		80-120	10-FEB-20
Titanium (Ti)-Dissolved			99.3		%		80-120	10-FEB-20
Uranium (U)-Dissolved			98.3		%		80-120	10-FEB-20
Vanadium (V)-Dissolved			100.0		%		80-120	10-FEB-20
Zinc (Zn)-Dissolved			91.6		%		80-120	10-FEB-20
WG3273090-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-FEB-20



Quality Control Report

Workorder: L2411499

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4992827							
WG3273090-1	MB	NP						
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4986982							
WG3267704-14	LCS							
Ammonia as N			115.0		%		85-115	31-JAN-20
WG3267704-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-20
NO2-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Nitrite (as N)			98.5		%		90-110	30-JAN-20
WG3267575-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4985922							
WG3267575-2	LCS							
Nitrate (as N)			106.2		%		90-110	30-JAN-20
WG3267575-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-JAN-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R4985627							
WG3267435-7 MB								
Hydroxide (OH)			<5.0		mg/L		5	30-JAN-20
ORP-CL	Water							
Batch	R4988251							
WG3268042-3 CRM		CL-ORP						
ORP			225		mV		210-230	01-FEB-20
P-T-L-COL-CL	Water							
Batch	R4986884							
WG3268689-6 LCS								
Phosphorus (P)-Total			107.8		%		80-120	03-FEB-20
WG3268689-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-FEB-20
PH-CL	Water							
Batch	R4985627							
WG3267435-8 LCS								
pH			7.00		pH		6.9-7.1	30-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4984187							
WG3266850-3 DUP		L2411499-5						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JAN-20
WG3266850-2 LCS								
Orthophosphate-Dissolved (as P)			100.9		%		80-120	30-JAN-20
WG3266850-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-JAN-20
WG3266850-4 MS		L2411499-5						
Orthophosphate-Dissolved (as P)			96.5		%		70-130	30-JAN-20
SO4-IC-N-CL	Water							
Batch	R4985922							
WG3267575-2 LCS								
Sulfate (SO4)			106.9		%		90-110	30-JAN-20
WG3267575-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-JAN-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R4990224							
WG3269461-2	LCS							
Total Dissolved Solids			101.3		%		85-115	04-FEB-20
WG3269461-1	MB							
Total Dissolved Solids			<10		mg/L		10	04-FEB-20
TKN-L-F-CL								
Water								
Batch	R4985736							
WG3267323-19	DUP	L2411499-5						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3267323-14	LCS							
Total Kjeldahl Nitrogen			91.5		%		75-125	31-JAN-20
WG3267323-18	LCS							
Total Kjeldahl Nitrogen			89.2		%		75-125	31-JAN-20
WG3267323-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-JAN-20
WG3267323-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-JAN-20
WG3267323-20	MS	L2411499-5						
Total Kjeldahl Nitrogen			110.6		%		70-130	31-JAN-20
TSS-L-CL								
Water								
Batch	R4990118							
WG3269126-2	LCS							
Total Suspended Solids			98.7		%		85-115	04-FEB-20
WG3269126-1	MB							
Total Suspended Solids			<1.0		mg/L		1	04-FEB-20
TURBIDITY-CL								
Water								
Batch	R4985026							
WG3266460-8	LCS							
Turbidity			104.5		%		85-115	30-JAN-20
WG3266460-7	MB							
Turbidity			<0.10		NTU		0.1	30-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	29-JAN-20 15:20	01-FEB-20 11:00	0.25	68	hours	EHTR-FM
	2	29-JAN-20 14:15	01-FEB-20 11:00	0.25	69	hours	EHTR-FM
	3	29-JAN-20 12:25	01-FEB-20 11:00	0.25	71	hours	EHTR-FM
	4	29-JAN-20 12:00	01-FEB-20 11:00	0.25	71	hours	EHTR-FM
	5	29-JAN-20 12:00	01-FEB-20 12:30	0.25	72	hours	EHTR-FM
pH							
	1	29-JAN-20 15:20	30-JAN-20 11:00	0.25	20	hours	EHTR-FM
	2	29-JAN-20 14:15	30-JAN-20 11:00	0.25	21	hours	EHTR-FM
	3	29-JAN-20 12:25	30-JAN-20 11:00	0.25	23	hours	EHTR-FM
	4	29-JAN-20 12:00	30-JAN-20 11:00	0.25	23	hours	EHTR-FM
	5	29-JAN-20 12:00	30-JAN-20 11:00	0.25	23	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2411499 were received on 30-JAN-20 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q1_20200129		TURNAROUND TIME: Regular			RUSH: NO					
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO				
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets		Email 1: Scott.Holmgren@teck.com		X	X	X
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com		Email 2: teckcoal@equisonline.com				
Address PO Box 3000				Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X
City Sparwood				City Calgary		Email 4: victoria.sharpe@teck.com		X	X	X
Province BC				Province AB		Email 5: don.sacino@teck.com		X	X	X
Postal Code V0B 2G0				Postal Code T1Y 7B5						
Country Canada				Country Canada						
Phone Number 1-250-425-7321				Phone Number 403 407 1800		PO number		VPO00683186		

SAMPLE DETAILS



L2411499-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
CM_MW1-DP_WG_2020-01-14_N	CM_MW1-DP	WG	No	2020/01/29	15:20	G	5
CM_MW1-OB_WG_2020-01-14_N	CM_MW1-OB	WG	No	2020/01/29	14:15	G	5
CM_MW1-SH_WG_2020-01-14_N	CM_MW1-SH	WG	No	2020/01/29	12:25	G	5
CM_NNP2_WS_2020-01-14_N	CM_NNP2	WG	No	2020/01/29	-	G	5
CM_TRP_WS_2020-01-14_N	CM_TRP	WG	No	2020/01/29	-	G	5

ANALYSIS REQUESTED

ANALYSIS	F	N	F	F	N
H2SO4					
H2SO4					
HCl					
HNO3					
NONE					
ALS_Package-DOC					
ALS_Package-TKN/TOC					
HG-D-CVAF-VA					
TECKCOAL-MET-D-VA					
TECKCOAL-ROUTINE-VA					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>AS</i>	<i>WBO 585</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	SHI	Mobile #	250-425-7522	
Sampler's Signature	<i>[Signature]</i>	Date/Time	January 29, 2020	

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TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 31-JAN-20
Report Date: 18-DEC-20 14:15 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2412013
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200130
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:25

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-1 CM_MW3-DP_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 13:05							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	264		5.0	mg/L		31-JAN-20	R4986159
Carbonate (CO3)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Dissolved Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Hydroxide (OH)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Total Kjeldahl Nitrogen	0.667		0.050	mg/L		04-FEB-20	R4990901
Total Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	03-FEB-20	04-FEB-20	R4988192
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-FEB-20	03-FEB-20	R4986981
Dissolved Mercury Filtration Location	FIELD					03-FEB-20	R4986692
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Aluminum (Al)-Dissolved	0.0090		0.0030	mg/L	03-FEB-20	04-FEB-20	R4988192
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Arsenic (As)-Dissolved	0.00089		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Barium (Ba)-Dissolved	0.830		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Boron (B)-Dissolved	0.519		0.020	mg/L	03-FEB-20	04-FEB-20	R4988192
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	03-FEB-20	04-FEB-20	R4988192
Calcium (Ca)-Dissolved	12.4		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	03-FEB-20	04-FEB-20	R4988192
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	03-FEB-20	04-FEB-20	R4988192
Iron (Fe)-Dissolved	0.029		0.020	mg/L	03-FEB-20	04-FEB-20	R4988192
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Lithium (Li)-Dissolved	1.29		0.0020	mg/L	03-FEB-20	04-FEB-20	R4988192
Magnesium (Mg)-Dissolved	4.91		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Manganese (Mn)-Dissolved	0.0410		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Molybdenum (Mo)-Dissolved	0.00279		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Nickel (Ni)-Dissolved	0.0013		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Potassium (K)-Dissolved	2.51		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	03-FEB-20	04-FEB-20	R4988192
Silicon (Si)-Dissolved	3.51		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	03-FEB-20	04-FEB-20	R4988192
Sodium (Na)-Dissolved	602		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Strontium (Sr)-Dissolved	1.13		0.00040	mg/L	03-FEB-20	04-FEB-20	R4988192
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	03-FEB-20	04-FEB-20	R4988192
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Uranium (U)-Dissolved	0.000454		0.000020	mg/L	03-FEB-20	04-FEB-20	R4988192
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	03-FEB-20	04-FEB-20	R4988192
Hardness							
Hardness (as CaCO3)	51.3		0.50	mg/L		04-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-1 CM_MW3-DP_WG_2020-01-14_N Sampled By: SH on 30-JAN-20 @ 13:05 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	216		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Total (as CaCO3)	216		1.0	mg/L		31-JAN-20	R4986159
Ammonia, Total (as N)							
Ammonia as N	0.649	DLHC	0.050	mg/L		03-FEB-20	R4987474
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.46		0.050	mg/L		31-JAN-20	R4986851
Chloride in Water by IC							
Chloride (Cl)	705		0.50	mg/L		31-JAN-20	R4986851
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2680		2.0	uS/cm		31-JAN-20	R4986159
Fluoride in Water by IC							
Fluoride (F)	0.326		0.020	mg/L		31-JAN-20	R4986851
Ion Balance Calculation							
Cation - Anion Balance	6.0			%		04-FEB-20	
Anion Sum	24.2			meq/L		04-FEB-20	
Cation Sum	27.3			meq/L		04-FEB-20	
Ion Balance Calculation							
Ion Balance	113		-100	%		04-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		31-JAN-20	R4986851
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-JAN-20	R4986851
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0053		0.0010	mg/L		31-JAN-20	R4986069
Oxidation redution potential by elect.							
ORP	430		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0084		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	0.66		0.30	mg/L		31-JAN-20	R4986851
Total Dissolved Solids							
Total Dissolved Solids	1520	DLHC	20	mg/L		05-FEB-20	R4990946
Total Suspended Solids							
Total Suspended Solids	2.1		1.0	mg/L		05-FEB-20	R4990940
Turbidity							
Turbidity	0.69		0.10	NTU		31-JAN-20	R4986032
pH							
pH	8.26		0.10	pH		31-JAN-20	R4986159
L2412013-2 CM_MW3-SH_WG_2020-01-14_N Sampled By: SH on 30-JAN-20 @ 14:35 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	212		5.0	mg/L		31-JAN-20	R4986159
Carbonate (CO3)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Dissolved Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Hydroxide (OH)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-FEB-20	R4990901
Total Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-2 CM_MW3-SH_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 14:35							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-FEB-20	04-FEB-20	R4988192
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	03-FEB-20	R4986981
Dissolved Mercury Filtration Location	FIELD					03-FEB-20	R4986692
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-FEB-20	04-FEB-20	R4988192
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Barium (Ba)-Dissolved	0.0826		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Boron (B)-Dissolved	0.019		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Cadmium (Cd)-Dissolved	0.0070		0.0050	ug/L	03-FEB-20	04-FEB-20	R4988192
Calcium (Ca)-Dissolved	47.6		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Chromium (Cr)-Dissolved	0.00026		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-FEB-20	04-FEB-20	R4988192
Copper (Cu)-Dissolved	0.0115		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Lead (Pb)-Dissolved	0.000093		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Lithium (Li)-Dissolved	0.0070		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Magnesium (Mg)-Dissolved	11.6		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Manganese (Mn)-Dissolved	0.00311		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Molybdenum (Mo)-Dissolved	0.000815		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Potassium (K)-Dissolved	0.679		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Selenium (Se)-Dissolved	0.272		0.050	ug/L	03-FEB-20	04-FEB-20	R4988192
Silicon (Si)-Dissolved	2.25		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Sodium (Na)-Dissolved	4.05		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Strontium (Sr)-Dissolved	0.268		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Uranium (U)-Dissolved	0.000197		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Zinc (Zn)-Dissolved	0.0178		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Hardness							
Hardness (as CaCO3)	166		0.50	mg/L		04-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.8		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	174		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Total (as CaCO3)	174		1.0	mg/L		31-JAN-20	R4986159
Ammonia, Total (as N)							
Ammonia as N	0.0055		0.0050	mg/L		03-FEB-20	R4987474
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		31-JAN-20	R4986851
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-2 CM_MW3-SH_WG_2020-01-14_N Sampled By: SH on 30-JAN-20 @ 14:35 Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	1.48		0.50	mg/L		31-JAN-20	R4986851
Electrical Conductivity (EC)							
Conductivity (@ 25C)	321		2.0	uS/cm		31-JAN-20	R4986159
Fluoride in Water by IC							
Fluoride (F)	0.093		0.020	mg/L		31-JAN-20	R4986851
Ion Balance Calculation							
Cation - Anion Balance	-4.7			%		04-FEB-20	
Anion Sum	3.86			meq/L		04-FEB-20	
Cation Sum	3.52			meq/L		04-FEB-20	
Ion Balance Calculation							
Ion Balance	91.1		-100	%		04-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0180		0.0050	mg/L		31-JAN-20	R4986851
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-JAN-20	R4986851
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0033	RRV	0.0010	mg/L		31-JAN-20	R4986069
Oxidation redution potential by elect.							
ORP	359		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020	RRV	0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	16.3		0.30	mg/L		31-JAN-20	R4986851
Total Dissolved Solids							
Total Dissolved Solids	192	DLHC	20	mg/L		05-FEB-20	R4990946
Total Suspended Solids							
Total Suspended Solids	1.2		1.0	mg/L		05-FEB-20	R4990940
Turbidity							
Turbidity	0.17		0.10	NTU		31-JAN-20	R4986032
pH							
pH	7.82		0.10	pH		31-JAN-20	R4986159
L2412013-3 CM_NNT_WG_2020-01-14_N Sampled By: SH on 30-JAN-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Carbonate (CO3)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Dissolved Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Hydroxide (OH)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-FEB-20	R4990901
Total Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-FEB-20	04-FEB-20	R4988192
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-FEB-20	03-FEB-20	R4986981
Dissolved Mercury Filtration Location	FIELD					03-FEB-20	R4986692
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-FEB-20	04-FEB-20	R4988192

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-3 CM_NNT_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Boron (B)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	03-FEB-20	04-FEB-20	R4988192
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-FEB-20	04-FEB-20	R4988192
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Potassium (K)-Dissolved	<0.050		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	03-FEB-20	04-FEB-20	R4988192
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		04-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.8		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		03-FEB-20	R4987474
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		31-JAN-20	R4986851
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		31-JAN-20	R4986851
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		31-JAN-20	R4986159
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		31-JAN-20	R4986851
Ion Balance Calculation							
Ion Balance	0.0		-100	%		04-FEB-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-3 CM_NNT_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 12:00							
Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		04-FEB-20	
Anion Sum	<0.10			meq/L		04-FEB-20	
Cation Sum	<0.10			meq/L		04-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		31-JAN-20	R4986851
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-JAN-20	R4986851
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		31-JAN-20	R4986069
Oxidation redution potential by elect.							
ORP	422		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		31-JAN-20	R4986851
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		05-FEB-20	R4990946
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		05-FEB-20	R4990940
Turbidity							
Turbidity	<0.10		0.10	NTU		31-JAN-20	R4986032
pH							
pH	5.46		0.10	pH		31-JAN-20	R4986159
L2412013-4 CM_NNP_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 12:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	212		5.0	mg/L		31-JAN-20	R4986159
Carbonate (CO3)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Dissolved Organic Carbon	<0.50		0.50	mg/L		01-FEB-20	R4986441
Hydroxide (OH)	<5.0		5.0	mg/L		31-JAN-20	R4986159
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-FEB-20	R4990901
Total Organic Carbon	0.79		0.50	mg/L		01-FEB-20	R4986441
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-FEB-20	04-FEB-20	R4988192
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-FEB-20	03-FEB-20	R4986981
Dissolved Mercury Filtration Location	FIELD					03-FEB-20	R4986692
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					03-FEB-20	R4986729
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-FEB-20	04-FEB-20	R4988192
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Barium (Ba)-Dissolved	0.0828		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Boron (B)-Dissolved	0.019		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Cadmium (Cd)-Dissolved	0.0080		0.0050	ug/L	03-FEB-20	04-FEB-20	R4988192
Calcium (Ca)-Dissolved	47.8		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-4 CM_NNP_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	03-FEB-20	04-FEB-20	R4988192
Copper (Cu)-Dissolved	0.0114		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Lead (Pb)-Dissolved	0.000090		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Lithium (Li)-Dissolved	0.0071		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Magnesium (Mg)-Dissolved	11.5		0.10	mg/L	03-FEB-20	04-FEB-20	R4988192
Manganese (Mn)-Dissolved	0.00298		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Molybdenum (Mo)-Dissolved	0.000810		0.000050	mg/L	03-FEB-20	04-FEB-20	R4988192
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Potassium (K)-Dissolved	0.673		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Selenium (Se)-Dissolved	0.267		0.050	ug/L	03-FEB-20	04-FEB-20	R4988192
Silicon (Si)-Dissolved	2.34		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Sodium (Na)-Dissolved	4.04		0.050	mg/L	03-FEB-20	04-FEB-20	R4988192
Strontium (Sr)-Dissolved	0.268		0.00020	mg/L	03-FEB-20	04-FEB-20	R4988192
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-FEB-20	04-FEB-20	R4988192
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-FEB-20	04-FEB-20	R4988192
Uranium (U)-Dissolved	0.000193		0.000010	mg/L	03-FEB-20	04-FEB-20	R4988192
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-FEB-20	04-FEB-20	R4988192
Zinc (Zn)-Dissolved	0.0174		0.0010	mg/L	03-FEB-20	04-FEB-20	R4988192
Hardness							
Hardness (as CaCO3)	167		0.50	mg/L		04-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.3		1.0	mg/L		31-JAN-20	R4986307
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	173		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-JAN-20	R4986159
Alkalinity, Total (as CaCO3)	173		1.0	mg/L		31-JAN-20	R4986159
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		03-FEB-20	R4987474
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		31-JAN-20	R4986851
Chloride in Water by IC							
Chloride (Cl)	1.42		0.50	mg/L		31-JAN-20	R4986851
Electrical Conductivity (EC)							
Conductivity (@ 25C)	321		2.0	uS/cm		31-JAN-20	R4986159
Fluoride in Water by IC							
Fluoride (F)	0.094		0.020	mg/L		31-JAN-20	R4986851
Ion Balance Calculation							
Ion Balance	91.6		-100	%		04-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-4.4			%		04-FEB-20	
Anion Sum	3.85			meq/L		04-FEB-20	
Cation Sum	3.53			meq/L		04-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0176		0.0050	mg/L		31-JAN-20	R4986851
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-JAN-20	R4986851
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2412013-4 CM_NNP_WG_2020-01-14_N							
Sampled By: SH on 30-JAN-20 @ 12:00							
Matrix: WG							
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0021		0.0010	mg/L		31-JAN-20	R4986069
Oxidation redution potential by elect.							
ORP	437		-1000	mV		01-FEB-20	R4988251
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-FEB-20	R4986884
Sulfate in Water by IC							
Sulfate (SO4)	16.2		0.30	mg/L		31-JAN-20	R4986851
Total Dissolved Solids							
Total Dissolved Solids	188	DLHC	20	mg/L		05-FEB-20	R4990946
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		05-FEB-20	R4990940
Turbidity							
Turbidity	<0.10		0.10	NTU		31-JAN-20	R4986032
pH							
pH	7.91		0.10	pH		31-JAN-20	R4986159

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200130

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2412013

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4986307							
WG3268004-11	LCS							
Acidity (as CaCO3)			101.9		%		85-115	31-JAN-20
WG3268004-10	MB							
Acidity (as CaCO3)			1.6		mg/L		2	31-JAN-20
ALK-MAN-CL								
	Water							
Batch	R4986159							
WG3267865-4	LCS							
Alkalinity, Total (as CaCO3)			98.9		%		85-115	31-JAN-20
WG3267865-3	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-JAN-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4988192							
WG3268519-2	LCS							
Beryllium (Be)-Dissolved			111.4		%		80-120	04-FEB-20
WG3268519-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-FEB-20
BIC-CL								
	Water							
Batch	R4986159							
WG3267865-3	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	31-JAN-20
BR-L-IC-N-CL								
	Water							
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
Bromide (Br)			93.5		%		85-115	31-JAN-20
WG3268658-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	31-JAN-20
WG3268658-8	MS	L2412013-3						
Bromide (Br)			107.1		%		75-125	31-JAN-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4986441							
WG3267854-10	LCS							
Dissolved Organic Carbon			94.5		%		80-120	01-FEB-20
WG3267854-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-FEB-20



Quality Control Report

Workorder: L2412013

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R4986441							
WG3267854-10	LCS							
Total Organic Carbon			95.6		%		80-120	01-FEB-20
WG3267854-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	01-FEB-20
CL-IC-N-CL Water								
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
Chloride (Cl)			93.8		%		90-110	31-JAN-20
WG3268658-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	31-JAN-20
WG3268658-8	MS	L2412013-3						
Chloride (Cl)			107.9		%		75-125	31-JAN-20
CO3-CL Water								
Batch	R4986159							
WG3267865-3	MB							
Carbonate (CO3)			<5.0		mg/L		5	31-JAN-20
EC-L-PCT-CL Water								
Batch	R4986159							
WG3267865-4	LCS							
Conductivity (@ 25C)			98.4		%		90-110	31-JAN-20
WG3267865-3	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-JAN-20
F-IC-N-CL Water								
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
Fluoride (F)			101.7		%		90-110	31-JAN-20
WG3268658-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	31-JAN-20
WG3268658-8	MS	L2412013-3						
Fluoride (F)			105.0		%		75-125	31-JAN-20
HG-D-CVAA-VA Water								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R4986981							
WG3268507-7	DUP	L2412013-4						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-FEB-20
WG3268507-2	LCS							
Mercury (Hg)-Dissolved			99.8		%		80-120	03-FEB-20
WG3268507-6	LCS							
Mercury (Hg)-Dissolved			100.2		%		80-120	03-FEB-20
WG3268507-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-20
WG3268507-5	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4988192							
WG3268519-2	LCS							
Aluminum (Al)-Dissolved			119.7		%		80-120	04-FEB-20
Antimony (Sb)-Dissolved			115.1		%		80-120	04-FEB-20
Arsenic (As)-Dissolved			114.3		%		80-120	04-FEB-20
Barium (Ba)-Dissolved			120.1	MES	%		80-120	04-FEB-20
Bismuth (Bi)-Dissolved			112.5		%		80-120	04-FEB-20
Boron (B)-Dissolved			110.5		%		80-120	04-FEB-20
Cadmium (Cd)-Dissolved			114.5		%		80-120	04-FEB-20
Calcium (Ca)-Dissolved			111.1		%		80-120	04-FEB-20
Chromium (Cr)-Dissolved			117.2		%		80-120	04-FEB-20
Cobalt (Co)-Dissolved			113.6		%		80-120	04-FEB-20
Copper (Cu)-Dissolved			113.0		%		80-120	04-FEB-20
Iron (Fe)-Dissolved			115.7		%		80-120	04-FEB-20
Lead (Pb)-Dissolved			113.4		%		80-120	04-FEB-20
Lithium (Li)-Dissolved			112.8		%		80-120	04-FEB-20
Magnesium (Mg)-Dissolved			115.8		%		80-120	04-FEB-20
Manganese (Mn)-Dissolved			116.7		%		80-120	04-FEB-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	04-FEB-20
Nickel (Ni)-Dissolved			115.5		%		80-120	04-FEB-20
Potassium (K)-Dissolved			116.9		%		80-120	04-FEB-20
Selenium (Se)-Dissolved			111.6		%		80-120	04-FEB-20
Silicon (Si)-Dissolved			113.5		%		60-140	04-FEB-20
Silver (Ag)-Dissolved			112.4		%		80-120	04-FEB-20
Sodium (Na)-Dissolved			122.0	MES	%		80-120	04-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4988192							
WG3268519-2	LCS							
Strontium (Sr)-Dissolved			110.2		%		80-120	04-FEB-20
Thallium (Tl)-Dissolved			110.7		%		80-120	04-FEB-20
Tin (Sn)-Dissolved			113.7		%		80-120	04-FEB-20
Titanium (Ti)-Dissolved			109.2		%		80-120	04-FEB-20
Uranium (U)-Dissolved			110.0		%		80-120	04-FEB-20
Vanadium (V)-Dissolved			118.7		%		80-120	04-FEB-20
Zinc (Zn)-Dissolved			116.9		%		80-120	04-FEB-20
WG3268519-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4988192							
WG3268519-1	MB	NP						
	Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	04-FEB-20
	Uranium (U)-Dissolved		<0.000010		mg/L		0.00001	04-FEB-20
	Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	04-FEB-20
	Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	04-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4987474							
WG3268792-10	LCS							
	Ammonia as N		107.7		%		85-115	03-FEB-20
WG3268792-9	MB							
	Ammonia as N		<0.0050		mg/L		0.005	03-FEB-20
NO2-L-IC-N-CL								
	Water							
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
	Nitrite (as N)	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
	Nitrite (as N)		95.5		%		90-110	31-JAN-20
WG3268658-5	MB							
	Nitrite (as N)		<0.0010		mg/L		0.001	31-JAN-20
WG3268658-8	MS	L2412013-3						
	Nitrite (as N)		109.2		%		75-125	31-JAN-20
NO3-L-IC-N-CL								
	Water							
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
	Nitrate (as N)	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
	Nitrate (as N)		94.9		%		90-110	31-JAN-20
WG3268658-5	MB							
	Nitrate (as N)		<0.0050		mg/L		0.005	31-JAN-20
WG3268658-8	MS	L2412013-3						
	Nitrate (as N)		108.0		%		75-125	31-JAN-20
OH-CL								
	Water							
Batch	R4986159							
WG3267865-3	MB							
	Hydroxide (OH)		<5.0		mg/L		5	31-JAN-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R4988251							
WG3268042-5	CRM	CL-ORP						
ORP			226		mV		210-230	01-FEB-20
WG3268042-7	CRM	CL-ORP						
ORP			228		mV		210-230	01-FEB-20
P-T-L-COL-CL	Water							
Batch	R4986884							
WG3268689-14	LCS							
Phosphorus (P)-Total			106.9		%		80-120	03-FEB-20
WG3268689-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-FEB-20
PH-CL	Water							
Batch	R4986159							
WG3267865-4	LCS							
pH			7.00		pH		6.9-7.1	31-JAN-20
PO4-DO-L-COL-CL	Water							
Batch	R4986069							
WG3267699-3	LCS							
Orthophosphate-Dissolved (as P)			99.0		%		80-120	31-JAN-20
WG3267699-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-JAN-20
WG3267699-5	MS	L2412013-3						
Orthophosphate-Dissolved (as P)			99.98		%		70-130	31-JAN-20
SO4-IC-N-CL	Water							
Batch	R4986851							
WG3268658-7	DUP	L2412013-3						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	31-JAN-20
WG3268658-6	LCS							
Sulfate (SO4)			97.7		%		90-110	31-JAN-20
WG3268658-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	31-JAN-20
WG3268658-8	MS	L2412013-3						
Sulfate (SO4)			105.5		%		75-125	31-JAN-20
SOLIDS-TDS-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R4990946							
WG3270017-2	LCS							
Total Dissolved Solids			101.7		%		85-115	05-FEB-20
WG3270017-1	MB							
Total Dissolved Solids			<10		mg/L		10	05-FEB-20
TKN-L-F-CL								
Water								
Batch	R4990901							
WG3269280-3	DUP	L2412013-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-FEB-20
WG3269280-2	LCS							
Total Kjeldahl Nitrogen			92.2		%		75-125	04-FEB-20
WG3269280-6	LCS							
Total Kjeldahl Nitrogen			89.9		%		75-125	04-FEB-20
WG3269280-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-20
WG3269280-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-20
WG3269280-4	MS	L2412013-3						
Total Kjeldahl Nitrogen			116.1		%		70-130	04-FEB-20
TSS-L-CL								
Water								
Batch	R4990940							
WG3269996-2	LCS							
Total Suspended Solids			99.4		%		85-115	05-FEB-20
WG3269996-1	MB							
Total Suspended Solids			<1.0		mg/L		1	05-FEB-20
TURBIDITY-CL								
Water								
Batch	R4986032							
WG3267701-6	DUP	L2412013-4						
Turbidity		<0.10	0.12	RPD-NA	NTU	N/A	15	31-JAN-20
WG3267701-5	LCS							
Turbidity			104.5		%		85-115	31-JAN-20
WG3267701-4	MB							
Turbidity			<0.10		NTU		0.1	31-JAN-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	30-JAN-20 13:05	01-FEB-20 14:40	0.25	50	hours	EHTR-FM
	2	30-JAN-20 14:35	01-FEB-20 14:40	0.25	48	hours	EHTR-FM
	3	30-JAN-20 12:00	01-FEB-20 14:40	0.25	51	hours	EHTR-FM
	4	30-JAN-20 12:00	01-FEB-20 14:40	0.25	51	hours	EHTR-FM
pH							
	1	30-JAN-20 13:05	31-JAN-20 15:00	0.25	26	hours	EHTR-FM
	2	30-JAN-20 14:35	31-JAN-20 15:00	0.25	24	hours	EHTR-FM
	3	30-JAN-20 12:00	31-JAN-20 15:00	0.25	27	hours	EHTR-FM
	4	30-JAN-20 12:00	31-JAN-20 15:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2412013 were received on 31-JAN-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck



COC ID: COC_WG_Q1_20200130

TI L2412013-COFC

RUSH: NO

PROJECT/CLIENT INFO

OTHER INFO

Facility Name / Job#	Coal Mountain Operations			Lab Contact	Lyudmyla Shvets			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Email	Lyudmyla.Shvets@alsglobal.com			Email 1:	Scott.Hoimgren@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	victoria.sharpe@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	don.sacino@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	VPO00683186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None										
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N						
CM_MW3-DP_WG_2020-01-14_N	CM_MW3-DP	WG	No	2020/01/30	13:05	G	5	1	1	1	1	1											
CM_MW3-SH_WG_2020-01-14_N	CM_MW3-SH	WG	No	2020/01/30	14:35	G	5	1	1	1	1	1											
CM_NNT_WG_2020-01-14_N	CM_NNT	WG	No	2020/01/30	-	G	5	1	1	1	1	1											
CM_NNP_WG_2020-01-14_N	CM_NNP	WG	No	2020/01/30	-	G	5	1	1	1	1	1											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
		<i>[Signature]</i>	1/31/20

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	SII	Mobile #	250-425-7522
Sampler's Signature	<i>[Signature]</i>	Date/Time	January 30, 2020

3



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 07-FEB-20
Report Date: 21-DEC-20 16:22 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2414733
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200206
Legal Site Desc:

Comments: 21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2414733-1.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414733-1 CM_MW5-DP_WG_2020-01-14_N							
Sampled By: SH on 06-FEB-20 @ 11:19							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	501		5.0	mg/L		07-FEB-20	R4991963
Carbonate (CO3)	<5.0		5.0	mg/L		07-FEB-20	R4991963
Dissolved Organic Carbon	<0.50		0.50	mg/L		12-FEB-20	R4995923
Hydroxide (OH)	<5.0		5.0	mg/L		07-FEB-20	R4991963
Total Kjeldahl Nitrogen	0.716		0.050	mg/L		11-FEB-20	R4993788
Total Organic Carbon	<0.50		0.50	mg/L		12-FEB-20	R4995923
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-FEB-20	14-FEB-20	R4996890
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995640
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-FEB-20	12-FEB-20	R4994872
Dissolved Mercury Filtration Location	FIELD					11-FEB-20	R4994467
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995640
Aluminum (Al)-Dissolved	0.0030		0.0030	mg/L	12-FEB-20	14-FEB-20	R4996890
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Barium (Ba)-Dissolved	1.32		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Boron (B)-Dissolved	0.112		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	12-FEB-20	14-FEB-20	R4996890
Calcium (Ca)-Dissolved	77.5		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-FEB-20	14-FEB-20	R4996890
Copper (Cu)-Dissolved	0.00122		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Iron (Fe)-Dissolved	1.27		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Lithium (Li)-Dissolved	0.0659		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Magnesium (Mg)-Dissolved	26.2		0.10	mg/L	12-FEB-20	14-FEB-20	R4996890
Manganese (Mn)-Dissolved	0.0533		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Molybdenum (Mo)-Dissolved	0.000959		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Nickel (Ni)-Dissolved	0.00134		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Potassium (K)-Dissolved	3.73		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	12-FEB-20	14-FEB-20	R4996890
Silicon (Si)-Dissolved	6.15		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Sodium (Na)-Dissolved	65.3		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Strontium (Sr)-Dissolved	2.04		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Uranium (U)-Dissolved	0.000117		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Hardness							
Hardness (as CaCO3)	301		0.50	mg/L		14-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	16.8		1.0	mg/L		07-FEB-20	R4991946
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414733-1 CM_MW5-DP_WG_2020-01-14_N Sampled By: SH on 06-FEB-20 @ 11:19 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	411		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Total (as CaCO3)	411		1.0	mg/L		07-FEB-20	R4991963
Ammonia, Total (as N)							
Ammonia as N	0.631	DLHC	0.050	mg/L		10-FEB-20	R4993670
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		07-FEB-20	R4992007
Chloride in Water by IC							
Chloride (Cl)	10.5		0.50	mg/L		07-FEB-20	R4992007
Electrical Conductivity (EC)							
Conductivity (@ 25C)	698		2.0	uS/cm		07-FEB-20	R4991963
Fluoride in Water by IC							
Fluoride (F)	0.244		0.020	mg/L		07-FEB-20	R4992007
Ion Balance Calculation							
Cation - Anion Balance	3.1			%		14-FEB-20	
Anion Sum	8.53			meq/L		14-FEB-20	
Cation Sum	9.07			meq/L		14-FEB-20	
Ion Balance Calculation							
Ion Balance	106		-100	%		14-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-FEB-20	R4992007
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-FEB-20	R4992007
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-FEB-20	R4991865
Oxidation redution potential by elect.							
ORP	512		-1000	mV		11-FEB-20	R4993610
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.011	DLM	0.010	mg/L		12-FEB-20	R4995417
Sulfate in Water by IC							
Sulfate (SO4)	0.39		0.30	mg/L		07-FEB-20	R4992007
Total Dissolved Solids							
Total Dissolved Solids	445	DLHC	20	mg/L		12-FEB-20	R4996165
Total Suspended Solids							
Total Suspended Solids	3.5		1.0	mg/L		13-FEB-20	R4996727
Turbidity							
Turbidity	14.7		0.10	NTU		08-FEB-20	R4992102
pH							
pH	8.09		0.10	pH		07-FEB-20	R4991963
L2414733-2 CM_MW5-SH_WG_2020-01-14_N Sampled By: SH on 06-FEB-20 @ 13:00 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.56		0.50	mg/L		12-FEB-20	R4995923
Total Kjeldahl Nitrogen	0.167	TKNI	0.050	mg/L		11-FEB-20	R4993788
Total Organic Carbon	<0.50		0.50	mg/L		12-FEB-20	R4995923
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-FEB-20	14-FEB-20	R4996890
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995640
Diss. Mercury in Water by CVAAS or CVAFS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414733-2 CM_MW5-SH_WG_2020-01-14_N							
Sampled By: SH on 06-FEB-20 @ 13:00							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	11-FEB-20	12-FEB-20	R4994872
Dissolved Mercury Filtration Location	FIELD					11-FEB-20	R4994467
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995640
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-FEB-20	14-FEB-20	R4996890
Antimony (Sb)-Dissolved	0.00029		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Barium (Ba)-Dissolved	0.0856		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Boron (B)-Dissolved	0.034		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cadmium (Cd)-Dissolved	0.0488		0.0050	ug/L	12-FEB-20	14-FEB-20	R4996890
Calcium (Ca)-Dissolved	174		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Chromium (Cr)-Dissolved	0.00029		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-FEB-20	14-FEB-20	R4996890
Copper (Cu)-Dissolved	0.00043		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Lithium (Li)-Dissolved	0.0233		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Magnesium (Mg)-Dissolved	75.9		0.10	mg/L	12-FEB-20	14-FEB-20	R4996890
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Molybdenum (Mo)-Dissolved	0.00229		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Nickel (Ni)-Dissolved	0.00194		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Potassium (K)-Dissolved	2.37		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Selenium (Se)-Dissolved	12.6		0.050	ug/L	12-FEB-20	14-FEB-20	R4996890
Silicon (Si)-Dissolved	2.26		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Sodium (Na)-Dissolved	16.8		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Strontium (Sr)-Dissolved	0.509		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Thallium (Tl)-Dissolved	0.000049		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Uranium (U)-Dissolved	0.00430		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Hardness							
Hardness (as CaCO3)	748		0.50	mg/L		14-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	20.7		1.0	mg/L		07-FEB-20	R4991946
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	251		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		07-FEB-20	R4991963
Alkalinity, Total (as CaCO3)	251		1.0	mg/L		07-FEB-20	R4991963
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		10-FEB-20	R4993670
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-FEB-20	R4992007
Chloride in Water by IC							
Chloride (Cl)	5.4	DLHC	2.5	mg/L		07-FEB-20	R4992007
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1210		2.0	uS/cm		07-FEB-20	R4991963

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414733-2 CM_MW5-SH_WG_2020-01-14_N							
Sampled By: SH on 06-FEB-20 @ 13:00							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	0.15	DLHC	0.10	mg/L		07-FEB-20	R4992007
Ion Balance Calculation							
Ion Balance	99.9		-100	%		14-FEB-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.1			%		14-FEB-20	
Anion Sum	15.7			meq/L		14-FEB-20	
Cation Sum	15.7			meq/L		14-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	3.15	DLHC	0.025	mg/L		07-FEB-20	R4992007
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-FEB-20	R4992007
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0054		0.0010	mg/L		07-FEB-20	R4991865
Oxidation redution potential by elect.							
ORP	417		-1000	mV		11-FEB-20	R4993610
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0079	DLM	0.0050	mg/L		12-FEB-20	R4995417
Sulfate in Water by IC							
Sulfate (SO4)	497	DLHC	1.5	mg/L		07-FEB-20	R4992007
Total Dissolved Solids							
Total Dissolved Solids	1010	DLHC	20	mg/L		12-FEB-20	R4996165
Total Suspended Solids							
Total Suspended Solids	1.3		1.0	mg/L		13-FEB-20	R4996727
Turbidity							
Turbidity	<0.10		0.10	NTU		08-FEB-20	R4992102
pH							
pH	7.86		0.10	pH		07-FEB-20	R4991963

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200206

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2414733

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4991946							
WG3272153-2	LCS							
Acidity (as CaCO3)			102.3		%		85-115	07-FEB-20
WG3272153-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	07-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4991963							
WG3272155-11	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	07-FEB-20
WG3272155-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-2	LCS							
Beryllium (Be)-Dissolved			98.7		%		80-120	14-FEB-20
WG3274694-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
BIC-CL								
	Water							
Batch	R4991963							
WG3272155-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	07-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4992007							
WG3272208-6	LCS							
Bromide (Br)			101.4		%		85-115	07-FEB-20
WG3272208-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	07-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4995923							
WG3274431-10	LCS							
Dissolved Organic Carbon			97.6		%		80-120	12-FEB-20
WG3274431-14	LCS							
Dissolved Organic Carbon			94.9		%		80-120	12-FEB-20
WG3274431-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-FEB-20
WG3274431-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-FEB-20



Quality Control Report

Workorder: L2414733

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R4995923							
WG3274431-10	LCS							
Total Organic Carbon			100.5		%		80-120	12-FEB-20
WG3274431-14	LCS							
Total Organic Carbon			97.6		%		80-120	12-FEB-20
WG3274431-13	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-FEB-20
WG3274431-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-FEB-20
CL-IC-N-CL								
Water								
Batch	R4992007							
WG3272208-6	LCS							
Chloride (Cl)			99.4		%		90-110	07-FEB-20
WG3272208-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	07-FEB-20
CO3-CL								
Water								
Batch	R4991963							
WG3272155-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	07-FEB-20
EC-L-PCT-CL								
Water								
Batch	R4991963							
WG3272155-11	LCS							
Conductivity (@ 25C)			97.2		%		90-110	07-FEB-20
WG3272155-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	07-FEB-20
F-IC-N-CL								
Water								
Batch	R4992007							
WG3272208-6	LCS							
Fluoride (F)			102.9		%		90-110	07-FEB-20
WG3272208-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	07-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4994872							
WG3273903-2	LCS							
Mercury (Hg)-Dissolved			94.9		%		80-120	12-FEB-20
WG3273903-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-FEB-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-2	LCS							
Aluminum (Al)-Dissolved			101.3		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			94.4		%		80-120	14-FEB-20
Arsenic (As)-Dissolved			100.3		%		80-120	14-FEB-20
Barium (Ba)-Dissolved			110.0		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			103.9		%		80-120	14-FEB-20
Boron (B)-Dissolved			100.4		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			101.3		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			104.4		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			101.2		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			101.8		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			96.4		%		80-120	14-FEB-20
Iron (Fe)-Dissolved			99.2		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			99.9		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			97.1		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			99.4		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			98.6		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			101.5		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			100.8		%		80-120	14-FEB-20
Potassium (K)-Dissolved			105.0		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			96.3		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			102.6		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			97.2		%		80-120	14-FEB-20
Sodium (Na)-Dissolved			106.3		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			102.9		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			100.7		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			95.1		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			91.2		%		80-120	14-FEB-20
Uranium (U)-Dissolved			98.4		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			102.2		%		80-120	14-FEB-20
Zinc (Zn)-Dissolved			100.5		%		80-120	14-FEB-20
WG3274694-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274694-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4993670							
WG3273075-34	LCS							
Ammonia as N			108.5		%		85-115	10-FEB-20
WG3273075-33	MB							
Ammonia as N			<0.0050		mg/L		0.005	10-FEB-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6	LCS							
Nitrite (as N)			97.6		%		90-110	07-FEB-20
WG3272208-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-FEB-20
NO3-L-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6	LCS							
Nitrate (as N)			105.1		%		90-110	07-FEB-20
WG3272208-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-FEB-20
OH-CL	Water							
Batch	R4991963							
WG3272155-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	07-FEB-20
ORP-CL	Water							
Batch	R4993610							
WG3273663-1	CRM	CL-ORP						
ORP			223		mV		210-230	11-FEB-20
P-T-L-COL-CL	Water							
Batch	R4995417							
WG3274307-2	LCS							
Phosphorus (P)-Total			98.6		%		80-120	12-FEB-20
WG3274307-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-FEB-20
PH-CL	Water							
Batch	R4991963							
WG3272155-11	LCS							
pH			7.08		pH		6.9-7.1	07-FEB-20
PO4-DO-L-COL-CL	Water							
Batch	R4991865							
WG3272007-3	LCS							
Orthophosphate-Dissolved (as P)			102.6		%		80-120	07-FEB-20
WG3272007-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R4992007							
WG3272208-6	LCS							
Sulfate (SO4)			93.6		%		90-110	07-FEB-20
WG3272208-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	07-FEB-20
SOLIDS-TDS-CL	Water							
Batch	R4996165							
WG3273894-11	LCS							
Total Dissolved Solids			106.3		%		85-115	12-FEB-20
WG3273894-10	MB							
Total Dissolved Solids			<10		mg/L		10	12-FEB-20
TKN-L-F-CL	Water							
Batch	R4993788							
WG3273524-6	LCS							
Total Kjeldahl Nitrogen			93.8		%		75-125	11-FEB-20
WG3273524-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-FEB-20
TSS-L-CL	Water							
Batch	R4996727							
WG3275002-2	LCS							
Total Suspended Solids			91.8		%		85-115	13-FEB-20
WG3275002-1	MB							
Total Suspended Solids			<1.0		mg/L		1	13-FEB-20
TURBIDITY-CL	Water							
Batch	R4992102							
WG3272290-2	LCS							
Turbidity			104.5		%		85-115	08-FEB-20
WG3272290-1	MB							
Turbidity			<0.10		NTU		0.1	08-FEB-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	06-FEB-20 11:19	11-FEB-20 08:00	0.25	117	hours	EHTR-FM
	2	06-FEB-20 13:00	11-FEB-20 08:00	0.25	115	hours	EHTR-FM
pH	1	06-FEB-20 11:19	07-FEB-20 14:00	0.25	27	hours	EHTR-FM
	2	06-FEB-20 13:00	07-FEB-20 14:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2414733 were received on 07-FEB-20 09:00.


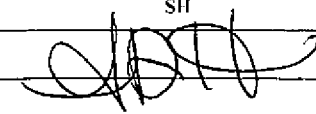
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q1_20200206		TURNAROUND TIME: Regular		RUSH NO	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name / Job# Coal Mountain Operations Project Manager Jay Jones Email Jay.Jones@teck.com Address PO Box 3000 City Sparwood Province BC Postal Code V0B 2G0 Country Canada Phone Number 1-250-425-7321			Lab Name ALS Calgary Lab Contact Lyudmyla Shvets Email lyudmyla.shvets@als-global.com Address 2559 29th St. NE City Calgary Province AB Postal Code T1Y 7B5 Country Canada Phone Number 403 407 1800		Report Format / Distribution Email 1: Scott.Hulmgren@teck.com X PDF X EDD X Email 2: teckcoal@equisonline.com X X X Email 3: jay.jones@teck.com X X X Email 4: victoria.sharpe@teck.com X X X Email 5: don.sacina@teck.com X X X PO number

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MWS-DP_WG_2020-01-14_N	CM_MWS-DP	WG	No	2020/02/06	11:19	G	5	1	1	1	1	1						
CM_MWS-SH_WG_2020-01-14_N	CM_MWS-SH	WG	No	2020/02/06	13:00	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
								2/7 9:00	
SERVICE REQUEST (rush - subject to availability)									
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name		SH		Mobile #		250-425-7522	
		Sampler's Signature				Date/Time		February 6, 2020	

2c



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 08-FEB-20
Report Date: 18-DEC-20 14:16 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2414916
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q1_20200207
Legal Site Desc:

Comments: ADDITIONAL 16-DEC-20 14:10

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414916-1 CM_MW2-SH_WG_2020-01-14_N							
Sampled By: VS on 06-FEB-20 @ 13:04							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	458		5.0	mg/L		08-FEB-20	R4992167
Carbonate (CO3)	<5.0		5.0	mg/L		08-FEB-20	R4992167
Dissolved Organic Carbon	0.99		0.50	mg/L		14-FEB-20	R4997110
Hydroxide (OH)	<5.0		5.0	mg/L		08-FEB-20	R4992167
Total Kjeldahl Nitrogen	0.109		0.050	mg/L		12-FEB-20	R4995336
Total Organic Carbon	0.78		0.50	mg/L		14-FEB-20	R4997110
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-FEB-20	14-FEB-20	R4996890
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995638
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-FEB-20	12-FEB-20	R4994872
Dissolved Mercury Filtration Location	FIELD					11-FEB-20	R4994467
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					12-FEB-20	R4995638
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-FEB-20	14-FEB-20	R4996890
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Barium (Ba)-Dissolved	0.0935		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Boron (B)-Dissolved	0.046		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cadmium (Cd)-Dissolved	0.107		0.0050	ug/L	12-FEB-20	14-FEB-20	R4996890
Calcium (Ca)-Dissolved	169		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-FEB-20	14-FEB-20	R4996890
Copper (Cu)-Dissolved	0.00096		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Lead (Pb)-Dissolved	0.000068		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Lithium (Li)-Dissolved	0.0337		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Magnesium (Mg)-Dissolved	43.7		0.10	mg/L	12-FEB-20	14-FEB-20	R4996890
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Molybdenum (Mo)-Dissolved	0.000121		0.000050	mg/L	12-FEB-20	14-FEB-20	R4996890
Nickel (Ni)-Dissolved	0.00059		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Potassium (K)-Dissolved	1.41		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Selenium (Se)-Dissolved	0.208		0.050	ug/L	12-FEB-20	14-FEB-20	R4996890
Silicon (Si)-Dissolved	4.87		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Sodium (Na)-Dissolved	31.4		0.050	mg/L	12-FEB-20	14-FEB-20	R4996890
Strontium (Sr)-Dissolved	0.476		0.00020	mg/L	12-FEB-20	14-FEB-20	R4996890
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-FEB-20	14-FEB-20	R4996890
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-FEB-20	14-FEB-20	R4996890
Uranium (U)-Dissolved	0.000179		0.000010	mg/L	12-FEB-20	14-FEB-20	R4996890
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-FEB-20	14-FEB-20	R4996890
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	12-FEB-20	14-FEB-20	R4996890
Hardness							
Hardness (as CaCO3)	603		0.50	mg/L		14-FEB-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	36.4		1.0	mg/L		08-FEB-20	R4992179
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2414916-1 CM_MW2-SH_WG_2020-01-14_N							
Sampled By: VS on 06-FEB-20 @ 13:04							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	375		1.0	mg/L		08-FEB-20	R4992167
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-FEB-20	R4992167
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-FEB-20	R4992167
Alkalinity, Total (as CaCO3)	375		1.0	mg/L		08-FEB-20	R4992167
Ammonia, Total (as N)							
Ammonia as N	0.0274		0.0050	mg/L		11-FEB-20	R4995857
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-FEB-20	R4992193
Chloride in Water by IC							
Chloride (Cl)	1.91		0.50	mg/L		08-FEB-20	R4992193
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1070		2.0	uS/cm		08-FEB-20	R4992167
Fluoride in Water by IC							
Fluoride (F)	0.093		0.020	mg/L		08-FEB-20	R4992193
Ion Balance Calculation							
Cation - Anion Balance	0.5			%		14-FEB-20	
Anion Sum	13.3			meq/L		14-FEB-20	
Cation Sum	13.5			meq/L		14-FEB-20	
Ion Balance Calculation							
Ion Balance	101		-100	%		14-FEB-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.312		0.0050	mg/L		08-FEB-20	R4992193
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-FEB-20	R4992193
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		09-FEB-20	R4992226
Oxidation redution potential by elect.							
ORP	442		-1000	mV		15-FEB-20	R4997214
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0024		0.0020	mg/L		12-FEB-20	R4995417
Sulfate in Water by IC							
Sulfate (SO4)	275		0.30	mg/L		08-FEB-20	R4992193
Total Dissolved Solids							
Total Dissolved Solids	816	DLHC	20	mg/L		12-FEB-20	R4996165
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		13-FEB-20	R4996727
Turbidity							
Turbidity	0.66		0.10	NTU		08-FEB-20	R4992102
pH							
pH	7.55		0.10	pH		08-FEB-20	R4992167

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q1_20200207

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2414916

Report Date: 18-DEC-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R4992179							
WG3272360-5	LCS							
Acidity (as CaCO3)			97.6		%		85-115	08-FEB-20
WG3272360-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	08-FEB-20
ALK-MAN-CL								
	Water							
Batch	R4992167							
WG3272344-8	LCS							
Alkalinity, Total (as CaCO3)			99.5		%		85-115	08-FEB-20
WG3272344-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-FEB-20
BE-D-L-CCMS-VA								
	Water							
Batch	R4996890							
WG3274692-2	LCS							
Beryllium (Be)-Dissolved			94.5		%		80-120	14-FEB-20
WG3274692-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-FEB-20
BR-L-IC-N-CL								
	Water							
Batch	R4992193							
WG3272378-11	DUP	L2414916-1						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-FEB-20
WG3272378-10	LCS							
Bromide (Br)			100.9		%		85-115	08-FEB-20
WG3272378-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-FEB-20
WG3272378-12	MS	L2414916-1						
Bromide (Br)			103.8		%		75-125	08-FEB-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R4997110							
WG3276445-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-FEB-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R4997110							
WG3276445-2	LCS							
Total Organic Carbon			107.2		%		80-120	14-FEB-20
WG3276445-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-FEB-20



Quality Control Report

Workorder: L2414916

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Water								
Batch	R4992193							
WG3272378-11	DUP	L2414916-1						
Chloride (Cl)		1.91	1.86		mg/L	2.2	20	08-FEB-20
WG3272378-10	LCS							
Chloride (Cl)			103.4		%		90-110	08-FEB-20
WG3272378-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-FEB-20
WG3272378-12	MS	L2414916-1						
Chloride (Cl)			113.0		%		75-125	08-FEB-20
EC-L-PCT-CL								
Water								
Batch	R4992167							
WG3272344-8	LCS							
Conductivity (@ 25C)			96.3		%		90-110	08-FEB-20
WG3272344-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-FEB-20
F-IC-N-CL								
Water								
Batch	R4992193							
WG3272378-11	DUP	L2414916-1						
Fluoride (F)		0.093	0.080		mg/L	15	20	08-FEB-20
WG3272378-10	LCS							
Fluoride (F)			103.8		%		90-110	08-FEB-20
WG3272378-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-FEB-20
WG3272378-12	MS	L2414916-1						
Fluoride (F)			81.8		%		75-125	08-FEB-20
HG-D-CVAA-VA								
Water								
Batch	R4994872							
WG3273903-10	LCS							
Mercury (Hg)-Dissolved			95.8		%		80-120	12-FEB-20
WG3273903-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-FEB-20
WG3273903-12	MS	L2414916-1						
Mercury (Hg)-Dissolved			96.2		%		70-130	12-FEB-20
MET-D-CCMS-VA								
Water								
Batch	R4996890							
WG3274692-2	LCS							
Aluminum (Al)-Dissolved			103.4		%		80-120	14-FEB-20
Antimony (Sb)-Dissolved			88.9		%		80-120	14-FEB-20



Quality Control Report

Workorder: L2414916

Report Date: 18-DEC-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274692-2	LCS							
Arsenic (As)-Dissolved			101.5		%		80-120	14-FEB-20
Barium (Ba)-Dissolved			106.1		%		80-120	14-FEB-20
Bismuth (Bi)-Dissolved			103.1		%		80-120	14-FEB-20
Boron (B)-Dissolved			93.2		%		80-120	14-FEB-20
Cadmium (Cd)-Dissolved			100.9		%		80-120	14-FEB-20
Calcium (Ca)-Dissolved			95.9		%		80-120	14-FEB-20
Chromium (Cr)-Dissolved			103.8		%		80-120	14-FEB-20
Cobalt (Co)-Dissolved			99.9		%		80-120	14-FEB-20
Copper (Cu)-Dissolved			100.2		%		80-120	14-FEB-20
Iron (Fe)-Dissolved			101.3		%		80-120	14-FEB-20
Lead (Pb)-Dissolved			99.3		%		80-120	14-FEB-20
Lithium (Li)-Dissolved			93.5		%		80-120	14-FEB-20
Magnesium (Mg)-Dissolved			97.8		%		80-120	14-FEB-20
Manganese (Mn)-Dissolved			102.2		%		80-120	14-FEB-20
Molybdenum (Mo)-Dissolved			92.4		%		80-120	14-FEB-20
Nickel (Ni)-Dissolved			101.2		%		80-120	14-FEB-20
Potassium (K)-Dissolved			103.6		%		80-120	14-FEB-20
Selenium (Se)-Dissolved			99.2		%		80-120	14-FEB-20
Silicon (Si)-Dissolved			102.6		%		60-140	14-FEB-20
Silver (Ag)-Dissolved			91.8		%		80-120	14-FEB-20
Sodium (Na)-Dissolved			102.6		%		80-120	14-FEB-20
Strontium (Sr)-Dissolved			97.3		%		80-120	14-FEB-20
Thallium (Tl)-Dissolved			99.3		%		80-120	14-FEB-20
Tin (Sn)-Dissolved			90.6		%		80-120	14-FEB-20
Titanium (Ti)-Dissolved			95.6		%		80-120	14-FEB-20
Uranium (U)-Dissolved			102.5		%		80-120	14-FEB-20
Vanadium (V)-Dissolved			102.1		%		80-120	14-FEB-20
Zinc (Zn)-Dissolved			105.9		%		80-120	14-FEB-20
WG3274692-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20



Quality Control Report

Workorder: L2414916

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R4996890							
WG3274692-1	MB	NP						
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-FEB-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-FEB-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-FEB-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-FEB-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-FEB-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-FEB-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-FEB-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-FEB-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-FEB-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-FEB-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-FEB-20
NH3-L-F-CL								
	Water							
Batch	R4995857							
WG3273769-30	LCS							
Ammonia as N			98.3		%		85-115	11-FEB-20
WG3273769-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-FEB-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL								
Batch R4992193								
WG3272378-11	DUP	L2414916-1						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-FEB-20
WG3272378-10	LCS							
Nitrite (as N)			101.1		%		90-110	08-FEB-20
WG3272378-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-FEB-20
WG3272378-12	MS	L2414916-1						
Nitrite (as N)			107.0		%		75-125	08-FEB-20
NO3-L-IC-N-CL								
Batch R4992193								
WG3272378-11	DUP	L2414916-1						
Nitrate (as N)		0.312	0.313		mg/L	0.3	20	08-FEB-20
WG3272378-10	LCS							
Nitrate (as N)			104.5		%		90-110	08-FEB-20
WG3272378-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-FEB-20
WG3272378-12	MS	L2414916-1						
Nitrate (as N)			113.5		%		75-125	08-FEB-20
ORP-CL								
Batch R4997214								
WG3276556-3	CRM	CL-ORP						
ORP			224		mV		210-230	15-FEB-20
P-T-L-COL-CL								
Batch R4995417								
WG3274307-14	LCS							
Phosphorus (P)-Total			104.9		%		80-120	12-FEB-20
WG3274307-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-FEB-20
PH-CL								
Batch R4992167								
WG3272344-8	LCS							
pH			6.98		pH		6.9-7.1	08-FEB-20
PO4-DO-L-COL-CL								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL Water								
Batch R4992226								
WG3272358-6 LCS								
Orthophosphate-Dissolved (as P)			106.3		%		80-120	09-FEB-20
WG3272358-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-FEB-20
SO4-IC-N-CL Water								
Batch R4992193								
WG3272378-11 DUP								
Sulfate (SO4)		L2414916-1 275	274		mg/L	0.3	20	08-FEB-20
WG3272378-10 LCS								
Sulfate (SO4)			100.7		%		90-110	08-FEB-20
WG3272378-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	08-FEB-20
WG3272378-12 MS								
Sulfate (SO4)		L2414916-1	N/A	MS-B	%		-	08-FEB-20
SOLIDS-TDS-CL Water								
Batch R4996165								
WG3273894-17 LCS								
Total Dissolved Solids			102.2		%		85-115	12-FEB-20
WG3273894-16 MB								
Total Dissolved Solids			<10		mg/L		10	12-FEB-20
TKN-L-F-CL Water								
Batch R4995336								
WG3274326-13 LCS								
Total Kjeldahl Nitrogen			97.8		%		75-125	12-FEB-20
WG3274326-2 LCS								
Total Kjeldahl Nitrogen			102.8		%		75-125	12-FEB-20
WG3274326-5 LCS								
Total Kjeldahl Nitrogen			102.5		%		75-125	12-FEB-20
WG3274326-9 LCS								
Total Kjeldahl Nitrogen			99.6		%		75-125	12-FEB-20
WG3274326-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-12 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20
WG3274326-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-FEB-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R4996727							
WG3275002-6	LCS							
Total Suspended Solids			89.9		%		85-115	13-FEB-20
WG3275002-5	MB							
Total Suspended Solids			<1.0		mg/L		1	13-FEB-20
TURBIDITY-CL	Water							
Batch	R4992102							
WG3272290-14	LCS							
Turbidity			103.5		%		85-115	08-FEB-20
WG3272290-13	MB							
Turbidity			<0.10		NTU		0.1	08-FEB-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	06-FEB-20 13:04	15-FEB-20 09:00	0.25	212	hours	EHTR-FM
pH	1	06-FEB-20 13:04	08-FEB-20 13:30	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2414916 were received on 08-FEB-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC_WG_QI_20200207**

TURNAROUND TIME: Regular

RUSH: NO

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO							
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary				Report Format / Distribution							
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets				Email 1: Scott.Holmgren@teck.com							
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com				Email 2: teckcoal@equisonline.com							
Address PO Box 3000				Address 2559 29th St. NE				Email 3: jay.jones@teck.com							
City Sparwood		Province BC		City Calgary		Province AB		Email 4: victoria.sharpe@teck.com		Excel		PDF		EDD	
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada		Email 5: don.sacino@teck.com		X		X		X	
Phone Number 1-250-425-7321				Phone Number 403 407 3800				PO number				TPO: 683 186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED																	
								FIL	F	N	F	F	N												
L2414916-COFC								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA													
								PRESERV.	H2SO4	H2SO4	HCl	HNO3	NONE												
CM_MW2-SH_WG_2020-01-14_N	CM_MW2-SH	WG	No	2020/02/06	13:09	G	5	I	I	I	I	I													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

SERVICE REQUEST (rush - subject to availability)

Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	VS	Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>VS Sharpe</i>	Date/Time	February 7, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

4



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 05-MAY-20
Report Date: 12-MAY-20 13:48 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2443456
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200504
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2443456-1 CM_MW6-DP_WG_2020-04-13_N							
Sampled By: SH on 04-MAY-20 @ 13:35							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.63		0.50	mg/L		08-MAY-20	R5080419
Total Kjeldahl Nitrogen	1.11		0.050	mg/L		11-MAY-20	R5081375
Total Organic Carbon	1.79		0.50	mg/L		08-MAY-20	R5080419
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-20	08-MAY-20	R5080440
Dissolved Metals Filtration Location	FIELD					08-MAY-20	R5080315
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-20	08-MAY-20	R5080090
Dissolved Mercury Filtration Location	FIELD					08-MAY-20	R5080028
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					08-MAY-20	R5080315
Aluminum (Al)-Dissolved	0.0043		0.0030	mg/L	08-MAY-20	08-MAY-20	R5080440
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Arsenic (As)-Dissolved	0.00064		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Barium (Ba)-Dissolved	0.364		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Boron (B)-Dissolved	0.323		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-MAY-20	08-MAY-20	R5080440
Calcium (Ca)-Dissolved	9.56		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-MAY-20	08-MAY-20	R5080440
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	08-MAY-20	08-MAY-20	R5080440
Iron (Fe)-Dissolved	0.176		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Lithium (Li)-Dissolved	0.450		0.0010	mg/L	08-MAY-20	08-MAY-20	R5080440
Magnesium (Mg)-Dissolved	2.85		0.10	mg/L	08-MAY-20	08-MAY-20	R5080440
Manganese (Mn)-Dissolved	0.0774		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Molybdenum (Mo)-Dissolved	0.00133		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-20	08-MAY-20	R5080440
Potassium (K)-Dissolved	1.97		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Selenium (Se)-Dissolved	1.31		0.050	ug/L	08-MAY-20	08-MAY-20	R5080440
Silicon (Si)-Dissolved	4.15		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Sodium (Na)-Dissolved	346		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Strontium (Sr)-Dissolved	1.16		0.00020	mg/L	08-MAY-20	08-MAY-20	R5080440
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Uranium (U)-Dissolved	0.000949		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-20	08-MAY-20	R5080440
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-20	08-MAY-20	R5080440
Hardness							
Hardness (as CaCO3)	35.6		0.50	mg/L		09-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		06-MAY-20	R5077945
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	653		1.0	mg/L		06-MAY-20	R5079176
Ammonia, Total (as N)							
Ammonia as N	0.533	DLHC	0.025	mg/L		11-MAY-20	R5081276
Bicarbonate (HCO3)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2443456-1 CM_MW6-DP_WG_2020-04-13_N Sampled By: SH on 04-MAY-20 @ 13:35 Matrix: WG							
Bicarbonate (HCO3) Bicarbonate (HCO3)	734		5.0	mg/L		06-MAY-20	R5079176
Bromide in Water by IC (Low Level) Bromide (Br)	<0.25	DLHC	0.25	mg/L		05-MAY-20	R5077477
Carbonate (CO3) Carbonate (CO3)	30.8		5.0	mg/L		06-MAY-20	R5079176
Chloride in Water by IC Chloride (Cl)	37.9	DLHC	2.5	mg/L		05-MAY-20	R5077477
Electrical Conductivity (EC) Conductivity (@ 25C)	1230		2.0	uS/cm		06-MAY-20	R5079176
Fluoride in Water by IC Fluoride (F)	0.37	DLHC	0.10	mg/L		05-MAY-20	R5077477
Hydroxide in Water Hydroxide (OH)	<5.0		5.0	mg/L		06-MAY-20	R5079176
Ion Balance Calculation Ion Balance	111		-100	%		09-MAY-20	
Ion Balance Calculation Cation - Anion Balance	5.3			%		09-MAY-20	
Anion Sum	14.2			meq/L		09-MAY-20	
Cation Sum	15.8			meq/L		09-MAY-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	<0.025	DLHC	0.025	mg/L		05-MAY-20	R5077477
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		05-MAY-20	R5077477
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0247		0.0010	mg/L		05-MAY-20	R5076877
Oxidation redution potential by elect. ORP	247		-1000	mV		05-MAY-20	R5076883
Phosphorus (P)-Total Phosphorus (P)-Total	0.0286		0.0020	mg/L		08-MAY-20	R5080250
Sulfate in Water by IC Sulfate (SO4)	4.8	DLHC	1.5	mg/L		05-MAY-20	R5077477
Total Dissolved Solids Total Dissolved Solids	760		20	mg/L		08-MAY-20	R5080632
Total Suspended Solids Total Suspended Solids	2.5		1.0	mg/L		08-MAY-20	R5080599
Turbidity Turbidity	1.48		0.10	NTU		05-MAY-20	R5077039
pH pH	8.72		0.10	pH		06-MAY-20	R5079176
L2443456-2 CM_MW6-SH_WG_2020-04-13_N Sampled By: SH on 04-MAY-20 @ 13:25 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	1.72		0.50	mg/L		08-MAY-20	R5080419
Total Kjeldahl Nitrogen	0.189		0.050	mg/L		11-MAY-20	R5081375
Total Organic Carbon	1.84		0.50	mg/L		08-MAY-20	R5080419
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-20	08-MAY-20	R5080440
Dissolved Metals Filtration Location	FIELD					08-MAY-20	R5080315
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-20	08-MAY-20	R5080090

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2443456-2 CM_MW6-SH_WG_2020-04-13_N							
Sampled By: SH on 04-MAY-20 @ 13:25							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Dissolved Mercury Filtration Location	FIELD					08-MAY-20	R5080028
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					08-MAY-20	R5080315
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-20	08-MAY-20	R5080440
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Arsenic (As)-Dissolved	0.00068		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Barium (Ba)-Dissolved	0.142		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Boron (B)-Dissolved	0.042		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-MAY-20	08-MAY-20	R5080440
Calcium (Ca)-Dissolved	19.4		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	08-MAY-20	08-MAY-20	R5080440
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	08-MAY-20	08-MAY-20	R5080440
Iron (Fe)-Dissolved	0.212		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Lithium (Li)-Dissolved	0.0411		0.0010	mg/L	08-MAY-20	08-MAY-20	R5080440
Magnesium (Mg)-Dissolved	7.84		0.10	mg/L	08-MAY-20	08-MAY-20	R5080440
Manganese (Mn)-Dissolved	0.235		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Molybdenum (Mo)-Dissolved	0.00506		0.000050	mg/L	08-MAY-20	08-MAY-20	R5080440
Nickel (Ni)-Dissolved	0.00061		0.00050	mg/L	08-MAY-20	08-MAY-20	R5080440
Potassium (K)-Dissolved	0.296		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Selenium (Se)-Dissolved	0.345		0.050	ug/L	08-MAY-20	08-MAY-20	R5080440
Silicon (Si)-Dissolved	3.25		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Sodium (Na)-Dissolved	77.6		0.050	mg/L	08-MAY-20	08-MAY-20	R5080440
Strontium (Sr)-Dissolved	0.226		0.00020	mg/L	08-MAY-20	08-MAY-20	R5080440
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-20	08-MAY-20	R5080440
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-20	08-MAY-20	R5080440
Uranium (U)-Dissolved	0.000480		0.000010	mg/L	08-MAY-20	08-MAY-20	R5080440
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-20	08-MAY-20	R5080440
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-20	08-MAY-20	R5080440
Hardness							
Hardness (as CaCO3)	80.9		0.50	mg/L		09-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		06-MAY-20	R5077945
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		06-MAY-20	R5079176
Ammonia, Total (as N)							
Ammonia as N	0.0779		0.0050	mg/L		11-MAY-20	R5081276
Bicarbonate (HCO3)							
Bicarbonate (HCO3)	238		5.0	mg/L		06-MAY-20	R5079176
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.065		0.050	mg/L		05-MAY-20	R5077477
Carbonate (CO3)							
Carbonate (CO3)	<5.0		5.0	mg/L		06-MAY-20	R5079176
Chloride in Water by IC							
Chloride (Cl)	18.8		0.50	mg/L		05-MAY-20	R5077477
Electrical Conductivity (EC)							
Conductivity (@ 25C)	383		2.0	uS/cm		06-MAY-20	R5079176

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2443456-2 CM_MW6-SH_WG_2020-04-13_N							
Sampled By: SH on 04-MAY-20 @ 13:25							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	1.31		0.020	mg/L		05-MAY-20	R5077477
Hydroxide in Water							
Hydroxide (OH)	<5.0		5.0	mg/L		06-MAY-20	R5079176
Ion Balance Calculation							
Ion Balance	106		-100	%		09-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	3.0			%		09-MAY-20	
Anion Sum	4.73			meq/L		09-MAY-20	
Cation Sum	5.02			meq/L		09-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		05-MAY-20	R5077477
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		05-MAY-20	R5077477
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		05-MAY-20	R5076877
Oxidation redution potential by elect.							
ORP	302		-1000	mV		05-MAY-20	R5076883
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0046		0.0020	mg/L		08-MAY-20	R5080250
Sulfate in Water by IC							
Sulfate (SO4)	3.30		0.30	mg/L		05-MAY-20	R5077477
Total Dissolved Solids							
Total Dissolved Solids	226		20	mg/L		08-MAY-20	R5080632
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		08-MAY-20	R5080599
Turbidity							
Turbidity	1.96		0.10	NTU		05-MAY-20	R5077039
pH							
pH	8.42		0.10	pH		06-MAY-20	R5079176

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-T-CL	Water	Alkalinity, Total	APHA 2320 B-Auto-Pot. Titration
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200504

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2443456

Report Date: 12-MAY-20

Page 1 of 11

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5077945							
WG3318729-2	LCS							
Acidity (as CaCO3)			94.8		%		85-115	06-MAY-20
WG3318729-1	MB							
Acidity (as CaCO3)			1.6		mg/L		2	06-MAY-20
ALK-MAN-T-CL								
	Water							
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
Alkalinity, Total (as CaCO3)		653	672		mg/L	2.9	20	06-MAY-20
WG3319175-2	LCS							
Alkalinity, Total (as CaCO3)			103.1		%		85-115	06-MAY-20
WG3319175-5	LCS							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	06-MAY-20
WG3319175-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-MAY-20
WG3319175-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5080440							
WG3320168-3	DUP	L2443456-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-MAY-20
WG3320168-2	LCS							
Beryllium (Be)-Dissolved			107.2		%		80-120	08-MAY-20
WG3320168-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-MAY-20
WG3320168-4	MS	L2443456-2						
Beryllium (Be)-Dissolved			102.1		%		70-130	08-MAY-20
BIC-CL								
	Water							
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
Bicarbonate (HCO3)		734	754		mg/L	2.7	20	06-MAY-20
WG3319175-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	06-MAY-20
WG3319175-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	06-MAY-20
BR-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2443456

Report Date: 12-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-L-IC-N-CL Water								
Batch	R5077477							
WG3318538-2	LCS							
Bromide (Br)			102.3		%		85-115	05-MAY-20
WG3318538-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	05-MAY-20
C-DIS-ORG-LOW-CL Water								
Batch	R5080419							
WG3320303-6	LCS							
Dissolved Organic Carbon			95.9		%		80-120	08-MAY-20
WG3320303-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-MAY-20
C-TOT-ORG-LOW-CL Water								
Batch	R5080419							
WG3320303-6	LCS							
Total Organic Carbon			100.6		%		80-120	08-MAY-20
WG3320303-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	08-MAY-20
CL-IC-N-CL Water								
Batch	R5077477							
WG3318538-2	LCS							
Chloride (Cl)			103.1		%		90-110	05-MAY-20
WG3318538-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	05-MAY-20
CO3-CL Water								
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
Carbonate (CO3)		30.8	32.4		mg/L	4.9	20	06-MAY-20
WG3319175-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	06-MAY-20
WG3319175-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	06-MAY-20
EC-L-PCT-CL Water								
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
Conductivity (@ 25C)		1230	1200		uS/cm	2.0	10	06-MAY-20
WG3319175-2	LCS							
Conductivity (@ 25C)			99.0		%		90-110	06-MAY-20
WG3319175-5	LCS							



Quality Control Report

Workorder: L2443456

Report Date: 12-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL		Water						
Batch R5079176								
WG3319175-5	LCS							
Conductivity (@ 25C)			100.5		%		90-110	06-MAY-20
WG3319175-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-MAY-20
WG3319175-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-MAY-20
F-IC-N-CL		Water						
Batch R5077477								
WG3318538-2	LCS							
Fluoride (F)			100.2		%		90-110	05-MAY-20
WG3318538-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	05-MAY-20
HG-D-CVAA-VA		Water						
Batch R5080090								
WG3319818-2	LCS							
Mercury (Hg)-Dissolved			103.0		%		80-120	08-MAY-20
WG3319818-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-MAY-20
MET-D-CCMS-VA		Water						
Batch R5080440								
WG3320168-3	DUP	L2443456-1						
Aluminum (Al)-Dissolved			0.0043	0.0045	mg/L	3.5	20	08-MAY-20
Antimony (Sb)-Dissolved			<0.00010	<0.00010	mg/L	RPD-NA	20	08-MAY-20
Arsenic (As)-Dissolved			0.00064	0.00067	mg/L	3.7	20	08-MAY-20
Barium (Ba)-Dissolved			0.364	0.365	mg/L	0.4	20	08-MAY-20
Bismuth (Bi)-Dissolved			<0.000050	<0.000050	mg/L	RPD-NA	20	08-MAY-20
Boron (B)-Dissolved			0.323	0.321	mg/L	0.8	20	08-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050	<0.000005C	mg/L	RPD-NA	20	08-MAY-20
Calcium (Ca)-Dissolved			9.56	9.60	mg/L	0.5	20	08-MAY-20
Chromium (Cr)-Dissolved			<0.00010	<0.00010	mg/L	RPD-NA	20	08-MAY-20
Cobalt (Co)-Dissolved			<0.00010	<0.00010	mg/L	RPD-NA	20	08-MAY-20
Copper (Cu)-Dissolved			<0.00020	<0.00020	mg/L	RPD-NA	20	08-MAY-20
Iron (Fe)-Dissolved			0.176	0.176	mg/L	0.1	20	08-MAY-20
Lead (Pb)-Dissolved			<0.000050	<0.000050	mg/L	RPD-NA	20	08-MAY-20
Lithium (Li)-Dissolved			0.450	0.450	mg/L	0.0	20	08-MAY-20
Magnesium (Mg)-Dissolved			2.85	2.88	mg/L	1.1	20	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5080440							
WG3320168-3	DUP	L2443456-1						
Manganese (Mn)-Dissolved		0.0774	0.0769		mg/L	0.6	20	08-MAY-20
Molybdenum (Mo)-Dissolved		0.00133	0.00133		mg/L	0.2	20	08-MAY-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-MAY-20
Potassium (K)-Dissolved		1.97	1.98		mg/L	0.4	20	08-MAY-20
Selenium (Se)-Dissolved		0.00131	0.00130		mg/L	0.8	20	08-MAY-20
Silicon (Si)-Dissolved		4.15	4.09		mg/L	1.4	20	08-MAY-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-MAY-20
Sodium (Na)-Dissolved		346	349		mg/L	0.7	20	08-MAY-20
Strontium (Sr)-Dissolved		1.16	1.15		mg/L	0.4	20	08-MAY-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-MAY-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-MAY-20
Uranium (U)-Dissolved		0.000949	0.000922		mg/L	2.8	20	08-MAY-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-MAY-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-MAY-20
WG3320168-2	LCS							
Aluminum (Al)-Dissolved			99.6		%		80-120	08-MAY-20
Antimony (Sb)-Dissolved			96.6		%		80-120	08-MAY-20
Arsenic (As)-Dissolved			101.0		%		80-120	08-MAY-20
Barium (Ba)-Dissolved			97.7		%		80-120	08-MAY-20
Bismuth (Bi)-Dissolved			123.9	MES	%		80-120	08-MAY-20
Boron (B)-Dissolved			95.9		%		80-120	08-MAY-20
Cadmium (Cd)-Dissolved			103.6		%		80-120	08-MAY-20
Calcium (Ca)-Dissolved			102.4		%		80-120	08-MAY-20
Chromium (Cr)-Dissolved			103.8		%		80-120	08-MAY-20
Cobalt (Co)-Dissolved			100.6		%		80-120	08-MAY-20
Copper (Cu)-Dissolved			100.7		%		80-120	08-MAY-20
Iron (Fe)-Dissolved			92.3		%		80-120	08-MAY-20
Lead (Pb)-Dissolved			107.3		%		80-120	08-MAY-20
Lithium (Li)-Dissolved			105.7		%		80-120	08-MAY-20
Magnesium (Mg)-Dissolved			104.2		%		80-120	08-MAY-20
Manganese (Mn)-Dissolved			100.2		%		80-120	08-MAY-20
Molybdenum (Mo)-Dissolved			98.5		%		80-120	08-MAY-20
Nickel (Ni)-Dissolved			99.1		%		80-120	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5080440							
WG3320168-2	LCS							
Potassium (K)-Dissolved			104.3		%		80-120	08-MAY-20
Selenium (Se)-Dissolved			101.7		%		80-120	08-MAY-20
Silicon (Si)-Dissolved			101.2		%		60-140	08-MAY-20
Silver (Ag)-Dissolved			97.6		%		80-120	08-MAY-20
Sodium (Na)-Dissolved			114.5		%		80-120	08-MAY-20
Strontium (Sr)-Dissolved			105.5		%		80-120	08-MAY-20
Thallium (Tl)-Dissolved			105.5		%		80-120	08-MAY-20
Tin (Sn)-Dissolved			100.2		%		80-120	08-MAY-20
Titanium (Ti)-Dissolved			100.3		%		80-120	08-MAY-20
Uranium (U)-Dissolved			106.2		%		80-120	08-MAY-20
Vanadium (V)-Dissolved			103.1		%		80-120	08-MAY-20
Zinc (Zn)-Dissolved			107.3		%		80-120	08-MAY-20
WG3320168-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5080440							
WG3320168-1	MB	NP						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAY-20
WG3320168-4	MS	L2443456-2						
Aluminum (Al)-Dissolved			92.4		%		70-130	08-MAY-20
Antimony (Sb)-Dissolved			97.4		%		70-130	08-MAY-20
Arsenic (As)-Dissolved			96.8		%		70-130	08-MAY-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	08-MAY-20
Bismuth (Bi)-Dissolved			88.3		%		70-130	08-MAY-20
Boron (B)-Dissolved			86.6		%		70-130	08-MAY-20
Cadmium (Cd)-Dissolved			98.8		%		70-130	08-MAY-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-MAY-20
Chromium (Cr)-Dissolved			93.0		%		70-130	08-MAY-20
Cobalt (Co)-Dissolved			93.1		%		70-130	08-MAY-20
Copper (Cu)-Dissolved			90.3		%		70-130	08-MAY-20
Iron (Fe)-Dissolved			95.2		%		70-130	08-MAY-20
Lead (Pb)-Dissolved			89.3		%		70-130	08-MAY-20
Lithium (Li)-Dissolved			110.3		%		70-130	08-MAY-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-MAY-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	08-MAY-20
Molybdenum (Mo)-Dissolved			93.0		%		70-130	08-MAY-20
Nickel (Ni)-Dissolved			90.7		%		70-130	08-MAY-20
Potassium (K)-Dissolved			97.1		%		70-130	08-MAY-20
Selenium (Se)-Dissolved			89.6		%		70-130	08-MAY-20
Silicon (Si)-Dissolved			89.1		%		70-130	08-MAY-20
Silver (Ag)-Dissolved			74.0		%		70-130	08-MAY-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	08-MAY-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5080440							
WG3320168-4	MS	L2443456-2						
Thallium (Tl)-Dissolved			86.5		%		70-130	08-MAY-20
Tin (Sn)-Dissolved			96.0		%		70-130	08-MAY-20
Titanium (Ti)-Dissolved			93.4		%		70-130	08-MAY-20
Uranium (U)-Dissolved			92.2		%		70-130	08-MAY-20
Vanadium (V)-Dissolved			95.2		%		70-130	08-MAY-20
Zinc (Zn)-Dissolved			96.4		%		70-130	08-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5081276							
WG3321242-6	LCS							
Ammonia as N			101.5		%		85-115	11-MAY-20
WG3321242-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	11-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5077477							
WG3318538-2	LCS							
Nitrite (as N)			105.5		%		90-110	05-MAY-20
WG3318538-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	05-MAY-20
NO3-L-IC-N-CL								
	Water							
Batch	R5077477							
WG3318538-2	LCS							
Nitrate (as N)			101.9		%		90-110	05-MAY-20
WG3318538-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	05-MAY-20
OH-CL								
	Water							
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	06-MAY-20
WG3319175-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	06-MAY-20
WG3319175-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	06-MAY-20
ORP-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ORP-CL	Water							
Batch	R5076883							
WG3318255-7	CRM	CL-ORP						
ORP			224		mV		210-230	05-MAY-20
P-T-L-COL-CL	Water							
Batch	R5080250							
WG3320002-6	LCS							
Phosphorus (P)-Total			102.8		%		80-120	08-MAY-20
WG3320002-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-MAY-20
PH-CL	Water							
Batch	R5079176							
WG3319175-6	DUP	L2443456-1						
pH		8.72	8.72	J	pH	0.00	0.2	06-MAY-20
WG3319175-2	LCS							
pH			7.03		pH		6.9-7.1	06-MAY-20
WG3319175-5	LCS							
pH			7.02		pH		6.9-7.1	06-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5076877							
WG3318206-2	LCS							
Orthophosphate-Dissolved (as P)			104.4		%		80-120	05-MAY-20
WG3318206-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-MAY-20
SO4-IC-N-CL	Water							
Batch	R5077477							
WG3318538-2	LCS							
Sulfate (SO4)			104.2		%		90-110	05-MAY-20
WG3318538-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5080632							
WG3319540-2	LCS							
Total Dissolved Solids			96.6		%		85-115	08-MAY-20
WG3319540-1	MB							
Total Dissolved Solids			<10		mg/L		10	08-MAY-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5081375							
WG3321360-11	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	11-MAY-20
WG3321360-14	LCS							
Total Kjeldahl Nitrogen			91.3		%		75-125	11-MAY-20
WG3321360-17	LCS							
Total Kjeldahl Nitrogen			90.5		%		75-125	11-MAY-20
WG3321360-2	LCS							
Total Kjeldahl Nitrogen			89.0		%		75-125	11-MAY-20
WG3321360-5	LCS							
Total Kjeldahl Nitrogen			90.3		%		75-125	11-MAY-20
WG3321360-8	LCS							
Total Kjeldahl Nitrogen			92.3		%		75-125	11-MAY-20
WG3321360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
WG3321360-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
WG3321360-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
WG3321360-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
WG3321360-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
WG3321360-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAY-20
TSS-L-CL		Water						
Batch	R5080599							
WG3319984-17	LCS							
Total Suspended Solids			107.2		%		85-115	08-MAY-20
WG3319984-16	MB							
Total Suspended Solids			<1.0		mg/L		1	08-MAY-20
TURBIDITY-CL		Water						
Batch	R5077039							
WG3318261-2	LCS							
Turbidity			104.5		%		85-115	05-MAY-20
WG3318261-1	MB							
Turbidity			<0.10		NTU		0.1	05-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	04-MAY-20 13:35	05-MAY-20 14:00	0.25	24	hours	EHTR-FM
	2	04-MAY-20 13:25	05-MAY-20 14:00	0.25	24	hours	EHTR-FM
pH	1	04-MAY-20 13:35	06-MAY-20 13:00	0.25	48	hours	EHTR-FM
	2	04-MAY-20 13:25	06-MAY-20 13:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2443456 were received on 05-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200504		TURNAROUND TIME:		REGULAR		RUSH: NO									
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO							
Facility Name / Job#		Coal Mountain Operations		Lab Name		ALS Calgary		Report Format / Distribution		Excel	PDF	EDD			
Project Manager		Jay Jones		Lab Contact		Lyudmyla Shvets		Email 1:		Victoria.Sharpa@teck.com	X	X	X		
Email		Jay.Jones@teck.com		Email		Lyudmyla.Shvets@alsglobal.com		Email 2:		teckcoal@equisonline.com			X		
Address		PO Box 3000		Address		2559 29th St. NE		Email 3:		Jay.Jones@teck.com	X	X	X		
City		Sparwood	Province	BC	City		Calgary	Province	AB	Email 4:		don.sacino@teck.com	X	X	X
Postal Code		V0B 2G0	Country		Canada	Postal Code		T1Y 7B5	Country		Canada				
Phone Number		1-250-425-7321		Phone Number		403 407 1800		PO number		VPO00683186					

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N					
CM_MW6-DP_WG_2020-04-13_N	CM_MW6-DP	WG	No	2020/05/04	13:35	G	5	1	1	1	1	1	1	1								
CM_MW6-SH_WG_2020-04-13_N	CM_MW6-SH	WG	No	2020/05/04	13:25	G	5	1	1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ . Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .						A		5/5 4:50	
SERVICE REQUEST (rush - subject to availability)		Sampler's Name		SH		Mobile #		250-425-7522	
Regular (default) <input checked="" type="checkbox"/>		Sampler's Signature		ADH		Date/Time		May 4, 2020	
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 08-MAY-20
Report Date: 21-DEC-20 17:54 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2445399
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200507
Legal Site Desc:

Comments:

21-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide on L2445399-1 and -2.

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2445399-1 CM_MW4-DP_WG_2020-04-13_N							
Sampled By: SH/JD on 07-MAY-20 @ 13:55							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	971		5.0	mg/L		09-MAY-20	R5080775
Carbonate (CO3)	41.0		5.0	mg/L		09-MAY-20	R5080775
Dissolved Organic Carbon	<0.50		0.50	mg/L		15-MAY-20	R5086916
Hydroxide (OH)	<5.0		5.0	mg/L		09-MAY-20	R5080775
Total Kjeldahl Nitrogen	0.627		0.050	mg/L		15-MAY-20	R5087923
Total Organic Carbon	<0.50		0.50	mg/L		15-MAY-20	R5086916
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	10-MAY-20	12-MAY-20	R5081993
Dissolved Metals Filtration Location	FIELD					10-MAY-20	R5080842
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAY-20	12-MAY-20	R5081532
Dissolved Mercury Filtration Location	FIELD					12-MAY-20	R5081497
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-MAY-20	R5080842
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-MAY-20	12-MAY-20	R5081993
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Barium (Ba)-Dissolved	0.614		0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Boron (B)-Dissolved	0.394		0.020	mg/L	10-MAY-20	12-MAY-20	R5081993
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	10-MAY-20	12-MAY-20	R5081993
Calcium (Ca)-Dissolved	8.21		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	10-MAY-20	12-MAY-20	R5081993
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	10-MAY-20	12-MAY-20	R5081993
Iron (Fe)-Dissolved	0.065		0.020	mg/L	10-MAY-20	12-MAY-20	R5081993
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Lithium (Li)-Dissolved	1.08		0.0020	mg/L	10-MAY-20	12-MAY-20	R5081993
Magnesium (Mg)-Dissolved	1.95		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Manganese (Mn)-Dissolved	0.00372		0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Molybdenum (Mo)-Dissolved	0.00047		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	10-MAY-20	12-MAY-20	R5081993
Potassium (K)-Dissolved	1.29		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	10-MAY-20	12-MAY-20	R5081993
Silicon (Si)-Dissolved	3.86		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-MAY-20	12-MAY-20	R5081993
Sodium (Na)-Dissolved	651		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Strontium (Sr)-Dissolved	1.16		0.00040	mg/L	10-MAY-20	12-MAY-20	R5081993
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-MAY-20	12-MAY-20	R5081993
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-MAY-20	12-MAY-20	R5081993
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-MAY-20	13-MAY-20	R5082757
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	10-MAY-20	12-MAY-20	R5081993
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	10-MAY-20	12-MAY-20	R5081993
Hardness							
Hardness (as CaCO3)	28.5		0.50	mg/L		14-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		09-MAY-20	R5080766
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2445399-1 CM_MW4-DP_WG_2020-04-13_N Sampled By: SH/JD on 07-MAY-20 @ 13:55 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	796		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Carbonate (as CaCO3)	68.4		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Total (as CaCO3)	864		1.0	mg/L		09-MAY-20	R5080775
Ammonia, Total (as N)							
Ammonia as N	0.696	DLHC	0.050	mg/L		14-MAY-20	R5084856
Bromide in Water by IC (Low Level)							
Bromide (Br)	1.67	DLHC	0.25	mg/L		09-MAY-20	R5083181
Chloride in Water by IC							
Chloride (Cl)	463	DLHC	2.5	mg/L		09-MAY-20	R5083181
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2740		2.0	uS/cm		09-MAY-20	R5080775
Fluoride in Water by IC							
Fluoride (F)	0.44	DLHC	0.10	mg/L		09-MAY-20	R5083181
Ion Balance Calculation							
Cation - Anion Balance	-2.8			%		14-MAY-20	
Anion Sum	30.6			meq/L		14-MAY-20	
Cation Sum	28.9			meq/L		14-MAY-20	
Ion Balance Calculation							
Ion Balance	94.6		-100	%		14-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.032	DLHC	0.025	mg/L		09-MAY-20	R5083181
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0087	DLHC	0.0050	mg/L		09-MAY-20	R5083181
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0107		0.0010	mg/L		08-MAY-20	R5080554
Oxidation redution potential by elect.							
ORP	253		-1000	mV		14-MAY-20	R5085738
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0121		0.0020	mg/L		13-MAY-20	R5082438
Sulfate in Water by IC							
Sulfate (SO4)	9.6	DLHC	1.5	mg/L		09-MAY-20	R5083181
Total Dissolved Solids							
Total Dissolved Solids	1740	DLHC	20	mg/L		13-MAY-20	R5084537
Total Suspended Solids							
Total Suspended Solids	1.8		1.0	mg/L		13-MAY-20	R5084916
Turbidity							
Turbidity	3.85		0.10	NTU		09-MAY-20	R5080617
pH							
pH	8.71		0.10	pH		09-MAY-20	R5080775
L2445399-2 CM_MW4-SH_WG_2020-04-13_N Sampled By: SH/JD on 07-MAY-20 @ 13:45 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	649		5.0	mg/L		09-MAY-20	R5080775
Carbonate (CO3)	27.7		5.0	mg/L		09-MAY-20	R5080775
Dissolved Organic Carbon	<0.50		0.50	mg/L		15-MAY-20	R5086916
Hydroxide (OH)	<5.0		5.0	mg/L		09-MAY-20	R5080775
Total Kjeldahl Nitrogen	0.443		0.050	mg/L		15-MAY-20	R5087923
Total Organic Carbon	<0.50		0.50	mg/L		15-MAY-20	R5086916
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2445399-2 CM_MW4-SH_WG_2020-04-13_N							
Sampled By: SH/JD on 07-MAY-20 @ 13:45							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-MAY-20	12-MAY-20	R5081993
Dissolved Metals Filtration Location	FIELD					10-MAY-20	R5080842
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAY-20	12-MAY-20	R5081532
Dissolved Mercury Filtration Location	FIELD					12-MAY-20	R5081497
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-MAY-20	R5080842
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-MAY-20	12-MAY-20	R5081993
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Barium (Ba)-Dissolved	0.343		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-MAY-20	12-MAY-20	R5081993
Boron (B)-Dissolved	0.333		0.010	mg/L	10-MAY-20	12-MAY-20	R5081993
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-MAY-20	12-MAY-20	R5081993
Calcium (Ca)-Dissolved	6.89		0.050	mg/L	10-MAY-20	12-MAY-20	R5081993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-MAY-20	12-MAY-20	R5081993
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Iron (Fe)-Dissolved	0.071		0.010	mg/L	10-MAY-20	12-MAY-20	R5081993
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-MAY-20	12-MAY-20	R5081993
Lithium (Li)-Dissolved	0.471		0.0010	mg/L	10-MAY-20	12-MAY-20	R5081993
Magnesium (Mg)-Dissolved	2.22		0.10	mg/L	10-MAY-20	12-MAY-20	R5081993
Manganese (Mn)-Dissolved	0.00445		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Molybdenum (Mo)-Dissolved	0.000790		0.000050	mg/L	10-MAY-20	12-MAY-20	R5081993
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-MAY-20	12-MAY-20	R5081993
Potassium (K)-Dissolved	1.08		0.050	mg/L	10-MAY-20	12-MAY-20	R5081993
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-MAY-20	12-MAY-20	R5081993
Silicon (Si)-Dissolved	3.78		0.050	mg/L	10-MAY-20	12-MAY-20	R5081993
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-MAY-20	12-MAY-20	R5081993
Sodium (Na)-Dissolved	334		0.050	mg/L	10-MAY-20	12-MAY-20	R5081993
Strontium (Sr)-Dissolved	0.818		0.00020	mg/L	10-MAY-20	12-MAY-20	R5081993
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-MAY-20	12-MAY-20	R5081993
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-MAY-20	12-MAY-20	R5081993
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-MAY-20	12-MAY-20	R5081993
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	10-MAY-20	12-MAY-20	R5081993
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-MAY-20	12-MAY-20	R5081993
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-MAY-20	12-MAY-20	R5081993
Hardness							
Hardness (as CaCO3)	26.3		0.50	mg/L		12-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		09-MAY-20	R5080766
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	532		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Carbonate (as CaCO3)	46.2		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		09-MAY-20	R5080775
Alkalinity, Total (as CaCO3)	578		1.0	mg/L		09-MAY-20	R5080775
Ammonia, Total (as N)							
Ammonia as N	0.489		0.0050	mg/L		14-MAY-20	R5084856
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.53	DLHC	0.25	mg/L		09-MAY-20	R5083181
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2445399-2 CM_MW4-SH_WG_2020-04-13_N							
Sampled By: SH/JD on 07-MAY-20 @ 13:45							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	144	DLHC	2.5	mg/L		09-MAY-20	R5083181
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1350		2.0	uS/cm		09-MAY-20	R5080775
Fluoride in Water by IC							
Fluoride (F)	0.44	DLHC	0.10	mg/L		09-MAY-20	R5083181
Ion Balance Calculation							
Cation - Anion Balance	-1.8			%		14-MAY-20	
Anion Sum	15.6			meq/L		14-MAY-20	
Cation Sum	15.1			meq/L		14-MAY-20	
Ion Balance Calculation							
Ion Balance	96.4		-100	%		14-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		09-MAY-20	R5083181
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		09-MAY-20	R5083181
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0106		0.0010	mg/L		08-MAY-20	R5080554
Oxidation redution potential by elect.							
ORP	212		-1000	mV		14-MAY-20	R5085738
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0098		0.0020	mg/L		13-MAY-20	R5082438
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		09-MAY-20	R5083181
Total Dissolved Solids							
Total Dissolved Solids	907	DLHC	20	mg/L		13-MAY-20	R5084537
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		13-MAY-20	R5084916
Turbidity							
Turbidity	1.06		0.10	NTU		09-MAY-20	R5080617
pH							
pH	8.70		0.10	pH		09-MAY-20	R5080775

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200507

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2445399

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5080766							
WG3320680-5	LCS							
Acidity (as CaCO3)			103.1		%		85-115	09-MAY-20
WG3320680-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	09-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5080775							
WG3320683-17	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	09-MAY-20
WG3320683-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5081993							
WG3320748-2	LCS							
Beryllium (Be)-Dissolved			105.4		%		80-120	12-MAY-20
WG3320748-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-MAY-20
BIC-CL								
	Water							
Batch	R5080775							
WG3320683-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	09-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5083181							
WG3322661-14	LCS							
Bromide (Br)			105.7		%		85-115	09-MAY-20
WG3322661-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	09-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5086916							
WG3324232-2	LCS							
Dissolved Organic Carbon			98.3		%		80-120	15-MAY-20
WG3324232-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5086916							
WG3324232-2 LCS								
Total Organic Carbon			97.6		%		80-120	15-MAY-20
WG3324232-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-MAY-20
CL-IC-N-CL	Water							
Batch	R5083181							
WG3322661-14 LCS								
Chloride (Cl)			102.5		%		90-110	09-MAY-20
WG3322661-13 MB								
Chloride (Cl)			<0.50		mg/L		0.5	09-MAY-20
CO3-CL	Water							
Batch	R5080775							
WG3320683-16 MB								
Carbonate (CO3)			<5.0		mg/L		5	09-MAY-20
EC-L-PCT-CL	Water							
Batch	R5080775							
WG3320683-17 LCS								
Conductivity (@ 25C)			100.3		%		90-110	09-MAY-20
WG3320683-16 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	09-MAY-20
F-IC-N-CL	Water							
Batch	R5083181							
WG3322661-14 LCS								
Fluoride (F)			101.1		%		90-110	09-MAY-20
WG3322661-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	09-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5081532							
WG3321566-6 LCS								
Mercury (Hg)-Dissolved			102.9		%		80-120	12-MAY-20
WG3321566-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-MAY-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081993							
WG3320748-2	LCS							
Aluminum (Al)-Dissolved			98.4		%		80-120	12-MAY-20
Antimony (Sb)-Dissolved			97.9		%		80-120	12-MAY-20
Arsenic (As)-Dissolved			97.4		%		80-120	12-MAY-20
Barium (Ba)-Dissolved			105.0		%		80-120	12-MAY-20
Bismuth (Bi)-Dissolved			95.4		%		80-120	12-MAY-20
Boron (B)-Dissolved			98.4		%		80-120	12-MAY-20
Cadmium (Cd)-Dissolved			95.1		%		80-120	12-MAY-20
Calcium (Ca)-Dissolved			107.4		%		80-120	12-MAY-20
Chromium (Cr)-Dissolved			100.7		%		80-120	12-MAY-20
Cobalt (Co)-Dissolved			99.8		%		80-120	12-MAY-20
Copper (Cu)-Dissolved			97.2		%		80-120	12-MAY-20
Iron (Fe)-Dissolved			90.0		%		80-120	12-MAY-20
Lead (Pb)-Dissolved			90.7		%		80-120	12-MAY-20
Lithium (Li)-Dissolved			107.2		%		80-120	12-MAY-20
Magnesium (Mg)-Dissolved			94.3		%		80-120	12-MAY-20
Manganese (Mn)-Dissolved			99.9		%		80-120	12-MAY-20
Molybdenum (Mo)-Dissolved			97.6		%		80-120	12-MAY-20
Nickel (Ni)-Dissolved			97.0		%		80-120	12-MAY-20
Potassium (K)-Dissolved			104.0		%		80-120	12-MAY-20
Selenium (Se)-Dissolved			96.6		%		80-120	12-MAY-20
Silicon (Si)-Dissolved			93.7		%		60-140	12-MAY-20
Silver (Ag)-Dissolved			96.2		%		80-120	12-MAY-20
Sodium (Na)-Dissolved			95.2		%		80-120	12-MAY-20
Strontium (Sr)-Dissolved			104.1		%		80-120	12-MAY-20
Thallium (Tl)-Dissolved			93.0		%		80-120	12-MAY-20
Tin (Sn)-Dissolved			97.0		%		80-120	12-MAY-20
Titanium (Ti)-Dissolved			95.4		%		80-120	12-MAY-20
Uranium (U)-Dissolved			93.9		%		80-120	12-MAY-20
Vanadium (V)-Dissolved			98.5		%		80-120	12-MAY-20
Zinc (Zn)-Dissolved			103.6		%		80-120	12-MAY-20
WG3320748-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5081993							
WG3320748-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5084856							
WG3323703-22	LCS							
Ammonia as N			103.4		%		85-115	14-MAY-20
WG3323703-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-MAY-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5083181							
WG3322661-14 LCS								
Nitrite (as N)			103.9		%		90-110	09-MAY-20
WG3322661-13 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	09-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5083181							
WG3322661-14 LCS								
Nitrate (as N)			102.5		%		90-110	09-MAY-20
WG3322661-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-MAY-20
OH-CL	Water							
Batch	R5080775							
WG3320683-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	09-MAY-20
ORP-CL	Water							
Batch	R5085738							
WG3323834-5 CRM		CL-ORP						
ORP			225		mV		210-230	14-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-10 LCS								
Phosphorus (P)-Total			107.0		%		80-120	13-MAY-20
WG3322703-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL	Water							
Batch	R5080775							
WG3320683-17 LCS								
pH			6.98		pH		6.9-7.1	09-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5080554							
WG3320281-19 LCS								
Orthophosphate-Dissolved (as P)			103.9		%		80-120	08-MAY-20
WG3320281-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5083181							
WG3322661-14 LCS								
Sulfate (SO4)			101.9		%		90-110	09-MAY-20
WG3322661-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5084537							
WG3322449-14 LCS								
Total Dissolved Solids			105.1		%		85-115	13-MAY-20
WG3322449-13 MB								
Total Dissolved Solids			<10		mg/L		10	13-MAY-20
TKN-L-F-CL	Water							
Batch	R5087923							
WG3324412-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2 LCS								
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22 LCS								
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6 LCS								
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5084916							
WG3322385-4	LCS							
Total Suspended Solids			93.3		%		85-115	13-MAY-20
WG3322385-3	MB							
Total Suspended Solids			<1.0		mg/L		1	13-MAY-20
TURBIDITY-CL	Water							
Batch	R5080617							
WG3320528-2	LCS							
Turbidity			104.5		%		85-115	09-MAY-20
WG3320528-1	MB							
Turbidity			<0.10		NTU		0.1	09-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	07-MAY-20 13:55	14-MAY-20 21:00	0.25	175	hours	EHTR-FM
	2	07-MAY-20 13:45	14-MAY-20 21:00	0.25	175	hours	EHTR-FM
pH	1	07-MAY-20 13:55	09-MAY-20 13:00	0.25	47	hours	EHTR-FM
	2	07-MAY-20 13:45	09-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2445399 were received on 08-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200507		TURNAROUND TIME: Regular		RUSH: NO								
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO						
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets		Email 1:	Victoria.Sharpe@teck.com	X	X	X	
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.com				
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	Jay.Jones@teck.com	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sachno@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800		PO number	VPO00683186				



L2445399-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW4-DP_WG_2020-04-13_N	CM_MW4-DP	WG	No	2020/05/07	13:55	G	5	1	1	1	1	1					
CM_MW4-SH_WG_2020-04-13_N	CM_MW4-SH	WG	No	2020/05/07	13:45	G	5	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>R</i>	<i>5/8 845</i>

SERVICE REQUEST (rush - subject to availability) Regular (default) <input checked="" type="checkbox"/>	Sampler's Name <i>SH/JD</i>	Mobile # 250-425-7522
Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature <i>[Signature]</i>	Date/Time May 7, 2020 <i>7</i>



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 12-MAY-20
Report Date: 20-MAY-20 15:26 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2446405
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200511
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2446405-1 CM_MW7-DP_WG_2020-04-13_N							
Sampled By: SH/JD on 11-MAY-20 @ 14:35							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-MAY-20	R5092369
Total Kjeldahl Nitrogen	0.337		0.050	mg/L		15-MAY-20	R5087923
Total Organic Carbon	<0.50		0.50	mg/L		19-MAY-20	R5092369
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	14-MAY-20	15-MAY-20	R5084261
Dissolved Metals Filtration Location	FIELD					14-MAY-20	R5084456
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-MAY-20	15-MAY-20	R5085901
Dissolved Mercury Filtration Location	FIELD					14-MAY-20	R5085299
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					14-MAY-20	R5084456
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	14-MAY-20	15-MAY-20	R5084261
Antimony (Sb)-Dissolved	0.00024		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Barium (Ba)-Dissolved	0.0132		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Boron (B)-Dissolved	0.051		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Cadmium (Cd)-Dissolved	0.224		0.0050	ug/L	14-MAY-20	15-MAY-20	R5084261
Calcium (Ca)-Dissolved	330		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Cobalt (Co)-Dissolved	0.35		0.10	ug/L	14-MAY-20	15-MAY-20	R5084261
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	14-MAY-20	15-MAY-20	R5084261
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Lithium (Li)-Dissolved	0.0665		0.0010	mg/L	14-MAY-20	15-MAY-20	R5084261
Magnesium (Mg)-Dissolved	124		0.10	mg/L	14-MAY-20	15-MAY-20	R5087656
Manganese (Mn)-Dissolved	0.206		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Molybdenum (Mo)-Dissolved	0.000104		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Nickel (Ni)-Dissolved	0.0144		0.00050	mg/L	14-MAY-20	15-MAY-20	R5084261
Potassium (K)-Dissolved	2.77		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Selenium (Se)-Dissolved	2.85		0.050	ug/L	14-MAY-20	15-MAY-20	R5084261
Silicon (Si)-Dissolved	2.39		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Sodium (Na)-Dissolved	32.2		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Strontium (Sr)-Dissolved	0.887		0.00020	mg/L	14-MAY-20	15-MAY-20	R5084261
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Tin (Sn)-Dissolved	0.00013		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Uranium (U)-Dissolved	0.00525		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Zinc (Zn)-Dissolved	0.0157		0.0010	mg/L	14-MAY-20	15-MAY-20	R5084261
Hardness							
Hardness (as CaCO3)	1330		0.50	mg/L		15-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	18.7		1.0	mg/L		13-MAY-20	R5083036
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	394		1.0	mg/L		13-MAY-20	R5083297
Ammonia, Total (as N)							
Ammonia as N	0.133		0.0050	mg/L		19-MAY-20	R5091837
Bicarbonate (HCO3)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2446405-1 CM_MW7-DP_WG_2020-04-13_N Sampled By: SH/JD on 11-MAY-20 @ 14:35 Matrix: WG							
Bicarbonate (HCO3) Bicarbonate (HCO3)	481		5.0	mg/L		13-MAY-20	R5083297
Bromide in Water by IC (Low Level) Bromide (Br)	<0.25	DLHC	0.25	mg/L		14-MAY-20	R5086385
Carbonate (CO3) Carbonate (CO3)	<5.0		5.0	mg/L		13-MAY-20	R5083297
Chloride in Water by IC Chloride (Cl)	2.8	DLHC	2.5	mg/L		14-MAY-20	R5086385
Electrical Conductivity (EC) Conductivity (@ 25C)	2000		2.0	uS/cm		13-MAY-20	R5083297
Fluoride in Water by IC Fluoride (F)	<0.10	DLHC	0.10	mg/L		14-MAY-20	R5086385
Hydroxide in Water Hydroxide (OH)	<5.0		5.0	mg/L		13-MAY-20	R5083297
Ion Balance Calculation Cation - Anion Balance	-2.1			%		15-MAY-20	
Anion Sum	29.4			meq/L		15-MAY-20	
Cation Sum	28.1			meq/L		15-MAY-20	
Ion Balance Calculation Ion Balance	95.8		-100	%		15-MAY-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.126	DLHC	0.025	mg/L		14-MAY-20	R5086385
Nitrite in Water by IC (Low Level) Nitrite (as N)	0.125	DLHC	0.0050	mg/L		14-MAY-20	R5086385
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-MAY-20	R5082066
Oxidation redution potential by elect. ORP	363		-1000	mV		19-MAY-20	R5092422
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		13-MAY-20	R5082438
Sulfate in Water by IC Sulfate (SO4)	1030	DLHC	1.5	mg/L		14-MAY-20	R5086385
Total Dissolved Solids Total Dissolved Solids	1880	DLHC	20	mg/L		14-MAY-20	R5087837
Total Suspended Solids Total Suspended Solids	8.1		1.0	mg/L		15-MAY-20	R5088638
Turbidity Turbidity	1.01		0.10	NTU		14-MAY-20	R5085357
pH pH	7.90		0.10	pH		13-MAY-20	R5083297
L2446405-2 CM_MW7-SH_WG_2020-04-13_N Sampled By: SH/JD on 11-MAY-20 @ 14:09 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	1.75		0.50	mg/L		19-MAY-20	R5092369
Total Kjeldahl Nitrogen	0.130		0.050	mg/L		15-MAY-20	R5087923
Total Organic Carbon	1.97		0.50	mg/L		19-MAY-20	R5092369
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	14-MAY-20	15-MAY-20	R5084261
Dissolved Metals Filtration Location	FIELD					14-MAY-20	R5084456
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-MAY-20	15-MAY-20	R5085901

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2446405-2 CM_MW7-SH_WG_2020-04-13_N							
Sampled By: SH/JD on 11-MAY-20 @ 14:09							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Dissolved Mercury Filtration Location	FIELD					14-MAY-20	R5085299
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					14-MAY-20	R5084456
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	14-MAY-20	15-MAY-20	R5084261
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Arsenic (As)-Dissolved	0.00189		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Barium (Ba)-Dissolved	0.0228		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Boron (B)-Dissolved	0.020		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	14-MAY-20	15-MAY-20	R5084261
Calcium (Ca)-Dissolved	129		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Cobalt (Co)-Dissolved	0.55		0.10	ug/L	14-MAY-20	15-MAY-20	R5084261
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	14-MAY-20	15-MAY-20	R5084261
Iron (Fe)-Dissolved	2.23		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Lithium (Li)-Dissolved	0.0072		0.0010	mg/L	14-MAY-20	15-MAY-20	R5084261
Magnesium (Mg)-Dissolved	41.1		0.10	mg/L	14-MAY-20	15-MAY-20	R5087656
Manganese (Mn)-Dissolved	0.165		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Molybdenum (Mo)-Dissolved	0.00127		0.000050	mg/L	14-MAY-20	15-MAY-20	R5084261
Nickel (Ni)-Dissolved	0.00134		0.00050	mg/L	14-MAY-20	15-MAY-20	R5084261
Potassium (K)-Dissolved	1.85		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Selenium (Se)-Dissolved	0.316		0.050	ug/L	14-MAY-20	15-MAY-20	R5084261
Silicon (Si)-Dissolved	5.14		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Sodium (Na)-Dissolved	18.9		0.050	mg/L	14-MAY-20	15-MAY-20	R5084261
Strontium (Sr)-Dissolved	0.555		0.00020	mg/L	14-MAY-20	15-MAY-20	R5084261
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	14-MAY-20	15-MAY-20	R5084261
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	14-MAY-20	15-MAY-20	R5084261
Uranium (U)-Dissolved	0.000810		0.000010	mg/L	14-MAY-20	15-MAY-20	R5084261
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	14-MAY-20	15-MAY-20	R5084261
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	14-MAY-20	15-MAY-20	R5084261
Hardness							
Hardness (as CaCO3)	491		0.50	mg/L		15-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.1		1.0	mg/L		13-MAY-20	R5083036
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	252		1.0	mg/L		13-MAY-20	R5083297
Ammonia, Total (as N)							
Ammonia as N	0.146		0.0050	mg/L		19-MAY-20	R5091837
Bicarbonate (HCO3)							
Bicarbonate (HCO3)	307		5.0	mg/L		13-MAY-20	R5083297
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		14-MAY-20	R5086385
Carbonate (CO3)							
Carbonate (CO3)	<5.0		5.0	mg/L		13-MAY-20	R5083297
Chloride in Water by IC							
Chloride (Cl)	10.5		0.50	mg/L		14-MAY-20	R5086385
Electrical Conductivity (EC)							
Conductivity (@ 25C)	866		2.0	uS/cm		13-MAY-20	R5083297

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2446405-2 CM_MW7-SH_WG_2020-04-13_N							
Sampled By: SH/JD on 11-MAY-20 @ 14:09							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	0.216		0.020	mg/L		14-MAY-20	R5086385
Hydroxide in Water							
Hydroxide (OH)	<5.0		5.0	mg/L		13-MAY-20	R5083297
Ion Balance Calculation							
Cation - Anion Balance	3.0			%		15-MAY-20	
Anion Sum	10.2			meq/L		15-MAY-20	
Cation Sum	10.8			meq/L		15-MAY-20	
Ion Balance Calculation							
Ion Balance	106		-100	%		15-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-MAY-20	R5086385
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0016		0.0010	mg/L		14-MAY-20	R5086385
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		12-MAY-20	R5082066
Oxidation reduction potential by elect.							
ORP	440		-1000	mV		19-MAY-20	R5092422
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0103		0.0020	mg/L		13-MAY-20	R5082438
Sulfate in Water by IC							
Sulfate (SO4)	233		0.30	mg/L		14-MAY-20	R5086385
Total Dissolved Solids							
Total Dissolved Solids	624	DLHC	20	mg/L		14-MAY-20	R5087837
Total Suspended Solids							
Total Suspended Solids	54.3		1.0	mg/L		15-MAY-20	R5088638
Turbidity							
Turbidity	36.4		0.10	NTU		14-MAY-20	R5085357
pH							
pH	7.79		0.10	pH		13-MAY-20	R5083297

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-T-CL	Water	Alkalinity, Total	APHA 2320 B-Auto-Pot. Titration
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200511

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2446405

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5083036							
WG3323148-8	LCS							
Acidity (as CaCO3)			93.2		%		85-115	13-MAY-20
WG3323148-7	MB							
Acidity (as CaCO3)			1.5		mg/L		2	13-MAY-20
ALK-MAN-T-CL								
	Water							
Batch	R5083297							
WG3323209-14	LCS							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	13-MAY-20
WG3323209-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5084261							
WG3323578-2	LCS							
Beryllium (Be)-Dissolved			93.2		%		80-120	15-MAY-20
WG3323578-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAY-20
BIC-CL								
	Water							
Batch	R5083297							
WG3323209-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5086385							
WG3324055-2	LCS							
Bromide (Br)			102.2		%		85-115	14-MAY-20
WG3324055-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5092369							
WG3325047-10	LCS							
Dissolved Organic Carbon			93.3		%		80-120	19-MAY-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5092369							
WG3325047-10	LCS							
Total Organic Carbon			94.2		%		80-120	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL	Water							
Batch	R5086385							
WG3324055-2	LCS							
Chloride (Cl)			103.7		%		90-110	14-MAY-20
WG3324055-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-MAY-20
CO3-CL	Water							
Batch	R5083297							
WG3323209-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-MAY-20
EC-L-PCT-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
Conductivity (@ 25C)			101.7		%		90-110	13-MAY-20
WG3323209-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAY-20
F-IC-N-CL	Water							
Batch	R5086385							
WG3324055-2	LCS							
Fluoride (F)			99.8		%		90-110	14-MAY-20
WG3324055-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	14-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5085901							
WG3323804-6	LCS							
Mercury (Hg)-Dissolved			103.5		%		80-120	15-MAY-20
WG3323804-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-20
MET-D-CCMS-VA	Water							
Batch	R5084261							
WG3323578-2	LCS							
Aluminum (Al)-Dissolved			96.3		%		80-120	15-MAY-20
Antimony (Sb)-Dissolved			93.7		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			97.8		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			96.6		%		80-120	15-MAY-20
Bismuth (Bi)-Dissolved			113.6		%		80-120	15-MAY-20
Boron (B)-Dissolved			88.8		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			96.2		%		80-120	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084261							
WG3323578-2	LCS							
Calcium (Ca)-Dissolved			95.4		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			101.0		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			96.6		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			96.9		%		80-120	15-MAY-20
Iron (Fe)-Dissolved			90.8		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			100.6		%		80-120	15-MAY-20
Lithium (Li)-Dissolved			98.7		%		80-120	15-MAY-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	15-MAY-20
Manganese (Mn)-Dissolved			99.6		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			93.9		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			97.2		%		80-120	15-MAY-20
Potassium (K)-Dissolved			104.4		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			92.2		%		80-120	15-MAY-20
Silicon (Si)-Dissolved			97.1		%		60-140	15-MAY-20
Silver (Ag)-Dissolved			94.4		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			106.2		%		80-120	15-MAY-20
Strontium (Sr)-Dissolved			104.7		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			98.1		%		80-120	15-MAY-20
Tin (Sn)-Dissolved			94.5		%		80-120	15-MAY-20
Titanium (Ti)-Dissolved			96.6		%		80-120	15-MAY-20
Uranium (U)-Dissolved			107.9		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			99.5		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			90.1		%		80-120	15-MAY-20
WG3323578-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5084261							
WG3323578-1	MB	NP						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
Magnesium (Mg)-Dissolved			0.0122	B	mg/L		0.005	15-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5091837							
WG3325366-10	LCS							
Ammonia as N			99.3		%		85-115	19-MAY-20
WG3325366-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5086385							
WG3324055-2	LCS							
Nitrite (as N)			105.0		%		90-110	14-MAY-20
WG3324055-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-MAY-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5086385							
WG3324055-2	LCS							
Nitrate (as N)			104.2		%		90-110	14-MAY-20
WG3324055-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-MAY-20
OH-CL	Water							
Batch	R5083297							
WG3323209-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	13-MAY-20
ORP-CL	Water							
Batch	R5092422							
WG3325615-5	CRM	CL-ORP						
ORP			224		mV		210-230	19-MAY-20
P-T-L-COL-CL	Water							
Batch	R5082438							
WG3322703-30	LCS							
Phosphorus (P)-Total			109.7		%		80-120	13-MAY-20
WG3322703-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-20
PH-CL	Water							
Batch	R5083297							
WG3323209-14	LCS							
pH			6.99		pH		6.9-7.1	13-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5082066							
WG3322055-10	LCS							
Orthophosphate-Dissolved (as P)			108.7		%		80-120	12-MAY-20
WG3322055-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-MAY-20
SO4-IC-N-CL	Water							
Batch	R5086385							
WG3324055-2	LCS							
Sulfate (SO4)			104.0		%		90-110	14-MAY-20
WG3324055-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL		Water						
Batch	R5087837							
WG3323488-14	LCS							
Total Dissolved Solids			100.1		%		85-115	14-MAY-20
WG3323488-13	MB							
Total Dissolved Solids			<10		mg/L		10	14-MAY-20
TKN-L-F-CL		Water						
Batch	R5087923							
WG3324412-10	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	15-MAY-20
WG3324412-14	LCS							
Total Kjeldahl Nitrogen			93.9		%		75-125	15-MAY-20
WG3324412-18	LCS							
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-2	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	15-MAY-20
WG3324412-22	LCS							
Total Kjeldahl Nitrogen			95.1		%		75-125	15-MAY-20
WG3324412-6	LCS							
Total Kjeldahl Nitrogen			92.1		%		75-125	15-MAY-20
WG3324412-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
WG3324412-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAY-20
TSS-L-CL		Water						
Batch	R5088638							
WG3323949-29	LCS							
Total Suspended Solids			107.4		%		85-115	15-MAY-20
WG3323949-28	MB							
Total Suspended Solids			<1.0		mg/L		1	15-MAY-20
TURBIDITY-CL		Water						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5085357							
WG3323554-8	LCS							
Turbidity			105.0		%		85-115	14-MAY-20
WG3323554-7	MB							
Turbidity			<0.10		NTU		0.1	14-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-MAY-20 14:35	19-MAY-20 19:00	0.25	196	hours	EHTR-FM
	2	11-MAY-20 14:09	19-MAY-20 19:00	0.25	197	hours	EHTR-FM
pH	1	11-MAY-20 14:35	13-MAY-20 13:00	0.25	46	hours	EHTR-FM
	2	11-MAY-20 14:09	13-MAY-20 13:00	0.25	47	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2446405 were received on 12-MAY-20 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC_WG_Q2_20200511** TURNAROUND TIME: Regular RUSH: NO

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacno@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	VPO00683186			

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2446405-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								F	N	F	F	N										
CM_MW7-DP_WG_2020-04-13_N	CM_MW7-DP	WG	No	2020/05/11	14:35	G	5	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA										
CM_MW7-SH_WG_2020-04-13_N	CM_MW7-SH	WG	No	2020/05/11	14:09	G	5															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .			<i>[Signature]</i>	5/12 0920

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	SH/JD	Mobile #
Regular (default) <input checked="" type="checkbox"/>			250-425-7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>		Date/Time
			May 11, 2020

50c



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 14-MAY-20
Report Date: 22-MAY-20 14:36 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2447856
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200513
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2447856-1 CM_MW8_WG_2020-04-13_N							
Sampled By: SH/JD on 13-MAY-20 @ 09:18							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	386		5.0	mg/L		15-MAY-20	R5089039
Carbonate (CO3)	<5.0		5.0	mg/L		15-MAY-20	R5089039
Dissolved Organic Carbon	0.51		0.50	mg/L		21-MAY-20	R5094036
Hydroxide (OH)	<5.0		5.0	mg/L		15-MAY-20	R5089039
Total Kjeldahl Nitrogen	1.08		0.050	mg/L		20-MAY-20	R5094642
Total Organic Carbon	0.65		0.50	mg/L		21-MAY-20	R5094036
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-MAY-20	19-MAY-20	R5092428
Dissolved Metals Filtration Location	FIELD					19-MAY-20	R5091819
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					19-MAY-20	R5091819
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-MAY-20	19-MAY-20	R5092428
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Barium (Ba)-Dissolved	0.0899		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-MAY-20	19-MAY-20	R5092428
Boron (B)-Dissolved	0.248		0.010	mg/L	19-MAY-20	19-MAY-20	R5092428
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	19-MAY-20	19-MAY-20	R5092428
Calcium (Ca)-Dissolved	86.0		0.050	mg/L	19-MAY-20	19-MAY-20	R5092428
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Cobalt (Co)-Dissolved	0.16		0.10	ug/L	19-MAY-20	19-MAY-20	R5092428
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	19-MAY-20	19-MAY-20	R5092428
Iron (Fe)-Dissolved	1.13		0.010	mg/L	19-MAY-20	19-MAY-20	R5092428
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-MAY-20	19-MAY-20	R5092428
Lithium (Li)-Dissolved	0.0515		0.0010	mg/L	19-MAY-20	19-MAY-20	R5092428
Magnesium (Mg)-Dissolved	25.2		0.10	mg/L	19-MAY-20	19-MAY-20	R5092428
Manganese (Mn)-Dissolved	0.104		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Molybdenum (Mo)-Dissolved	0.000366		0.000050	mg/L	19-MAY-20	19-MAY-20	R5092428
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	19-MAY-20	19-MAY-20	R5092428
Potassium (K)-Dissolved	2.83		0.050	mg/L	19-MAY-20	19-MAY-20	R5092428
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	19-MAY-20	19-MAY-20	R5092428
Silicon (Si)-Dissolved	6.05		0.050	mg/L	19-MAY-20	19-MAY-20	R5092428
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-MAY-20	19-MAY-20	R5092428
Sodium (Na)-Dissolved	40.3		0.050	mg/L	19-MAY-20	19-MAY-20	R5092428
Strontium (Sr)-Dissolved	5.09		0.00020	mg/L	19-MAY-20	19-MAY-20	R5092428
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	19-MAY-20	19-MAY-20	R5092428
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	19-MAY-20	19-MAY-20	R5092428
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-MAY-20	19-MAY-20	R5092428
Uranium (U)-Dissolved	0.000223		0.000010	mg/L	19-MAY-20	19-MAY-20	R5092428
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-MAY-20	19-MAY-20	R5092428
Zinc (Zn)-Dissolved	0.0061		0.0010	mg/L	19-MAY-20	19-MAY-20	R5092428
Hardness							
Hardness (as CaCO3)	319		0.50	mg/L		22-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.1		1.0	mg/L		21-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2447856-1 CM_MW8_WG_2020-04-13_N							
Sampled By: SH/JD on 13-MAY-20 @ 09:18							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	317		1.0	mg/L		15-MAY-20	R5089039
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-MAY-20	R5089039
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-MAY-20	R5089039
Alkalinity, Total (as CaCO3)	317		1.0	mg/L		15-MAY-20	R5089039
Ammonia, Total (as N)							
Ammonia as N	0.0904		0.0050	mg/L		21-MAY-20	R5094615
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-MAY-20	R5088828
Chloride in Water by IC							
Chloride (Cl)	0.90		0.50	mg/L		15-MAY-20	R5088828
Electrical Conductivity (EC)							
Conductivity (@ 25C)	684		2.0	uS/cm		15-MAY-20	R5089039
Fluoride in Water by IC							
Fluoride (F)	0.261		0.020	mg/L		15-MAY-20	R5088828
Ion Balance Calculation							
Ion Balance	96.1		-100	%		22-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.0			%		22-MAY-20	
Anion Sum	8.59			meq/L		22-MAY-20	
Cation Sum	8.25			meq/L		22-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		15-MAY-20	R5088828
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0031		0.0010	mg/L		15-MAY-20	R5088828
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect.							
ORP	418		-1000	mV		22-MAY-20	R5095129
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0177		0.0020	mg/L		15-MAY-20	R5086876
Sulfate in Water by IC							
Sulfate (SO4)	107		0.30	mg/L		15-MAY-20	R5088828
Total Dissolved Solids							
Total Dissolved Solids	467	DLHC	20	mg/L		20-MAY-20	R5094704
Total Suspended Solids							
Total Suspended Solids	15.5		1.0	mg/L		20-MAY-20	R5094657
Turbidity							
Turbidity	28.4		0.10	NTU		15-MAY-20	R5088763
pH							
pH	7.94		0.10	pH		15-MAY-20	R5089039

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200513

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2447856

Report Date: 22-MAY-20

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5093739							
WG3326478-5	LCS							
Acidity (as CaCO3)			108.0		%		85-115	20-MAY-20
WG3326478-4	MB							
Acidity (as CaCO3)			2.6	MB-LOR	mg/L		2	20-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5089039							
WG3324597-17	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	15-MAY-20
WG3324597-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5092428							
WG3325318-2	LCS							
Beryllium (Be)-Dissolved			93.1		%		80-120	19-MAY-20
WG3325318-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAY-20
BIC-CL								
	Water							
Batch	R5089039							
WG3324597-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	15-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5088828							
WG3324630-10	LCS							
Bromide (Br)			99.1		%		85-115	15-MAY-20
WG3324630-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	15-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5094036							
WG3326536-6	LCS							
Dissolved Organic Carbon			95.3		%		80-120	20-MAY-20
WG3326536-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2447856

Report Date: 22-MAY-20

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5094036							
WG3326536-6	LCS							
Total Organic Carbon			100.2		%		80-120	20-MAY-20
WG3326536-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-MAY-20
CL-IC-N-CL	Water							
Batch	R5088828							
WG3324630-10	LCS							
Chloride (Cl)			101.3		%		90-110	15-MAY-20
WG3324630-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAY-20
CO3-CL	Water							
Batch	R5089039							
WG3324597-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	15-MAY-20
EC-L-PCT-CL	Water							
Batch	R5089039							
WG3324597-17	LCS							
Conductivity (@ 25C)			103.6		%		90-110	15-MAY-20
WG3324597-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-MAY-20
F-IC-N-CL	Water							
Batch	R5088828							
WG3324630-10	LCS							
Fluoride (F)			94.7		%		90-110	15-MAY-20
WG3324630-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	15-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5092516							
WG3326254-6	LCS							
Mercury (Hg)-Dissolved			101.2		%		80-120	20-MAY-20
WG3326254-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-MAY-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2447856

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092428							
WG3325318-2	LCS							
Aluminum (Al)-Dissolved			100.1		%		80-120	19-MAY-20
Antimony (Sb)-Dissolved			90.3		%		80-120	19-MAY-20
Arsenic (As)-Dissolved			98.0		%		80-120	19-MAY-20
Barium (Ba)-Dissolved			100.8		%		80-120	19-MAY-20
Bismuth (Bi)-Dissolved			98.6		%		80-120	19-MAY-20
Boron (B)-Dissolved			84.9		%		80-120	19-MAY-20
Cadmium (Cd)-Dissolved			100.3		%		80-120	19-MAY-20
Calcium (Ca)-Dissolved			97.2		%		80-120	19-MAY-20
Chromium (Cr)-Dissolved			103.7		%		80-120	19-MAY-20
Cobalt (Co)-Dissolved			99.3		%		80-120	19-MAY-20
Copper (Cu)-Dissolved			98.6		%		80-120	19-MAY-20
Iron (Fe)-Dissolved			100.2		%		80-120	19-MAY-20
Lead (Pb)-Dissolved			97.6		%		80-120	19-MAY-20
Lithium (Li)-Dissolved			94.8		%		80-120	19-MAY-20
Magnesium (Mg)-Dissolved			95.0		%		80-120	19-MAY-20
Manganese (Mn)-Dissolved			99.0		%		80-120	19-MAY-20
Molybdenum (Mo)-Dissolved			90.6		%		80-120	19-MAY-20
Nickel (Ni)-Dissolved			100.1		%		80-120	19-MAY-20
Potassium (K)-Dissolved			99.5		%		80-120	19-MAY-20
Selenium (Se)-Dissolved			99.3		%		80-120	19-MAY-20
Silicon (Si)-Dissolved			93.9		%		60-140	19-MAY-20
Silver (Ag)-Dissolved			94.5		%		80-120	19-MAY-20
Sodium (Na)-Dissolved			101.4		%		80-120	19-MAY-20
Strontium (Sr)-Dissolved			95.0		%		80-120	19-MAY-20
Thallium (Tl)-Dissolved			96.0		%		80-120	19-MAY-20
Tin (Sn)-Dissolved			92.4		%		80-120	19-MAY-20
Titanium (Ti)-Dissolved			99.3		%		80-120	19-MAY-20
Uranium (U)-Dissolved			100.7		%		80-120	19-MAY-20
Vanadium (V)-Dissolved			99.7		%		80-120	19-MAY-20
Zinc (Zn)-Dissolved			99.0		%		80-120	19-MAY-20
WG3325318-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20



Quality Control Report

Workorder: L2447856

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092428							
WG3325318-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5094615							
WG3326912-30	LCS							
Ammonia as N			91.8		%		85-115	21-MAY-20
WG3326912-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-MAY-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5088828							
WG3324630-10 LCS								
Nitrite (as N)			103.0		%		90-110	15-MAY-20
WG3324630-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5088828							
WG3324630-10 LCS								
Nitrate (as N)			102.8		%		90-110	15-MAY-20
WG3324630-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAY-20
OH-CL	Water							
Batch	R5089039							
WG3324597-16 MB								
Hydroxide (OH)			<5.0		mg/L		5	15-MAY-20
ORP-CL	Water							
Batch	R5095129							
WG3327503-3 CRM		CL-ORP						
ORP			219		mV		210-230	22-MAY-20
P-T-L-COL-CL	Water							
Batch	R5086876							
WG3324125-30 LCS								
Phosphorus (P)-Total			111.3		%		80-120	15-MAY-20
WG3324125-29 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-MAY-20
PH-CL	Water							
Batch	R5089039							
WG3324597-17 LCS								
pH			6.97		pH		6.9-7.1	15-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5088258							
WG3324035-7 LCS								
Orthophosphate-Dissolved (as P)			105.0		%		80-120	15-MAY-20
WG3324035-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5088828							
WG3324630-10 LCS								
Sulfate (SO4)			102.5		%		90-110	15-MAY-20
WG3324630-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5094704							
WG3325623-49 LCS								
Total Dissolved Solids			105.3		%		85-115	20-MAY-20
WG3325623-48 MB								
Total Dissolved Solids			<10		mg/L		10	20-MAY-20
TKN-L-F-CL	Water							
Batch	R5094642							
WG3326879-10 LCS								
Total Kjeldahl Nitrogen			91.0		%		75-125	20-MAY-20
WG3326879-14 LCS								
Total Kjeldahl Nitrogen			91.1		%		75-125	20-MAY-20
WG3326879-18 LCS								
Total Kjeldahl Nitrogen			91.9		%		75-125	20-MAY-20
WG3326879-2 LCS								
Total Kjeldahl Nitrogen			90.6		%		75-125	20-MAY-20
WG3326879-22 LCS								
Total Kjeldahl Nitrogen			89.0		%		75-125	20-MAY-20
WG3326879-6 LCS								
Total Kjeldahl Nitrogen			91.7		%		75-125	20-MAY-20
WG3326879-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
WG3326879-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-MAY-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5094657							
WG3325810-6	LCS							
Total Suspended Solids			97.7		%		85-115	20-MAY-20
WG3325810-5	MB							
Total Suspended Solids			<1.0		mg/L		1	20-MAY-20
TURBIDITY-CL	Water							
Batch	R5088763							
WG3324134-14	LCS							
Turbidity			106.5		%		85-115	15-MAY-20
WG3324134-13	MB							
Turbidity			<0.10		NTU		0.1	15-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	13-MAY-20 09:18	22-MAY-20 09:30	0.25	216	hours	EHTR-FM
pH	1	13-MAY-20 09:18	15-MAY-20 13:00	0.25	52	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2447856 were received on 14-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200513		TURNAROUND TIME: Regular		RUSH: NO													
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO											
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary		Report Format / Distribution											
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets		Excel X PDF X EDD X											
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com		Email 1: Victoria.Sharpe@teck.com X X X											
Address PO Box 3000				Address 2559 29th St. NE		Email 2: teckcoal@equisonline.com X X X											
City Sparwood Province BC				City Calgary Province AB		Email 3: jay.jones@teck.com X X X											
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada		Email 4: don.sacino@teck.com X X X											
Phone Number 1-250-425-7321				Phone Number 403 407 1800		PO number VPO00683186											
SAMPLE DETAILS				ANALYSIS REQUESTED													
 L2447856-COFC				Filtered - F: Field, L: Lab, FL: Field & Lab, N: None													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N				
CM_MW8_WG_2020-04-13_N	CM_MW10	WG	No	2020/05/13	9:18	G	5	ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
									1	1	1	1	1				
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME							
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.								[Signature]		5/14/20							
SERVICE REQUEST (rush - subject to availability)																	
Regular (default) X				Sampler's Name		SH/JD		Mobile #		250-425-7522							
Priority (2-3 business days) - 50% surcharge				Sampler's Signature		[Signature]		Date/Time		May 13, 2020							
Emergency (1 Business Day) - 100% surcharge																	
For Emergency <1 Day, ASAP or Weekend - Contact ALS																	

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TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 15-MAY-20
Report Date: 11-DEC-20 15:21 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2448230
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200514
Legal Site Desc:

Comments: 11-DEC-2020 Additional analysis for Bicarbonate, Carbonate and Hydroxide.

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-1 CM_MW1-DP_WG_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 10:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	379		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	15.4		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	0.94		0.50	mg/L		23-MAY-20	R5095622
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.601		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	1.08		0.50	mg/L		23-MAY-20	R5095622
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAY-20	19-MAY-20	R5092413
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Aluminum (Al)-Dissolved	0.0033		0.0030	mg/L	17-MAY-20	19-MAY-20	R5092413
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Arsenic (As)-Dissolved	0.00254		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Barium (Ba)-Dissolved	12.0		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Boron (B)-Dissolved	0.225		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-MAY-20	19-MAY-20	R5092413
Calcium (Ca)-Dissolved	29.4		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cobalt (Co)-Dissolved	0.30		0.10	ug/L	17-MAY-20	19-MAY-20	R5092413
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Iron (Fe)-Dissolved	0.984		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Lithium (Li)-Dissolved	0.738		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Magnesium (Mg)-Dissolved	18.6		0.10	mg/L	17-MAY-20	19-MAY-20	R5092413
Manganese (Mn)-Dissolved	0.121		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Molybdenum (Mo)-Dissolved	0.00368		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Potassium (K)-Dissolved	5.69		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-MAY-20	19-MAY-20	R5092413
Silicon (Si)-Dissolved	4.86		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Sodium (Na)-Dissolved	265		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Strontium (Sr)-Dissolved	2.55		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Uranium (U)-Dissolved	0.000498		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Zinc (Zn)-Dissolved	0.0057		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Hardness							
Hardness (as CaCO3)	150		0.50	mg/L		19-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-1 CM_MW1-DP_WG_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 10:15							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	311		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	25.6		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	336		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.658	DLHC	0.025	mg/L		25-MAY-20	R5096597
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.90	DLDS	0.25	mg/L		17-MAY-20	R5096943
Chloride in Water by IC							
Chloride (Cl)	239	DLDS	2.5	mg/L		17-MAY-20	R5096943
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1200		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.25	DLDS	0.10	mg/L		17-MAY-20	R5096943
Ion Balance Calculation							
Cation - Anion Balance	4.5			%		25-MAY-20	
Anion Sum	13.5			meq/L		25-MAY-20	
Cation Sum	14.7			meq/L		25-MAY-20	
Ion Balance Calculation							
Ion Balance	109		-100	%		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLDS	0.025	mg/L		17-MAY-20	R5096943
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		17-MAY-20	R5096943
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0270		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect.							
ORP	323		-1000	mV		25-MAY-20	R5097316
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0342		0.0020	mg/L		16-MAY-20	R5090848
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLDS	1.5	mg/L		17-MAY-20	R5096943
Total Dissolved Solids							
Total Dissolved Solids	760	DLHC	20	mg/L		20-MAY-20	R5094704
Total Suspended Solids							
Total Suspended Solids	2.3		1.0	mg/L		20-MAY-20	R5094657
Turbidity							
Turbidity	7.97		0.10	NTU		16-MAY-20	R5089048
pH							
pH	8.65		0.10	pH		20-MAY-20	R5094241
L2448230-2 CM_MW1-OB_WG_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 12:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	243		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	0.79		0.50	mg/L		23-MAY-20	R5095622
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.328		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	2.44		0.50	mg/L		23-MAY-20	R5095622
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-2 CM_MW1-OB_WG_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 12:10							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAY-20	19-MAY-20	R5092413
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAY-20	19-MAY-20	R5092413
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Barium (Ba)-Dissolved	0.0497		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Boron (B)-Dissolved	0.031		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cadmium (Cd)-Dissolved	0.0791		0.0050	ug/L	17-MAY-20	19-MAY-20	R5092413
Calcium (Ca)-Dissolved	160		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Chromium (Cr)-Dissolved	0.00048		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-MAY-20	19-MAY-20	R5092413
Copper (Cu)-Dissolved	0.00279		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Lead (Pb)-Dissolved	0.000137		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Lithium (Li)-Dissolved	0.0196		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Magnesium (Mg)-Dissolved	53.3		0.10	mg/L	17-MAY-20	19-MAY-20	R5092413
Manganese (Mn)-Dissolved	0.00026		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Molybdenum (Mo)-Dissolved	0.000281		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Nickel (Ni)-Dissolved	0.00101		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Potassium (K)-Dissolved	1.81		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Selenium (Se)-Dissolved	7.47		0.050	ug/L	17-MAY-20	19-MAY-20	R5092413
Silicon (Si)-Dissolved	3.15		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Sodium (Na)-Dissolved	50.5		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Strontium (Sr)-Dissolved	0.412		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Uranium (U)-Dissolved	0.00125		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Zinc (Zn)-Dissolved	0.0639		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Hardness							
Hardness (as CaCO3)	620		0.50	mg/L		19-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.3		1.0	mg/L		21-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	199		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.178		0.0050	mg/L		25-MAY-20	R5096597
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLDS	0.25	mg/L		17-MAY-20	R5096943
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-2 CM_MW1-OB_WG_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:10 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	47.3	DLDS	2.5	mg/L		17-MAY-20	R5096943
Electrical Conductivity (EC) Conductivity (@ 25C)	968		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC Fluoride (F)	<0.10	DLDS	0.10	mg/L		17-MAY-20	R5096943
Ion Balance Calculation Cation - Anion Balance	6.0			%		25-MAY-20	
Anion Sum	13.0			meq/L		25-MAY-20	
Cation Sum	14.6			meq/L		25-MAY-20	
Ion Balance Calculation Ion Balance	113		-100	%		25-MAY-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	1.37	DLDS	0.025	mg/L		17-MAY-20	R5096943
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLDS	0.0050	mg/L		17-MAY-20	R5096943
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0022		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect. ORP	502		-1000	mV		25-MAY-20	R5097316
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-MAY-20	R5090848
Sulfate in Water by IC Sulfate (SO4)	363	DLDS	1.5	mg/L		17-MAY-20	R5096943
Total Dissolved Solids Total Dissolved Solids	923	DLHC	20	mg/L		20-MAY-20	R5094704
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		20-MAY-20	R5094657
Turbidity Turbidity	0.20		0.10	NTU		16-MAY-20	R5089048
pH pH	8.03		0.10	pH		20-MAY-20	R5094241
L2448230-3 CM_MW1-SH_WG_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:15 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	221		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	5.2		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	0.65		0.50	mg/L		23-MAY-20	R5095622
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.138		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	0.62		0.50	mg/L		23-MAY-20	R5095622
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAY-20	19-MAY-20	R5092413
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAY-20	19-MAY-20	R5092413

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-3 CM_MW1-SH_WG_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 12:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Arsenic (As)-Dissolved	0.00206		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Barium (Ba)-Dissolved	0.349		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Boron (B)-Dissolved	0.051		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cadmium (Cd)-Dissolved	<0.025	DLM	0.025	ug/L	17-MAY-20	19-MAY-20	R5092413
Calcium (Ca)-Dissolved	29.5		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	17-MAY-20	19-MAY-20	R5092413
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Iron (Fe)-Dissolved	0.692		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Lithium (Li)-Dissolved	0.0194		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Magnesium (Mg)-Dissolved	11.8		0.10	mg/L	17-MAY-20	19-MAY-20	R5092413
Manganese (Mn)-Dissolved	0.187		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Molybdenum (Mo)-Dissolved	0.0510		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Potassium (K)-Dissolved	1.25		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-MAY-20	19-MAY-20	R5092413
Silicon (Si)-Dissolved	3.64		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Sodium (Na)-Dissolved	189		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Strontium (Sr)-Dissolved	0.329		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Uranium (U)-Dissolved	0.000623		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Hardness							
Hardness (as CaCO3)	122		0.50	mg/L		19-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	181		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	8.6		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	190		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.157		0.0050	mg/L		25-MAY-20	R5096597
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.826		0.050	mg/L		17-MAY-20	R5096943
Chloride in Water by IC							
Chloride (Cl)	201		0.50	mg/L		17-MAY-20	R5096943
Electrical Conductivity (EC)							
Conductivity (@ 25C)	898		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.812		0.020	mg/L		17-MAY-20	R5096943
Ion Balance Calculation							
Ion Balance	111		-100	%		25-MAY-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-3 CM_MW1-SH_WG_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:15 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	5.2			%		25-MAY-20	
Anion Sum	9.67			meq/L		25-MAY-20	
Cation Sum	10.7			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		17-MAY-20	R5096943
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5096943
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0017		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect.							
ORP	494		-1000	mV		25-MAY-20	R5097316
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0076		0.0020	mg/L		16-MAY-20	R5090848
Sulfate in Water by IC							
Sulfate (SO4)	7.86		0.30	mg/L		17-MAY-20	R5096943
Total Dissolved Solids							
Total Dissolved Solids	555	DLHC	20	mg/L		20-MAY-20	R5094704
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		20-MAY-20	R5094657
Turbidity							
Turbidity	4.79		0.10	NTU		16-MAY-20	R5089048
pH							
pH	8.48		0.10	pH		20-MAY-20	R5094241
L2448230-4 CM_NNP2_WS_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	228		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	5.3		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-MAY-20	R5095622
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.051		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	<0.50		0.50	mg/L		23-MAY-20	R5095622
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAY-20	19-MAY-20	R5092413
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAY-20	19-MAY-20	R5092413
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Arsenic (As)-Dissolved	0.00206		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Barium (Ba)-Dissolved	0.339		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Boron (B)-Dissolved	0.052		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cadmium (Cd)-Dissolved	<0.025	DLM	0.025	ug/L	17-MAY-20	19-MAY-20	R5092413
Calcium (Ca)-Dissolved	30.0		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-4 CM_NNP2_WS_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	0.23		0.10	ug/L	17-MAY-20	19-MAY-20	R5092413
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Iron (Fe)-Dissolved	0.735		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Lithium (Li)-Dissolved	0.0195		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Magnesium (Mg)-Dissolved	11.8		0.10	mg/L	17-MAY-20	19-MAY-20	R5092413
Manganese (Mn)-Dissolved	0.188		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Molybdenum (Mo)-Dissolved	0.0507		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Potassium (K)-Dissolved	1.25		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-MAY-20	19-MAY-20	R5092413
Silicon (Si)-Dissolved	3.64		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Sodium (Na)-Dissolved	188		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Strontium (Sr)-Dissolved	0.327		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Uranium (U)-Dissolved	0.000614		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Hardness							
Hardness (as CaCO3)	123		0.50	mg/L		19-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	187		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	8.8		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	195		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.0589		0.0050	mg/L		25-MAY-20	R5096597
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.835		0.050	mg/L		17-MAY-20	R5096943
Chloride in Water by IC							
Chloride (Cl)	210		0.50	mg/L		17-MAY-20	R5096943
Electrical Conductivity (EC)							
Conductivity (@ 25C)	922		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.815		0.020	mg/L		17-MAY-20	R5096943
Ion Balance Calculation							
Ion Balance	107		-100	%		25-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	3.2			%		25-MAY-20	
Anion Sum	10.0			meq/L		25-MAY-20	
Cation Sum	10.7			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		17-MAY-20	R5096943
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5096943
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-4 CM_NNP2_WS_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:00 Matrix: WG							
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect.							
ORP	373		-1000	mV		25-MAY-20	R5097316
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0057		0.0020	mg/L		16-MAY-20	R5090848
Sulfate in Water by IC							
Sulfate (SO4)	7.73		0.30	mg/L		17-MAY-20	R5096943
Total Dissolved Solids							
Total Dissolved Solids	597	DLHC	20	mg/L		20-MAY-20	R5094704
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		20-MAY-20	R5094657
Turbidity							
Turbidity	6.51		0.10	NTU		16-MAY-20	R5089048
pH							
pH	8.47		0.10	pH		20-MAY-20	R5094241
L2448230-5 CM_TRP_WS_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-MAY-20	R5095622
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	<0.50		0.50	mg/L		23-MAY-20	R5095622
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-MAY-20	19-MAY-20	R5092413
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	20-MAY-20	R5092516
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093220
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-MAY-20	R5092417
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-MAY-20	19-MAY-20	R5092413
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Boron (B)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-MAY-20	19-MAY-20	R5092413
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-MAY-20	19-MAY-20	R5092413
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	17-MAY-20	19-MAY-20	R5092413
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	17-MAY-20	19-MAY-20	R5092413

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-5 CM_TRP_WS_2020-04-13_N							
Sampled By: SH/JD on 14-MAY-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Potassium (K)-Dissolved	<0.050		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-MAY-20	19-MAY-20	R5092413
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	17-MAY-20	19-MAY-20	R5092413
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	17-MAY-20	19-MAY-20	R5092413
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-MAY-20	19-MAY-20	R5092413
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-MAY-20	19-MAY-20	R5092413
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	17-MAY-20	19-MAY-20	R5092413
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-MAY-20	19-MAY-20	R5092413
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-MAY-20	19-MAY-20	R5092413
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		19-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		21-MAY-20	R5093739
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.0092	RRV	0.0050	mg/L		25-MAY-20	R5096597
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAY-20	R5096943
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		17-MAY-20	R5096943
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		17-MAY-20	R5096943
Ion Balance Calculation							
Ion Balance	0.0		-100	%		25-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		25-MAY-20	
Anion Sum	<0.10			meq/L		25-MAY-20	
Cation Sum	<0.10			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		17-MAY-20	R5096943
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5096943
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		15-MAY-20	R5088258
Oxidation redution potential by elect.							
ORP	520		-1000	mV		25-MAY-20	R5097316
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-MAY-20	R5090848
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		17-MAY-20	R5096943
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448230-5 CM_TRP_WS_2020-04-13_N Sampled By: SH/JD on 14-MAY-20 @ 12:00 Matrix: WG							
Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		20-MAY-20	R5094704
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		20-MAY-20	R5094657
Turbidity Turbidity	<0.10		0.10	NTU		16-MAY-20	R5089048
pH pH	5.49		0.10	pH		20-MAY-20	R5094241

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200514

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2448230

Report Date: 11-DEC-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5093739							
WG3326478-12	DUP	L2448230-1						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	20-MAY-20
WG3326478-11	LCS							
Acidity (as CaCO3)			108.0		%		85-115	20-MAY-20
WG3326478-10	MB							
Acidity (as CaCO3)			2.6	MB-LOR	mg/L		2	20-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5094241							
WG3326514-5	LCS							
Alkalinity, Total (as CaCO3)			94.3		%		85-115	20-MAY-20
WG3326514-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-2	LCS							
Beryllium (Be)-Dissolved			95.5		%		80-120	19-MAY-20
WG3324889-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAY-20
BIC-CL								
	Water							
Batch	R5094241							
WG3326514-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	20-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-3	DUP	L2448230-5						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-MAY-20
WG3328693-2	LCS							
Bromide (Br)			96.4		%		85-115	17-MAY-20
WG3328693-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
WG3328693-4	MS	L2448230-5						
Bromide (Br)			104.3		%		75-125	17-MAY-20
C-DIS-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2448230

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095622							
WG3328110-3	DUP	L2448230-5						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-MAY-20
WG3328110-2	LCS							
Dissolved Organic Carbon			106.4		%		80-120	23-MAY-20
WG3328110-6	LCS							
Dissolved Organic Carbon			103.0		%		80-120	23-MAY-20
WG3328110-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-4	MS	L2448230-5						
Dissolved Organic Carbon			113.9		%		70-130	23-MAY-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5095622							
WG3328110-3	DUP	L2448230-5						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-MAY-20
WG3328110-2	LCS							
Total Organic Carbon			104.1		%		80-120	23-MAY-20
WG3328110-6	LCS							
Total Organic Carbon			103.1		%		80-120	23-MAY-20
WG3328110-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-MAY-20
WG3328110-4	MS	L2448230-5						
Total Organic Carbon			116.3		%		70-130	23-MAY-20
CL-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-3	DUP	L2448230-5						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-2	LCS							
Chloride (Cl)			105.4		%		90-110	17-MAY-20
WG3328693-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
WG3328693-4	MS	L2448230-5						
Chloride (Cl)			108.9		%		75-125	17-MAY-20
CO3-CL								
	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CO3-CL	Water							
Batch R5094241								
WG3326514-4 MB								
Carbonate (CO3)			<5.0		mg/L		5	20-MAY-20
EC-L-PCT-CL	Water							
Batch R5094241								
WG3326514-5 LCS								
Conductivity (@ 25C)			98.1		%		90-110	20-MAY-20
WG3326514-4 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAY-20
F-IC-N-CL	Water							
Batch R5096943								
WG3328693-3 DUP		L2448230-5						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-2 LCS								
Fluoride (F)			101.9		%		90-110	17-MAY-20
WG3328693-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20
WG3328693-4 MS		L2448230-5						
Fluoride (F)			105.5		%		75-125	17-MAY-20
HG-D-CVAA-VA	Water							
Batch R5092516								
WG3326254-14 LCS								
Mercury (Hg)-Dissolved			102.5		%		80-120	20-MAY-20
WG3326254-13 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-MAY-20
MET-D-CCMS-VA	Water							
Batch R5092413								
WG3324889-2 LCS								
Aluminum (Al)-Dissolved			98.2		%		80-120	19-MAY-20
Antimony (Sb)-Dissolved			96.9		%		80-120	19-MAY-20
Arsenic (As)-Dissolved			93.3		%		80-120	19-MAY-20
Barium (Ba)-Dissolved			96.8		%		80-120	19-MAY-20
Bismuth (Bi)-Dissolved			100.0		%		80-120	19-MAY-20
Boron (B)-Dissolved			88.3		%		80-120	19-MAY-20
Cadmium (Cd)-Dissolved			96.2		%		80-120	19-MAY-20
Calcium (Ca)-Dissolved			96.8		%		80-120	19-MAY-20
Chromium (Cr)-Dissolved			96.2		%		80-120	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-2	LCS							
Cobalt (Co)-Dissolved			95.2		%		80-120	19-MAY-20
Copper (Cu)-Dissolved			94.9		%		80-120	19-MAY-20
Iron (Fe)-Dissolved			96.6		%		80-120	19-MAY-20
Lead (Pb)-Dissolved			97.6		%		80-120	19-MAY-20
Lithium (Li)-Dissolved			96.6		%		80-120	19-MAY-20
Magnesium (Mg)-Dissolved			99.0		%		80-120	19-MAY-20
Manganese (Mn)-Dissolved			97.7		%		80-120	19-MAY-20
Molybdenum (Mo)-Dissolved			98.0		%		80-120	19-MAY-20
Nickel (Ni)-Dissolved			95.4		%		80-120	19-MAY-20
Potassium (K)-Dissolved			104.0		%		80-120	19-MAY-20
Selenium (Se)-Dissolved			94.3		%		80-120	19-MAY-20
Silicon (Si)-Dissolved			95.8		%		60-140	19-MAY-20
Silver (Ag)-Dissolved			98.6		%		80-120	19-MAY-20
Sodium (Na)-Dissolved			104.2		%		80-120	19-MAY-20
Strontium (Sr)-Dissolved			100.9		%		80-120	19-MAY-20
Thallium (Tl)-Dissolved			97.8		%		80-120	19-MAY-20
Tin (Sn)-Dissolved			97.7		%		80-120	19-MAY-20
Titanium (Ti)-Dissolved			92.7		%		80-120	19-MAY-20
Uranium (U)-Dissolved			96.1		%		80-120	19-MAY-20
Vanadium (V)-Dissolved			96.5		%		80-120	19-MAY-20
Zinc (Zn)-Dissolved			95.1		%		80-120	19-MAY-20
WG3324889-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5092413							
WG3324889-1	MB	NP						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5096597							
WG3328628-22	LCS							
Ammonia as N			108.9		%		85-115	25-MAY-20
WG3328628-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-20
NO2-L-IC-N-CL								
	Water							
Batch	R5096943							
WG3328693-3	DUP	L2448230-5						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-2	LCS							
Nitrite (as N)			105.1		%		90-110	17-MAY-20
WG3328693-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
WG3328693-4	MS	L2448230-5						
Nitrite (as N)			109.3		%		75-125	17-MAY-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL								
Batch R5096943								
WG3328693-3	DUP	L2448230-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-2	LCS							
Nitrate (as N)			105.8		%		90-110	17-MAY-20
WG3328693-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-MAY-20
WG3328693-4	MS	L2448230-5						
Nitrate (as N)			108.9		%		75-125	17-MAY-20
OH-CL								
Batch R5094241								
WG3326514-4	MB							
Hydroxide (OH)			<5.0		mg/L		5	20-MAY-20
ORP-CL								
Batch R5097316								
WG3328812-1	CRM	CL-ORP						
ORP			222		mV		210-230	25-MAY-20
P-T-L-COL-CL								
Batch R5090848								
WG3324610-25	LCS							
Phosphorus (P)-Total			109.9		%		80-120	16-MAY-20
WG3324610-24	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-20
PH-CL								
Batch R5094241								
WG3326514-5	LCS							
pH			7.00		pH		6.9-7.1	20-MAY-20
PO4-DO-L-COL-CL								
Batch R5088258								
WG3324035-16	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	15-MAY-20
WG3324035-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-MAY-20
SO4-IC-N-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R5096943								
WG3328693-3	DUP	L2448230-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3328693-2	LCS							
Sulfate (SO4)			103.9		%		90-110	17-MAY-20
WG3328693-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
WG3328693-4	MS	L2448230-5						
Sulfate (SO4)			97.5		%		75-125	17-MAY-20
SOLIDS-TDS-CL								
Batch R5094704								
WG3325623-59	DUP	L2448230-2						
Total Dissolved Solids		923	903		mg/L	2.1	20	20-MAY-20
WG3325623-58	LCS							
Total Dissolved Solids			98.8		%		85-115	20-MAY-20
WG3325623-57	MB							
Total Dissolved Solids			<10		mg/L		10	20-MAY-20
TKN-L-F-CL								
Batch R5096876								
WG3328687-6	DUP	L2448230-5						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-MAY-20
WG3328687-13	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	25-MAY-20
WG3328687-17	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	25-MAY-20
WG3328687-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	25-MAY-20
WG3328687-21	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	25-MAY-20
WG3328687-25	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	25-MAY-20
WG3328687-5	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	25-MAY-20
WG3328687-9	LCS							
Total Kjeldahl Nitrogen			86.0		%		75-125	25-MAY-20
WG3328687-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5096876							
WG3328687-16 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-20 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-24 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-8 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-7 MS		L2448230-5						
Total Kjeldahl Nitrogen			100.1		%		70-130	25-MAY-20
TSS-L-CL								
Water								
Batch	R5094657							
WG3325810-10 LCS								
Total Suspended Solids			88.0		%		85-115	20-MAY-20
WG3325810-9 MB								
Total Suspended Solids			<1.0		mg/L		1	20-MAY-20
TURBIDITY-CL								
Water								
Batch	R5089048							
WG3324774-17 LCS								
Turbidity			103.0		%		85-115	16-MAY-20
WG3324774-16 MB								
Turbidity			<0.10		NTU		0.1	16-MAY-20

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	14-MAY-20 10:15	25-MAY-20 20:00	0.25	274	hours	EHTR-FM
	2	14-MAY-20 12:10	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
	3	14-MAY-20 12:15	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
	4	14-MAY-20 12:00	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
	5	14-MAY-20 12:00	25-MAY-20 20:00	0.25	272	hours	EHTR-FM
pH							
	1	14-MAY-20 10:15	20-MAY-20 13:00	0.25	147	hours	EHTR-FM
	2	14-MAY-20 12:10	20-MAY-20 13:00	0.25	145	hours	EHTR-FM
	3	14-MAY-20 12:15	20-MAY-20 13:00	0.25	145	hours	EHTR-FM
	4	14-MAY-20 12:00	20-MAY-20 13:00	0.25	145	hours	EHTR-FM
	5	14-MAY-20 12:00	20-MAY-20 13:00	0.25	145	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2448230 were received on 15-MAY-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200514		TURNAROUND TIME: Regular		RUSH/NO				
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jay Jones		Lab Contact Lyudmyla Shvets		Email 1: Victoria.Sharpe@teck.com		X	X	X
Email Jay.Jones@teck.com		Email Lyudmyla.Shvets@alglobal.com		Email 2: teckcoal@equisonline.com				
Address PO Box 3000		Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X
City Sparwood		Province BC	City Calgary	Province AB	Email 4: don.sacno@teck.com		X	X
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5	Country Canada			X	X
Phone Number 1-250-425-7321		Phone Number 403 407 1800		PO number		VPO00683186		

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2448230-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	BIT	F	N	F	F	N						
								PRESERV.	H2SO4	H2SO4	HCl	HNO3	NONE						
								ANALYSIS	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW1-DP_WG_2020-04-13_N	CM_MW1-DP	WG	No	2020/05/14	10:15	G	5		1	1	1	1	1						
CM_MW1-OH_WG_2020-04-13_N	CM_MW1-OB	WG	No	2020/05/14	12:10	G	5		1	1	1	1	1						
CM_MW1-SH_WG_2020-04-13_N	CM_MW1-SH	WG	No	2020/05/14	12:15	G	5		1	1	1	1	1						
CM_NNP2_WS_2020-04-13_N	CM_NNP2	WG	No	2020/05/14	-	G	5		1	1	1	1	1						
CM_TRP_WS_2020-04-13_N	CM_TRP	WG	No	2020/05/14	-	G	5		1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/15/20

SERVICE REQUEST (rush - subject to availability) Regular (default) <input checked="" type="checkbox"/>		Sampler's Name	SH/JD	Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Signature	<i>[Signature]</i>	Date/Time	May 14, 2020





TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 16-MAY-20
Report Date: 27-MAY-20 12:27 (MT)
Version: FINAL

Client Phone: 250-425-7321

Certificate of Analysis

Lab Work Order #: L2448408
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200515
Legal Site Desc:

Comments: ADDITIONAL 26-MAY-20 17:58

Lyudmyla Shvets, B.Sc.
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-1 CM_MW3-DP_WG_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 00:20							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	244		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-MAY-20	R5095737
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.674		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	<0.50		0.50	mg/L		24-MAY-20	R5095737
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	24-MAY-20	25-MAY-20	R5095831
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	21-MAY-20	R5093659
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093444
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Aluminum (Al)-Dissolved	0.0067		0.0030	mg/L	24-MAY-20	25-MAY-20	R5095831
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Arsenic (As)-Dissolved	0.00079		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Barium (Ba)-Dissolved	0.877		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Boron (B)-Dissolved	0.499		0.020	mg/L	24-MAY-20	25-MAY-20	R5095831
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	24-MAY-20	25-MAY-20	R5095831
Calcium (Ca)-Dissolved	12.0		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	24-MAY-20	25-MAY-20	R5095831
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	24-MAY-20	25-MAY-20	R5095831
Iron (Fe)-Dissolved	0.071		0.020	mg/L	24-MAY-20	25-MAY-20	R5095831
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Lithium (Li)-Dissolved	1.27		0.0020	mg/L	24-MAY-20	25-MAY-20	R5095831
Magnesium (Mg)-Dissolved	4.64		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Manganese (Mn)-Dissolved	0.0339		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Molybdenum (Mo)-Dissolved	0.00287		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Potassium (K)-Dissolved	2.46		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	24-MAY-20	25-MAY-20	R5095831
Silicon (Si)-Dissolved	3.55		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	24-MAY-20	25-MAY-20	R5095831
Sodium (Na)-Dissolved	638		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Strontium (Sr)-Dissolved	1.12		0.00040	mg/L	24-MAY-20	25-MAY-20	R5095831
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	24-MAY-20	25-MAY-20	R5095831
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Uranium (U)-Dissolved	0.000411		0.000020	mg/L	24-MAY-20	25-MAY-20	R5095831
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	24-MAY-20	25-MAY-20	R5095831
Hardness							
Hardness (as CaCO3)	49.0		0.50	mg/L		25-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-MAY-20	R5094898
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-1 CM_MW3-DP_WG_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 00:20							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	200		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	8.2		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	208		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.622	DLHC	0.050	mg/L		26-MAY-20	R5098750
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.53	DLHC	0.25	mg/L		17-MAY-20	R5095499
Chloride in Water by IC							
Chloride (Cl)	769	DLHC	2.5	mg/L		17-MAY-20	R5095499
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2510		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.36	DLHC	0.10	mg/L		17-MAY-20	R5095499
Ion Balance Calculation							
Ion Balance	111		-100	%		25-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	5.2			%		25-MAY-20	
Anion Sum	25.9			meq/L		25-MAY-20	
Cation Sum	28.8			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		17-MAY-20	R5095499
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-MAY-20	R5095499
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0089		0.0010	mg/L		16-MAY-20	R5090759
Oxidation redution potential by elect.							
ORP	392		-1000	mV		26-MAY-20	R5097520
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0085		0.0020	mg/L		20-MAY-20	R5092647
Sulfate in Water by IC							
Sulfate (SO4)	2.7	DLHC	1.5	mg/L		17-MAY-20	R5095499
Total Dissolved Solids							
Total Dissolved Solids	1400	DLHC	20	mg/L		21-MAY-20	R5095263
Total Suspended Solids							
Total Suspended Solids	1.2		1.0	mg/L		21-MAY-20	R5095261
Turbidity							
Turbidity	0.35		0.10	NTU		17-MAY-20	R5092019
pH							
pH	8.45		0.10	pH		20-MAY-20	R5094241
L2448408-2 CM_MW3-SH_WG_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 00:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	219		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	1.12		0.50	mg/L		24-MAY-20	R5095737
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.232		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	1.61		0.50	mg/L		24-MAY-20	R5095737
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-2 CM_MW3-SH_WG_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 00:10							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-MAY-20	25-MAY-20	R5095831
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	21-MAY-20	R5093659
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093444
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-MAY-20	25-MAY-20	R5095831
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Barium (Ba)-Dissolved	0.0908		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Boron (B)-Dissolved	0.019		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Cadmium (Cd)-Dissolved	0.0051		0.0050	ug/L	24-MAY-20	25-MAY-20	R5095831
Calcium (Ca)-Dissolved	55.9		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-MAY-20	25-MAY-20	R5095831
Copper (Cu)-Dissolved	0.00097		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Lithium (Li)-Dissolved	0.0069		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Magnesium (Mg)-Dissolved	12.9		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Molybdenum (Mo)-Dissolved	0.000523		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Potassium (K)-Dissolved	0.653		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Selenium (Se)-Dissolved	0.277		0.050	ug/L	24-MAY-20	25-MAY-20	R5095831
Silicon (Si)-Dissolved	2.57		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Sodium (Na)-Dissolved	3.98		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Strontium (Sr)-Dissolved	0.294		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Uranium (U)-Dissolved	0.000176		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Hardness							
Hardness (as CaCO3)	192		0.50	mg/L		25-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-MAY-20	R5094898
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	179		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	8.2		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	188		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.159		0.0050	mg/L		26-MAY-20	R5098750
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAY-20	R5095499
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-2 CM_MW3-SH_WG_2020-04-13_N Sampled By: VS/JD on 15-MAY-20 @ 00:10 Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		17-MAY-20	R5095499
Electrical Conductivity (EC)							
Conductivity (@ 25C)	303		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.064		0.020	mg/L		17-MAY-20	R5095499
Ion Balance Calculation							
Ion Balance	101		-100	%		25-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	0.7			%		25-MAY-20	
Anion Sum	3.98			meq/L		25-MAY-20	
Cation Sum	4.04			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0115		0.0050	mg/L		17-MAY-20	R5095499
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5095499
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0032	RRV	0.0010	mg/L		16-MAY-20	R5090759
Oxidation redution potential by elect.							
ORP	329		-1000	mV		26-MAY-20	R5097520
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020	RRV	0.0020	mg/L		20-MAY-20	R5092647
Sulfate in Water by IC							
Sulfate (SO4)	11.0		0.30	mg/L		17-MAY-20	R5095499
Total Dissolved Solids							
Total Dissolved Solids	206	DLHC	20	mg/L		21-MAY-20	R5095263
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		21-MAY-20	R5095261
Turbidity							
Turbidity	0.20		0.10	NTU		17-MAY-20	R5092019
pH							
pH	8.43		0.10	pH		20-MAY-20	R5094241
L2448408-3 CM_NNP_WS_2020-04-13_N Sampled By: VS/JD on 15-MAY-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	214		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	1.06		0.50	mg/L		24-MAY-20	R5095737
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.077		0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	1.06		0.50	mg/L		24-MAY-20	R5095737
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-MAY-20	25-MAY-20	R5095831
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	21-MAY-20	R5093659
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093444
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-MAY-20	25-MAY-20	R5095831

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-3 CM_NNP_WS_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Barium (Ba)-Dissolved	0.0889		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Boron (B)-Dissolved	0.017		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	24-MAY-20	25-MAY-20	R5095831
Calcium (Ca)-Dissolved	56.4		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-MAY-20	25-MAY-20	R5095831
Copper (Cu)-Dissolved	0.00096		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Lithium (Li)-Dissolved	0.0066		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Magnesium (Mg)-Dissolved	12.9		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Molybdenum (Mo)-Dissolved	0.000496		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Potassium (K)-Dissolved	0.641		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Selenium (Se)-Dissolved	0.290		0.050	ug/L	24-MAY-20	25-MAY-20	R5095831
Silicon (Si)-Dissolved	2.59		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Sodium (Na)-Dissolved	3.77		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Strontium (Sr)-Dissolved	0.299		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Uranium (U)-Dissolved	0.000168		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Hardness							
Hardness (as CaCO3)	194		0.50	mg/L		25-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-MAY-20	R5094898
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	8.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	183		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.0095		0.0050	mg/L		26-MAY-20	R5098750
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAY-20	R5095499
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		17-MAY-20	R5095499
Electrical Conductivity (EC)							
Conductivity (@ 25C)	300		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	0.062		0.020	mg/L		17-MAY-20	R5095499
Ion Balance Calculation							
Ion Balance	104		-100	%		25-MAY-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-3 CM_NNP_WS_2020-04-13_N Sampled By: VS/JD on 15-MAY-20 @ 12:00 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	2.1			%		25-MAY-20	
Anion Sum	3.89			meq/L		25-MAY-20	
Cation Sum	4.06			meq/L		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0117		0.0050	mg/L		17-MAY-20	R5095499
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5095499
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0029		0.0010	mg/L		16-MAY-20	R5090759
Oxidation redution potential by elect.							
ORP	330		-1000	mV		26-MAY-20	R5097520
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0026		0.0020	mg/L		20-MAY-20	R5092647
Sulfate in Water by IC							
Sulfate (SO4)	10.9		0.30	mg/L		17-MAY-20	R5095499
Total Dissolved Solids							
Total Dissolved Solids	205	DLHC	20	mg/L		21-MAY-20	R5095263
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		21-MAY-20	R5095261
Turbidity							
Turbidity	0.20		0.10	NTU		17-MAY-20	R5092019
pH							
pH	8.44		0.10	pH		20-MAY-20	R5094241
L2448408-4 CM_NNT_WS_2020-04-13_N Sampled By: VS/JD on 15-MAY-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Carbonate (CO3)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-MAY-20	R5095737
Hydroxide (OH)	<5.0		5.0	mg/L		20-MAY-20	R5094241
Total Kjeldahl Nitrogen	0.155	RRV	0.050	mg/L		25-MAY-20	R5096876
Total Organic Carbon	<0.50		0.50	mg/L		24-MAY-20	R5095737
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-MAY-20	25-MAY-20	R5095831
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-MAY-20	21-MAY-20	R5093659
Dissolved Mercury Filtration Location	FIELD					20-MAY-20	R5093444
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-MAY-20	R5095606
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-MAY-20	25-MAY-20	R5095831
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Boron (B)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	24-MAY-20	25-MAY-20	R5095831
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-4 CM_NNT_WS_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-MAY-20	25-MAY-20	R5095831
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	24-MAY-20	25-MAY-20	R5095831
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	24-MAY-20	25-MAY-20	R5095831
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Potassium (K)-Dissolved	<0.050		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	24-MAY-20	25-MAY-20	R5095831
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	24-MAY-20	25-MAY-20	R5095831
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	24-MAY-20	25-MAY-20	R5095831
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-MAY-20	25-MAY-20	R5095831
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-MAY-20	25-MAY-20	R5095831
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	24-MAY-20	25-MAY-20	R5095831
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-MAY-20	25-MAY-20	R5095831
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	24-MAY-20	25-MAY-20	R5095831
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		25-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		21-MAY-20	R5094898
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		20-MAY-20	R5094241
Ammonia, Total (as N)							
Ammonia as N	0.129	RRV	0.0050	mg/L		26-MAY-20	R5098750
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		17-MAY-20	R5095499
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		17-MAY-20	R5095499
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		20-MAY-20	R5094241
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		17-MAY-20	R5095499
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		25-MAY-20	
Anion Sum	<0.10			meq/L		25-MAY-20	
Cation Sum	<0.10			meq/L		25-MAY-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		25-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		17-MAY-20	R5095499
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		17-MAY-20	R5095499
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2448408-4 CM_NNT_WS_2020-04-13_N							
Sampled By: VS/JD on 15-MAY-20 @ 12:00							
Matrix: WG							
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		16-MAY-20	R5090759
Oxidation redution potential by elect.							
ORP	452		-1000	mV		26-MAY-20	R5097520
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		20-MAY-20	R5092647
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		17-MAY-20	R5095499
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		21-MAY-20	R5095263
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		21-MAY-20	R5095261
Turbidity							
Turbidity	<0.10		0.10	NTU		17-MAY-20	R5092019
pH							
pH	5.41		0.10	pH		20-MAY-20	R5094241

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200515

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2448408

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5094898							
WG3327249-5	LCS							
Acidity (as CaCO3)			101.2		%		85-115	21-MAY-20
WG3327249-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	21-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5094241							
WG3326514-11	LCS							
Alkalinity, Total (as CaCO3)			97.1		%		85-115	20-MAY-20
WG3326514-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5095831							
WG3328094-2	LCS							
Beryllium (Be)-Dissolved			97.4		%		80-120	25-MAY-20
WG3328094-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Bromide (Br)			102.3		%		85-115	17-MAY-20
WG3327951-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-MAY-20
WG3327951-4	MS	L2448408-4						
Bromide (Br)			113.3		%		75-125	17-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5095737							
WG3328297-10	LCS							
Dissolved Organic Carbon			96.1		%		80-120	24-MAY-20
WG3328297-14	LCS							
Dissolved Organic Carbon			90.8		%		80-120	24-MAY-20
WG3328297-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5095737							
WG3328297-10	LCS							
Total Organic Carbon			87.6		%		80-120	24-MAY-20
WG3328297-14	LCS							
Total Organic Carbon			87.3		%		80-120	24-MAY-20
WG3328297-13	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
WG3328297-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-20
CL-IC-N-CL								
Water								
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Chloride (Cl)			102.5		%		90-110	17-MAY-20
WG3327951-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	17-MAY-20
WG3327951-4	MS	L2448408-4						
Chloride (Cl)			110.3		%		75-125	17-MAY-20
EC-L-PCT-CL								
Water								
Batch	R5094241							
WG3326514-11	LCS							
Conductivity (@ 25C)			97.4		%		90-110	20-MAY-20
WG3326514-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAY-20
F-IC-N-CL								
Water								
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Fluoride (F)			97.3		%		90-110	17-MAY-20
WG3327951-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	17-MAY-20
WG3327951-4	MS	L2448408-4						
Fluoride (F)			105.3		%		75-125	17-MAY-20
HG-D-CVAA-VA								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5093659							
WG3326352-6	LCS							
Mercury (Hg)-Dissolved			104.4		%		80-120	21-MAY-20
WG3326352-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-MAY-20
MET-D-CCMS-VA								
	Water							
Batch	R5095831							
WG3328094-2	LCS							
Aluminum (Al)-Dissolved			105.5		%		80-120	25-MAY-20
Antimony (Sb)-Dissolved			97.9		%		80-120	25-MAY-20
Arsenic (As)-Dissolved			103.0		%		80-120	25-MAY-20
Barium (Ba)-Dissolved			106.3		%		80-120	25-MAY-20
Bismuth (Bi)-Dissolved			97.5		%		80-120	25-MAY-20
Boron (B)-Dissolved			95.6		%		80-120	25-MAY-20
Cadmium (Cd)-Dissolved			105.0		%		80-120	25-MAY-20
Calcium (Ca)-Dissolved			101.4		%		80-120	25-MAY-20
Chromium (Cr)-Dissolved			107.0		%		80-120	25-MAY-20
Cobalt (Co)-Dissolved			102.1		%		80-120	25-MAY-20
Copper (Cu)-Dissolved			100.2		%		80-120	25-MAY-20
Iron (Fe)-Dissolved			98.8		%		80-120	25-MAY-20
Lead (Pb)-Dissolved			94.9		%		80-120	25-MAY-20
Lithium (Li)-Dissolved			97.5		%		80-120	25-MAY-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	25-MAY-20
Manganese (Mn)-Dissolved			103.9		%		80-120	25-MAY-20
Molybdenum (Mo)-Dissolved			99.5		%		80-120	25-MAY-20
Nickel (Ni)-Dissolved			101.0		%		80-120	25-MAY-20
Potassium (K)-Dissolved			105.5		%		80-120	25-MAY-20
Selenium (Se)-Dissolved			105.2		%		80-120	25-MAY-20
Silicon (Si)-Dissolved			106.6		%		60-140	25-MAY-20
Silver (Ag)-Dissolved			98.9		%		80-120	25-MAY-20
Sodium (Na)-Dissolved			111.2		%		80-120	25-MAY-20
Strontium (Sr)-Dissolved			96.3		%		80-120	25-MAY-20
Thallium (Tl)-Dissolved			95.3		%		80-120	25-MAY-20
Tin (Sn)-Dissolved			99.2		%		80-120	25-MAY-20
Titanium (Ti)-Dissolved			101.8		%		80-120	25-MAY-20
Uranium (U)-Dissolved			91.4		%		80-120	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095831							
WG3328094-2	LCS							
Vanadium (V)-Dissolved			103.4		%		80-120	25-MAY-20
Zinc (Zn)-Dissolved			100.0		%		80-120	25-MAY-20
WG3328094-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL		Water						
Batch	R5098750							
WG3329264-11	DUP	L2448408-4						
Ammonia as N		0.129	0.130		mg/L	0.8	20	26-MAY-20
WG3329264-10	LCS							
Ammonia as N			94.3		%		85-115	26-MAY-20
WG3329264-6	LCS							
Ammonia as N			102.1		%		85-115	26-MAY-20
WG3329264-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
WG3329264-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-MAY-20
WG3329264-12	MS	L2448408-4						
Ammonia as N			N/A	MS-B	%		-	26-MAY-20
NO2-L-IC-N-CL		Water						
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Nitrite (as N)			103.7		%		90-110	17-MAY-20
WG3327951-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	17-MAY-20
WG3327951-4	MS	L2448408-4						
Nitrite (as N)			110.6		%		75-125	17-MAY-20
NO3-L-IC-N-CL		Water						
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Nitrate (as N)			102.4		%		90-110	17-MAY-20
WG3327951-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	17-MAY-20
WG3327951-4	MS	L2448408-4						
Nitrate (as N)			110.3		%		75-125	17-MAY-20
ORP-CL		Water						
Batch	R5097520							
WG3328944-5	CRM	CL-ORP						
ORP			224		mV		210-230	26-MAY-20
WG3328944-6	DUP	L2448408-2						
ORP		329	337	J	mV	7.8	15	26-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL Water								
Batch	R5092647							
WG3325850-2	LCS							
Phosphorus (P)-Total			101.2		%		80-120	20-MAY-20
WG3325850-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-MAY-20
PH-CL Water								
Batch	R5094241							
WG3326514-11	LCS							
pH			7.00		pH		6.9-7.1	20-MAY-20
PO4-DO-L-COL-CL Water								
Batch	R5090759							
WG3324761-2	LCS							
Orthophosphate-Dissolved (as P)			104.7		%		80-120	16-MAY-20
WG3324761-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-MAY-20
SO4-IC-N-CL Water								
Batch	R5095499							
WG3327951-3	DUP	L2448408-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	17-MAY-20
WG3327951-2	LCS							
Sulfate (SO4)			103.9		%		90-110	17-MAY-20
WG3327951-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	17-MAY-20
WG3327951-4	MS	L2448408-4						
Sulfate (SO4)			111.9		%		75-125	17-MAY-20
SOLIDS-TDS-CL Water								
Batch	R5095263							
WG3326604-8	LCS							
Total Dissolved Solids			100.7		%		85-115	21-MAY-20
WG3326604-7	MB							
Total Dissolved Solids			<10		mg/L		10	21-MAY-20
TKN-L-F-CL Water								
Batch	R5096876							
WG3328687-18	DUP	L2448408-4						
Total Kjeldahl Nitrogen		0.155	0.152		mg/L	2.0	20	25-MAY-20
WG3328687-13	LCS							
Total Kjeldahl Nitrogen			100.0		%		75-125	25-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5096876							
WG3328687-17	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	25-MAY-20
WG3328687-2	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	25-MAY-20
WG3328687-21	LCS							
Total Kjeldahl Nitrogen			94.4		%		75-125	25-MAY-20
WG3328687-25	LCS							
Total Kjeldahl Nitrogen			91.7		%		75-125	25-MAY-20
WG3328687-5	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	25-MAY-20
WG3328687-9	LCS							
Total Kjeldahl Nitrogen			86.0		%		75-125	25-MAY-20
WG3328687-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-24	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-MAY-20
WG3328687-19	MS	L2448408-4						
Total Kjeldahl Nitrogen			110.0		%		70-130	25-MAY-20
TSS-L-CL								
	Water							
Batch	R5095261							
WG3326544-8	LCS							
Total Suspended Solids			110.8		%		85-115	21-MAY-20
WG3326544-7	MB							
Total Suspended Solids			<1.0		mg/L		1	21-MAY-20
TURBIDITY-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5092019							
WG3324895-2	LCS							
Turbidity			104.5		%		85-115	17-MAY-20
WG3324895-1	MB							
Turbidity			<0.10		NTU		0.1	17-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	15-MAY-20 00:20	26-MAY-20 09:30	0.25	273	hours	EHTR-FM
	2	15-MAY-20 00:10	26-MAY-20 09:30	0.25	273	hours	EHTR-FM
	3	15-MAY-20 12:00	26-MAY-20 09:30	0.25	262	hours	EHTR-FM
	4	15-MAY-20 12:00	26-MAY-20 09:30	0.25	262	hours	EHTR-FM
pH							
	1	15-MAY-20 00:20	20-MAY-20 13:00	0.25	133	hours	EHTR-FM
	2	15-MAY-20 00:10	20-MAY-20 13:00	0.25	133	hours	EHTR-FM
	3	15-MAY-20 12:00	20-MAY-20 13:00	0.25	121	hours	EHTR-FM
	4	15-MAY-20 12:00	20-MAY-20 13:00	0.25	121	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:


Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2448408 were received on 16-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Coal Mountain Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Jay Jones	Lab Contact	Lyudmyla Shvets	Email 1:	Victoria.Sharpe@teck.com X X X
Email	Jay.Jones@teck.com	Email	Lyudmyla.Shvets@alsglobal.com	Email 2:	teckcoal@equisonline.com X X X
Address	PO Box 3000	Address	2559 29th St. NE	Email 3:	jay.jones@teck.com X X X
City	Sparwood	City	Calgary	Email 4:	don.sacino@teck.com X X X
Postal Code	V0B 2G0	Postal Code	T1Y 7B5		
Province	BC	Province	AB		
Country	Canada	Country	Canada		
Phone Number	1-250-425-7321	Phone Number	403 407 1800	PO number	VPO00683186

SAMPLE DETAILS							ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	# Of Cont.	F	N	F	F	N	FL	FL	FL	FL
 L2448408-COFC															
CM_MW3-DP_WG_2020-04-13_N	CM_MW3-DP	WG	No	2020/05/15		G	1	1	1	1	1				
CM_MW3-SH_WG_2020-04-13_N	CM_MW3-SH	WG	No	2020/05/15		G	1	1	1	1	1				
CM_NNP_WS_2020-04-13_N	CM_NNP	WG	No	2020/05/15		G	1	1	1	1	1				
CM_NNT_WS_2020-04-13_N	CM_NNT	WG	No	2020/05/15		G	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.			<i>DK</i>	5/16/2020

SERVICE REQUEST (rush - subject to availability)	SAMPLER'S NAME	DATE/TIME	MOBILE #
Regular (default) <input checked="" type="checkbox"/> X	VS/JD		250-425-7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>VS/JD</i>		May 15, 2020



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 21-MAY-20
Report Date: 29-MAY-20 11:27 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2450235
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2_20200520
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450235-1 CM_MW5-DP_WG_2020-04-13_N							
Sampled By: VS/JD on 20-MAY-20 @ 13:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	490		5.0	mg/L		23-MAY-20	R5098686
Carbonate (CO3)	<5.0		5.0	mg/L		23-MAY-20	R5098686
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-MAY-20	R5099449
Hydroxide (OH)	<5.0		5.0	mg/L		23-MAY-20	R5098686
Total Kjeldahl Nitrogen	0.804		0.050	mg/L		27-MAY-20	R5099526
Total Organic Carbon	<0.50		0.50	mg/L		26-MAY-20	R5099449
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAY-20	23-MAY-20	R5095474
Dissolved Metals Filtration Location	FIELD					22-MAY-20	R5095348
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-MAY-20	25-MAY-20	R5096941
Dissolved Mercury Filtration Location	FIELD					23-MAY-20	R5095365
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-MAY-20	R5095348
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAY-20	23-MAY-20	R5095474
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Barium (Ba)-Dissolved	1.17		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Boron (B)-Dissolved	0.111		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	22-MAY-20	23-MAY-20	R5095474
Calcium (Ca)-Dissolved	72.4		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-MAY-20	23-MAY-20	R5095474
Copper (Cu)-Dissolved	0.00037		0.00020	mg/L	22-MAY-20	23-MAY-20	R5095474
Iron (Fe)-Dissolved	1.17		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Lithium (Li)-Dissolved	0.0633		0.0010	mg/L	22-MAY-20	23-MAY-20	R5095474
Magnesium (Mg)-Dissolved	24.8		0.10	mg/L	22-MAY-20	23-MAY-20	R5095474
Manganese (Mn)-Dissolved	0.0477		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Molybdenum (Mo)-Dissolved	0.000547		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	22-MAY-20	23-MAY-20	R5095474
Potassium (K)-Dissolved	3.57		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	22-MAY-20	26-MAY-20	R5098840
Silicon (Si)-Dissolved	6.43		0.050	mg/L	22-MAY-20	26-MAY-20	R5098840
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Sodium (Na)-Dissolved	59.0		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Strontium (Sr)-Dissolved	1.96		0.00020	mg/L	22-MAY-20	23-MAY-20	R5095474
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Uranium (U)-Dissolved	0.000073		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAY-20	23-MAY-20	R5095474
Zinc (Zn)-Dissolved	0.0010		0.0010	mg/L	22-MAY-20	23-MAY-20	R5095474
Hardness							
Hardness (as CaCO3)	283		0.50	mg/L		28-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.4		1.0	mg/L		22-MAY-20	R5095404
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450235-1 CM_MW5-DP_WG_2020-04-13_N Sampled By: VS/JD on 20-MAY-20 @ 13:00 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	402		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Total (as CaCO3)	402		1.0	mg/L		23-MAY-20	R5098686
Ammonia, Total (as N)							
Ammonia as N	0.672	DLHC	0.050	mg/L		27-MAY-20	R5099747
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		23-MAY-20	R5098769
Chloride in Water by IC							
Chloride (Cl)	10.8		0.50	mg/L		23-MAY-20	R5098769
Electrical Conductivity (EC)							
Conductivity (@ 25C)	613		2.0	uS/cm		23-MAY-20	R5098686
Fluoride in Water by IC							
Fluoride (F)	0.319		0.020	mg/L		23-MAY-20	R5098769
Ion Balance Calculation							
Cation - Anion Balance	-0.2			%		28-MAY-20	
Anion Sum	8.36			meq/L		28-MAY-20	
Cation Sum	8.32			meq/L		28-MAY-20	
Ion Balance Calculation							
Ion Balance	99.6		-100	%		28-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-MAY-20	R5098769
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-MAY-20	R5098769
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-MAY-20	R5094759
Oxidation redution potential by elect.							
ORP	329		-1000	mV		28-MAY-20	R5100136
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0049	DLM	0.0040	mg/L		26-MAY-20	R5098761
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		23-MAY-20	R5098769
Total Dissolved Solids							
Total Dissolved Solids	416	DLHC	20	mg/L		26-MAY-20	R5099604
Total Suspended Solids							
Total Suspended Solids	1.2		1.0	mg/L		26-MAY-20	R5099537
Turbidity							
Turbidity	13.3		0.10	NTU		23-MAY-20	R5095522
pH							
pH	8.29		0.10	pH		23-MAY-20	R5098686
L2450235-2 CM_MW5-SH_WG_2020-04-13_N Sampled By: VS/JD on 20-MAY-20 @ 13:25 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	294		5.0	mg/L		23-MAY-20	R5098686
Carbonate (CO3)	<5.0		5.0	mg/L		23-MAY-20	R5098686
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-MAY-20	R5099449
Hydroxide (OH)	<5.0		5.0	mg/L		23-MAY-20	R5098686
Total Kjeldahl Nitrogen	0.293		0.050	mg/L		27-MAY-20	R5099526
Total Organic Carbon	<0.50		0.50	mg/L		26-MAY-20	R5099449
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450235-2 CM_MW5-SH_WG_2020-04-13_N							
Sampled By: VS/JD on 20-MAY-20 @ 13:25							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-MAY-20	23-MAY-20	R5095474
Dissolved Metals Filtration Location	FIELD					22-MAY-20	R5095348
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-MAY-20	25-MAY-20	R5096941
Dissolved Mercury Filtration Location	FIELD					23-MAY-20	R5095365
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-MAY-20	R5095348
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-MAY-20	23-MAY-20	R5095474
Antimony (Sb)-Dissolved	0.00028		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Barium (Ba)-Dissolved	0.0606		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Boron (B)-Dissolved	0.030		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Cadmium (Cd)-Dissolved	0.0256		0.0050	ug/L	22-MAY-20	23-MAY-20	R5095474
Calcium (Ca)-Dissolved	116		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Chromium (Cr)-Dissolved	0.00024		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-MAY-20	23-MAY-20	R5095474
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-MAY-20	23-MAY-20	R5095474
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Lithium (Li)-Dissolved	0.0188		0.0010	mg/L	22-MAY-20	23-MAY-20	R5095474
Magnesium (Mg)-Dissolved	51.4		0.10	mg/L	22-MAY-20	23-MAY-20	R5095474
Manganese (Mn)-Dissolved	0.00061		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Molybdenum (Mo)-Dissolved	0.00193		0.000050	mg/L	22-MAY-20	23-MAY-20	R5095474
Nickel (Ni)-Dissolved	0.00125		0.00050	mg/L	22-MAY-20	23-MAY-20	R5095474
Potassium (K)-Dissolved	2.02		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Selenium (Se)-Dissolved	10.0		0.050	ug/L	22-MAY-20	23-MAY-20	R5095474
Silicon (Si)-Dissolved	2.18		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Sodium (Na)-Dissolved	19.7		0.050	mg/L	22-MAY-20	23-MAY-20	R5095474
Strontium (Sr)-Dissolved	0.360		0.00020	mg/L	22-MAY-20	23-MAY-20	R5095474
Thallium (Tl)-Dissolved	0.000038		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-MAY-20	23-MAY-20	R5095474
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-MAY-20	23-MAY-20	R5095474
Uranium (U)-Dissolved	0.00292		0.000010	mg/L	22-MAY-20	23-MAY-20	R5095474
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-MAY-20	23-MAY-20	R5095474
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	22-MAY-20	23-MAY-20	R5095474
Hardness							
Hardness (as CaCO3)	502		0.50	mg/L		28-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	6.4		1.0	mg/L		22-MAY-20	R5095404
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	241		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-MAY-20	R5098686
Alkalinity, Total (as CaCO3)	241		1.0	mg/L		23-MAY-20	R5098686
Ammonia, Total (as N)							
Ammonia as N	0.0180		0.0050	mg/L		27-MAY-20	R5099747
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		23-MAY-20	R5098769
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450235-2 CM_MW5-SH_WG_2020-04-13_N							
Sampled By: VS/JD on 20-MAY-20 @ 13:25							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	16.1		0.50	mg/L		23-MAY-20	R5098769
Electrical Conductivity (EC)							
Conductivity (@ 25C)	775		2.0	uS/cm		23-MAY-20	R5098686
Fluoride in Water by IC							
Fluoride (F)	0.159		0.020	mg/L		23-MAY-20	R5098769
Ion Balance Calculation							
Cation - Anion Balance	-0.6			%		28-MAY-20	
Anion Sum	11.3			meq/L		28-MAY-20	
Cation Sum	11.1			meq/L		28-MAY-20	
Ion Balance Calculation							
Ion Balance	98.9		-100	%		28-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.88		0.0050	mg/L		23-MAY-20	R5098769
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-MAY-20	R5098769
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0050		0.0010	mg/L		21-MAY-20	R5094759
Oxidation redution potential by elect.							
ORP	294		-1000	mV		28-MAY-20	R5100136
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0058	DLM	0.0050	mg/L		26-MAY-20	R5098761
Sulfate in Water by IC							
Sulfate (SO4)	281		0.30	mg/L		23-MAY-20	R5098769
Total Dissolved Solids							
Total Dissolved Solids	705	DLHC	20	mg/L		26-MAY-20	R5099604
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-MAY-20	R5099537
Turbidity							
Turbidity	0.10		0.10	NTU		23-MAY-20	R5095522
pH							
pH	8.24		0.10	pH		23-MAY-20	R5098686

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2_20200520

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2450235

Report Date: 29-MAY-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5095404							
WG3327856-17	LCS							
Acidity (as CaCO3)			102.6		%		85-115	22-MAY-20
WG3327856-16	MB							
Acidity (as CaCO3)			1.5		mg/L		2	22-MAY-20
ALK-MAN-CL								
	Water							
Batch	R5098686							
WG3329199-14	LCS							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	23-MAY-20
WG3329199-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5095474							
WG3327734-2	LCS							
Beryllium (Be)-Dissolved			97.8		%		80-120	23-MAY-20
WG3327734-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-MAY-20
BIC-CL								
	Water							
Batch	R5098686							
WG3329199-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5098769							
WG3329308-6	LCS							
Bromide (Br)			102.8		%		85-115	23-MAY-20
WG3329308-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5099449							
WG3330200-2	LCS							
Dissolved Organic Carbon			87.0		%		80-120	26-MAY-20
WG3330200-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5099449							
WG3330200-2	LCS							
Total Organic Carbon			92.9		%		80-120	26-MAY-20
WG3330200-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	26-MAY-20
CL-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6	LCS							
Chloride (Cl)			100.9		%		90-110	23-MAY-20
WG3329308-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	23-MAY-20
CO3-CL	Water							
Batch	R5098686							
WG3329199-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	23-MAY-20
EC-L-PCT-CL	Water							
Batch	R5098686							
WG3329199-14	LCS							
Conductivity (@ 25C)			103.3		%		90-110	23-MAY-20
WG3329199-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-MAY-20
F-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6	LCS							
Fluoride (F)			104.7		%		90-110	23-MAY-20
WG3329308-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	23-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5096941							
WG3327808-6	LCS							
Mercury (Hg)-Dissolved			101.5		%		80-120	25-MAY-20
WG3327808-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-MAY-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095474							
WG3327734-2	LCS							
Aluminum (Al)-Dissolved			100.3		%		80-120	23-MAY-20
Antimony (Sb)-Dissolved			101.0		%		80-120	23-MAY-20
Arsenic (As)-Dissolved			99.3		%		80-120	23-MAY-20
Barium (Ba)-Dissolved			103.9		%		80-120	23-MAY-20
Bismuth (Bi)-Dissolved			101.6		%		80-120	23-MAY-20
Boron (B)-Dissolved			90.5		%		80-120	23-MAY-20
Cadmium (Cd)-Dissolved			99.0		%		80-120	23-MAY-20
Calcium (Ca)-Dissolved			103.0		%		80-120	23-MAY-20
Chromium (Cr)-Dissolved			98.9		%		80-120	23-MAY-20
Cobalt (Co)-Dissolved			101.3		%		80-120	23-MAY-20
Copper (Cu)-Dissolved			100.4		%		80-120	23-MAY-20
Iron (Fe)-Dissolved			102.7		%		80-120	23-MAY-20
Lead (Pb)-Dissolved			101.2		%		80-120	23-MAY-20
Lithium (Li)-Dissolved			100.5		%		80-120	23-MAY-20
Magnesium (Mg)-Dissolved			99.3		%		80-120	23-MAY-20
Manganese (Mn)-Dissolved			102.1		%		80-120	23-MAY-20
Molybdenum (Mo)-Dissolved			101.5		%		80-120	23-MAY-20
Nickel (Ni)-Dissolved			98.5		%		80-120	23-MAY-20
Potassium (K)-Dissolved			107.3		%		80-120	23-MAY-20
Selenium (Se)-Dissolved			98.2		%		80-120	23-MAY-20
Silicon (Si)-Dissolved			98.4		%		60-140	23-MAY-20
Silver (Ag)-Dissolved			99.0		%		80-120	23-MAY-20
Sodium (Na)-Dissolved			101.9		%		80-120	23-MAY-20
Strontium (Sr)-Dissolved			102.2		%		80-120	23-MAY-20
Thallium (Tl)-Dissolved			104.7		%		80-120	23-MAY-20
Tin (Sn)-Dissolved			100.3		%		80-120	23-MAY-20
Titanium (Ti)-Dissolved			101.6		%		80-120	23-MAY-20
Uranium (U)-Dissolved			98.0		%		80-120	23-MAY-20
Vanadium (V)-Dissolved			103.1		%		80-120	23-MAY-20
Zinc (Zn)-Dissolved			100.1		%		80-120	23-MAY-20
WG3327734-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5095474							
WG3327734-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5099747							
WG3330212-35	DUP	L2450235-2						
Ammonia as N		0.0180	0.0180		mg/L	0.0	20	27-MAY-20
WG3330212-34	LCS							
Ammonia as N			97.0		%		85-115	27-MAY-20
WG3330212-42	LCS							
Ammonia as N			98.0		%		85-115	27-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5099747								
WG3330212-33	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
WG3330212-41	MB							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-20
WG3330212-36	MS	L2450235-2						
Ammonia as N			101.5		%		75-125	27-MAY-20
NO2-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrite (as N)			98.5		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	23-MAY-20
NO3-L-IC-N-CL								
Water								
Batch R5098769								
WG3329308-6	LCS							
Nitrate (as N)			102.0		%		90-110	23-MAY-20
WG3329308-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	23-MAY-20
OH-CL								
Water								
Batch R5098686								
WG3329199-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	23-MAY-20
ORP-CL								
Water								
Batch R5100136								
WG3330985-1	CRM	CL-ORP						
ORP			224		mV		210-230	28-MAY-20
WG3330985-3	CRM	CL-ORP						
ORP			223		mV		210-230	28-MAY-20
WG3330985-4	DUP	L2450235-2						
ORP		294	296	J	mV	2.3	15	28-MAY-20
P-T-L-COL-CL								
Water								
Batch R5098761								
WG3329209-10	LCS							
Phosphorus (P)-Total			107.7		%		80-120	26-MAY-20
WG3329209-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5098686							
WG3329199-14	LCS							
pH			6.98		pH		6.9-7.1	23-MAY-20
SO4-IC-N-CL	Water							
Batch	R5098769							
WG3329308-6	LCS							
Sulfate (SO4)			104.6		%		90-110	23-MAY-20
WG3329308-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5099604							
WG3328958-20	LCS							
Total Dissolved Solids			102.8		%		85-115	26-MAY-20
WG3328958-19	MB							
Total Dissolved Solids			<10		mg/L		10	26-MAY-20
TKN-L-F-CL	Water							
Batch	R5099526							
WG3330275-10	LCS							
Total Kjeldahl Nitrogen			79.0		%		75-125	27-MAY-20
WG3330275-14	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-18	LCS							
Total Kjeldahl Nitrogen			84.0		%		75-125	27-MAY-20
WG3330275-2	LCS							
Total Kjeldahl Nitrogen			85.8		%		75-125	27-MAY-20
WG3330275-22	LCS							
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-28	LCS							
Total Kjeldahl Nitrogen			84.5		%		75-125	27-MAY-20
WG3330275-32	LCS							
Total Kjeldahl Nitrogen			87.8		%		75-125	27-MAY-20
WG3330275-36	LCS							
Total Kjeldahl Nitrogen			86.7		%		75-125	27-MAY-20
WG3330275-40	LCS							
Total Kjeldahl Nitrogen			88.8		%		75-125	27-MAY-20
WG3330275-6	LCS							
Total Kjeldahl Nitrogen			84.2		%		75-125	27-MAY-20
WG3330275-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-39 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
TSS-L-CL		Water						
Batch	R5099537							
WG3328959-14 LCS								
Total Suspended Solids			105.1		%		85-115	26-MAY-20
WG3328959-13 MB								
Total Suspended Solids			<1.0		mg/L		1	26-MAY-20
TURBIDITY-CL		Water						
Batch	R5095522							
WG3327876-5 LCS								
Turbidity			103.5		%		85-115	23-MAY-20
WG3327876-4 MB								
Turbidity			<0.10		NTU		0.1	23-MAY-20

Quality Control Report

Workorder: L2450235

Report Date: 29-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

Workorder: L2450235

Report Date: 29-MAY-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-MAY-20 13:00	28-MAY-20 06:30	0.25	186	hours	EHTR-FM
	2	20-MAY-20 13:25	28-MAY-20 07:00	0.25	186	hours	EHTR-FM
pH	1	20-MAY-20 13:00	23-MAY-20 13:00	0.25	72	hours	EHTR-FM
	2	20-MAY-20 13:25	23-MAY-20 13:00	0.25	72	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450235 were received on 21-MAY-20 08:50.

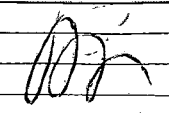
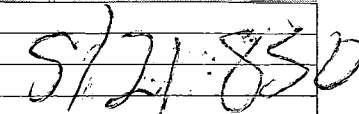
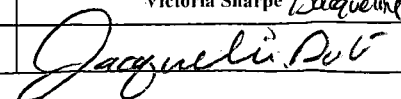
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200520		TURNAROUND TIME: Regular		RUSH: NO								
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO						
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets		Email 1:	Victoria.Sharpe@teck.com	X	X	X	
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.com			X	
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	jay.jones@teck.com	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800		PO number	VPO00683186				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N				
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA				
CM_MW5-DP_WG_2020-04-13_N	CM_MW5-DP	WG	No	2020/05/20	13:00	G	5	PRESERV	H2SO4	H2SO4	HCl	HNO3	NONE				
CM_MW5-SH_WG_2020-04-13_N	CM_MW5-SH	WG	No	2020/05/20	13:25	G	5										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Request analyses of bicarbonate and HCO ₃ hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .									
SERVICE REQUEST (rush - subject to availability)									
Regular (default) X		Sampler's Name		Victoria Sharpe <i>Jacqueline Dubé</i>		Mobile #		250-425-7522	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature				Date/Time		May 20, 2020	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 22-MAY-20
Report Date: 30-MAY-20 11:08 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2450637
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q2
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450637-1 CM_MW2-SH_WG_2020-04-13_N							
Sampled By: SH on 21-MAY-20 @ 10:26							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	0.75		0.50	mg/L		28-MAY-20	R5101149
Total Kjeldahl Nitrogen	0.109		0.050	mg/L		27-MAY-20	R5099526
Total Organic Carbon	0.67		0.50	mg/L		28-MAY-20	R5101149
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-MAY-20	28-MAY-20	R5099645
Dissolved Metals Filtration Location	FIELD					26-MAY-20	R5098768
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-MAY-20	27-MAY-20	R5099050
Dissolved Mercury Filtration Location	FIELD					27-MAY-20	R5099014
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-MAY-20	R5098768
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-MAY-20	28-MAY-20	R5099645
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Barium (Ba)-Dissolved	0.0817		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Boron (B)-Dissolved	0.036		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Cadmium (Cd)-Dissolved	0.0991		0.0050	ug/L	26-MAY-20	28-MAY-20	R5099645
Calcium (Ca)-Dissolved	167		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-MAY-20	28-MAY-20	R5099645
Copper (Cu)-Dissolved	0.00059		0.00020	mg/L	26-MAY-20	28-MAY-20	R5099645
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Lithium (Li)-Dissolved	0.0253		0.0010	mg/L	26-MAY-20	28-MAY-20	R5099645
Magnesium (Mg)-Dissolved	43.0		0.10	mg/L	26-MAY-20	28-MAY-20	R5099645
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Molybdenum (Mo)-Dissolved	0.000109		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-MAY-20	28-MAY-20	R5099645
Potassium (K)-Dissolved	1.19		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Selenium (Se)-Dissolved	0.589		0.050	ug/L	26-MAY-20	28-MAY-20	R5099645
Silicon (Si)-Dissolved	4.50		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Sodium (Na)-Dissolved	12.1		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Strontium (Sr)-Dissolved	0.443		0.00020	mg/L	26-MAY-20	28-MAY-20	R5099645
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Uranium (U)-Dissolved	0.000160		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-MAY-20	28-MAY-20	R5099645
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	26-MAY-20	28-MAY-20	R5099645
Hardness							
Hardness (as CaCO3)	595		0.50	mg/L		28-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-MAY-20	R5099712
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	300		1.0	mg/L		26-MAY-20	R5099065
Ammonia, Total (as N)							
Ammonia as N	0.0518		0.0050	mg/L		29-MAY-20	R5101981
Bicarbonate (HCO3)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450637-1 CM_MW2-SH_WG_2020-04-13_N Sampled By: SH on 21-MAY-20 @ 10:26 Matrix: WG							
Bicarbonate (HCO3) Bicarbonate (HCO3)	366		5.0	mg/L		26-MAY-20	R5099065
Bromide in Water by IC (Low Level) Bromide (Br)	<0.050		0.050	mg/L		24-MAY-20	R5099985
Carbonate (CO3) Carbonate (CO3)	<5.0		5.0	mg/L		26-MAY-20	R5099065
Chloride in Water by IC Chloride (Cl)	1.72		0.50	mg/L		24-MAY-20	R5099985
Electrical Conductivity (EC) Conductivity (@ 25C)	780		2.0	uS/cm		26-MAY-20	R5099065
Fluoride in Water by IC Fluoride (F)	0.072		0.020	mg/L		24-MAY-20	R5099985
Hydroxide in Water Hydroxide (OH)	<5.0		5.0	mg/L		26-MAY-20	R5099065
Ion Balance Calculation Cation - Anion Balance	1.1			%		28-MAY-20	
Anion Sum	12.2			meq/L		28-MAY-20	
Cation Sum	12.4			meq/L		28-MAY-20	
Ion Balance Calculation Ion Balance	102		-100	%		28-MAY-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.293		0.0050	mg/L		24-MAY-20	R5099985
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		24-MAY-20	R5099985
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		22-MAY-20	R5095338
Oxidation redution potential by elect. ORP	471		-1000	mV		29-MAY-20	R5102133
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		26-MAY-20	R5098761
Sulfate in Water by IC Sulfate (SO4)	294		0.30	mg/L		24-MAY-20	R5099985
Total Dissolved Solids Total Dissolved Solids	776	DLHC	20	mg/L		28-MAY-20	R5102055
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		27-MAY-20	R5100226
Turbidity Turbidity	0.21		0.10	NTU		22-MAY-20	R5095522
pH pH	8.15		0.10	pH		26-MAY-20	R5099065
L2450637-2 CM_MW10_WG_2020-04-13_N Sampled By: SH on 21-MAY-20 @ 13:10 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	0.68		0.50	mg/L		28-MAY-20	R5101149
Total Kjeldahl Nitrogen	0.270		0.050	mg/L		27-MAY-20	R5099526
Total Organic Carbon	0.83		0.50	mg/L		28-MAY-20	R5101149
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-MAY-20	28-MAY-20	R5099645
Dissolved Metals Filtration Location	FIELD					26-MAY-20	R5098768
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-MAY-20	27-MAY-20	R5099050

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450637-2 CM_MW10_WG_2020-04-13_N							
Sampled By: SH on 21-MAY-20 @ 13:10							
Matrix: WG							
Diss. Mercury in Water by CVAAS or CVAFS							
Dissolved Mercury Filtration Location	FIELD					27-MAY-20	R5099014
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					26-MAY-20	R5098768
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-MAY-20	28-MAY-20	R5099645
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Arsenic (As)-Dissolved	0.00092		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Barium (Ba)-Dissolved	0.172		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Boron (B)-Dissolved	0.020		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-MAY-20	28-MAY-20	R5099645
Calcium (Ca)-Dissolved	69.7		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Cobalt (Co)-Dissolved	0.15		0.10	ug/L	26-MAY-20	28-MAY-20	R5099645
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	26-MAY-20	28-MAY-20	R5099645
Iron (Fe)-Dissolved	0.618		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Lithium (Li)-Dissolved	0.0116		0.0010	mg/L	26-MAY-20	28-MAY-20	R5099645
Magnesium (Mg)-Dissolved	19.8		0.10	mg/L	26-MAY-20	28-MAY-20	R5099645
Manganese (Mn)-Dissolved	0.0996		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Molybdenum (Mo)-Dissolved	0.00784		0.000050	mg/L	26-MAY-20	28-MAY-20	R5099645
Nickel (Ni)-Dissolved	0.00175		0.00050	mg/L	26-MAY-20	28-MAY-20	R5099645
Potassium (K)-Dissolved	0.835		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-MAY-20	28-MAY-20	R5099645
Silicon (Si)-Dissolved	4.41		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Sodium (Na)-Dissolved	29.4		0.050	mg/L	26-MAY-20	28-MAY-20	R5099645
Strontium (Sr)-Dissolved	0.250		0.00020	mg/L	26-MAY-20	28-MAY-20	R5099645
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Tin (Sn)-Dissolved	0.00013		0.00010	mg/L	26-MAY-20	28-MAY-20	R5099645
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-MAY-20	28-MAY-20	R5099645
Uranium (U)-Dissolved	0.000994		0.000010	mg/L	26-MAY-20	28-MAY-20	R5099645
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-MAY-20	28-MAY-20	R5099645
Zinc (Zn)-Dissolved	0.0037		0.0010	mg/L	26-MAY-20	28-MAY-20	R5099645
Hardness							
Hardness (as CaCO3)	256		0.50	mg/L		28-MAY-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-MAY-20	R5099712
Alkalinity, Total							
Alkalinity, Total (as CaCO3)	246		1.0	mg/L		26-MAY-20	R5099065
Ammonia, Total (as N)							
Ammonia as N	0.215		0.0050	mg/L		29-MAY-20	R5101981
Bicarbonate (HCO3)							
Bicarbonate (HCO3)	300		5.0	mg/L		26-MAY-20	R5099065
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		24-MAY-20	R5099985
Carbonate (CO3)							
Carbonate (CO3)	<5.0		5.0	mg/L		26-MAY-20	R5099065
Chloride in Water by IC							
Chloride (Cl)	0.90		0.50	mg/L		24-MAY-20	R5099985
Electrical Conductivity (EC)							
Conductivity (@ 25C)	477		2.0	uS/cm		26-MAY-20	R5099065

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450637-2 CM_MW10_WG_2020-04-13_N							
Sampled By: SH on 21-MAY-20 @ 13:10							
Matrix: WG							
Fluoride in Water by IC							
Fluoride (F)	0.888		0.020	mg/L		24-MAY-20	R5099985
Hydroxide in Water							
Hydroxide (OH)	<5.0		5.0	mg/L		26-MAY-20	R5099065
Ion Balance Calculation							
Ion Balance	98.9		-100	%		28-MAY-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.6			%		28-MAY-20	
Anion Sum	6.52			meq/L		28-MAY-20	
Cation Sum	6.45			meq/L		28-MAY-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		24-MAY-20	R5099985
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		24-MAY-20	R5099985
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-MAY-20	R5095338
Oxidation redution potential by elect.							
ORP	400		-1000	mV		29-MAY-20	R5102133
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0036		0.0020	mg/L		26-MAY-20	R5098761
Sulfate in Water by IC							
Sulfate (SO4)	74.1		0.30	mg/L		24-MAY-20	R5099985
Total Dissolved Solids							
Total Dissolved Solids	381	DLHC	20	mg/L		28-MAY-20	R5102055
Total Suspended Solids							
Total Suspended Solids	4.6		1.0	mg/L		27-MAY-20	R5100226
Turbidity							
Turbidity	5.45		0.10	NTU		22-MAY-20	R5095522
pH							
pH	8.25		0.10	pH		26-MAY-20	R5099065

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-T-CL	Water	Alkalinity, Total	APHA 2320 B-Auto-Pot. Titration
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2450637

Report Date: 30-MAY-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5099712							
WG3330515-5	LCS							
Acidity (as CaCO3)			107.2		%		85-115	27-MAY-20
WG3330515-4	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	27-MAY-20
ALK-MAN-T-CL								
	Water							
Batch	R5099065							
WG3329741-11	LCS							
Alkalinity, Total (as CaCO3)			97.5		%		85-115	26-MAY-20
WG3329741-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-MAY-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5099645							
WG3329350-2	LCS							
Beryllium (Be)-Dissolved			90.7		%		80-120	28-MAY-20
WG3329350-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-MAY-20
BIC-CL								
	Water							
Batch	R5099065							
WG3329741-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	26-MAY-20
BR-L-IC-N-CL								
	Water							
Batch	R5099985							
WG3330851-2	LCS							
Bromide (Br)			108.0		%		85-115	24-MAY-20
WG3330851-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	24-MAY-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5101149							
WG3331618-2	LCS							
Dissolved Organic Carbon			105.0		%		80-120	28-MAY-20
WG3331618-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-MAY-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5101149							
WG3331618-2	LCS							
Total Organic Carbon			108.0		%		80-120	28-MAY-20
WG3331618-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	28-MAY-20
CL-IC-N-CL	Water							
Batch	R5099985							
WG3330851-2	LCS							
Chloride (Cl)			103.6		%		90-110	24-MAY-20
WG3330851-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAY-20
CO3-CL	Water							
Batch	R5099065							
WG3329741-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	26-MAY-20
EC-L-PCT-CL	Water							
Batch	R5099065							
WG3329741-11	LCS							
Conductivity (@ 25C)			101.8		%		90-110	26-MAY-20
WG3329741-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-MAY-20
F-IC-N-CL	Water							
Batch	R5099985							
WG3330851-2	LCS							
Fluoride (F)			96.0		%		90-110	24-MAY-20
WG3330851-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-MAY-20
HG-D-CVAA-VA	Water							
Batch	R5099050							
WG3329640-10	LCS							
Mercury (Hg)-Dissolved			102.2		%		80-120	27-MAY-20
WG3329640-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-MAY-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5099645							
WG3329350-2	LCS							
Aluminum (Al)-Dissolved			98.2		%		80-120	28-MAY-20
Antimony (Sb)-Dissolved			92.5		%		80-120	28-MAY-20
Arsenic (As)-Dissolved			98.4		%		80-120	28-MAY-20
Barium (Ba)-Dissolved			97.4		%		80-120	28-MAY-20
Bismuth (Bi)-Dissolved			102.9		%		80-120	28-MAY-20
Boron (B)-Dissolved			88.2		%		80-120	28-MAY-20
Cadmium (Cd)-Dissolved			98.5		%		80-120	28-MAY-20
Calcium (Ca)-Dissolved			95.8		%		80-120	28-MAY-20
Chromium (Cr)-Dissolved			99.3		%		80-120	28-MAY-20
Cobalt (Co)-Dissolved			99.6		%		80-120	28-MAY-20
Copper (Cu)-Dissolved			98.2		%		80-120	28-MAY-20
Iron (Fe)-Dissolved			97.8		%		80-120	28-MAY-20
Lead (Pb)-Dissolved			97.5		%		80-120	28-MAY-20
Lithium (Li)-Dissolved			92.2		%		80-120	28-MAY-20
Magnesium (Mg)-Dissolved			98.6		%		80-120	28-MAY-20
Manganese (Mn)-Dissolved			104.8		%		80-120	28-MAY-20
Molybdenum (Mo)-Dissolved			92.9		%		80-120	28-MAY-20
Nickel (Ni)-Dissolved			98.0		%		80-120	28-MAY-20
Potassium (K)-Dissolved			101.4		%		80-120	28-MAY-20
Selenium (Se)-Dissolved			96.4		%		80-120	28-MAY-20
Silicon (Si)-Dissolved			98.2		%		60-140	28-MAY-20
Silver (Ag)-Dissolved			89.9		%		80-120	28-MAY-20
Sodium (Na)-Dissolved			97.1		%		80-120	28-MAY-20
Strontium (Sr)-Dissolved			92.6		%		80-120	28-MAY-20
Thallium (Tl)-Dissolved			95.5		%		80-120	28-MAY-20
Tin (Sn)-Dissolved			91.1		%		80-120	28-MAY-20
Titanium (Ti)-Dissolved			91.8		%		80-120	28-MAY-20
Uranium (U)-Dissolved			93.0		%		80-120	28-MAY-20
Vanadium (V)-Dissolved			101.2		%		80-120	28-MAY-20
Zinc (Zn)-Dissolved			103.6		%		80-120	28-MAY-20
WG3329350-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5099645							
WG3329350-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-MAY-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-MAY-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-MAY-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-MAY-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-MAY-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-MAY-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-MAY-20
NH3-L-F-CL								
	Water							
Batch	R5101981							
WG3331809-10	LCS							
Ammonia as N			103.6		%		85-115	29-MAY-20
WG3331809-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	29-MAY-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5099985							
WG3330851-2	LCS							
Nitrite (as N)			104.3		%		90-110	24-MAY-20
WG3330851-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAY-20
NO3-L-IC-N-CL	Water							
Batch	R5099985							
WG3330851-2	LCS							
Nitrate (as N)			101.8		%		90-110	24-MAY-20
WG3330851-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAY-20
OH-CL	Water							
Batch	R5099065							
WG3329741-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	26-MAY-20
ORP-CL	Water							
Batch	R5102133							
WG3331913-3	CRM	CL-ORP						
ORP			228		mV		210-230	29-MAY-20
P-T-L-COL-CL	Water							
Batch	R5098761							
WG3329209-30	LCS							
Phosphorus (P)-Total			113.5		%		80-120	26-MAY-20
WG3329209-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-MAY-20
PH-CL	Water							
Batch	R5099065							
WG3329741-11	LCS							
pH			6.99		pH		6.9-7.1	26-MAY-20
PO4-DO-L-COL-CL	Water							
Batch	R5095338							
WG3327590-14	LCS							
Orthophosphate-Dissolved (as P)			106.3		%		80-120	22-MAY-20
WG3327590-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-MAY-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5099985							
WG3330851-2 LCS								
Sulfate (SO4)			104.9		%		90-110	24-MAY-20
WG3330851-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAY-20
SOLIDS-TDS-CL	Water							
Batch	R5102055							
WG3330512-2 LCS								
Total Dissolved Solids			101.5		%		85-115	28-MAY-20
WG3330512-1 MB								
Total Dissolved Solids			<10		mg/L		10	28-MAY-20
TKN-L-F-CL	Water							
Batch	R5099526							
WG3330275-10 LCS								
Total Kjeldahl Nitrogen			79.0		%		75-125	27-MAY-20
WG3330275-14 LCS								
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-18 LCS								
Total Kjeldahl Nitrogen			84.0		%		75-125	27-MAY-20
WG3330275-2 LCS								
Total Kjeldahl Nitrogen			85.8		%		75-125	27-MAY-20
WG3330275-22 LCS								
Total Kjeldahl Nitrogen			85.0		%		75-125	27-MAY-20
WG3330275-28 LCS								
Total Kjeldahl Nitrogen			84.5		%		75-125	27-MAY-20
WG3330275-32 LCS								
Total Kjeldahl Nitrogen			87.8		%		75-125	27-MAY-20
WG3330275-36 LCS								
Total Kjeldahl Nitrogen			86.7		%		75-125	27-MAY-20
WG3330275-40 LCS								
Total Kjeldahl Nitrogen			88.8		%		75-125	27-MAY-20
WG3330275-6 LCS								
Total Kjeldahl Nitrogen			84.2		%		75-125	27-MAY-20
WG3330275-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-17 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20



Quality Control Report

Workorder: L2450637

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5099526							
WG3330275-21 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-27 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-31 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-35 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-39 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
WG3330275-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-20
TSS-L-CL		Water						
Batch	R5100226							
WG3329712-10 LCS								
Total Suspended Solids			102.5		%		85-115	27-MAY-20
WG3329712-9 MB								
Total Suspended Solids			<1.0		mg/L		1	27-MAY-20
TURBIDITY-CL		Water						
Batch	R5095522							
WG3327876-20 LCS								
Turbidity			105.0		%		85-115	23-MAY-20
WG3327876-19 MB								
Turbidity			<0.10		NTU		0.1	23-MAY-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	21-MAY-20 10:26	29-MAY-20 12:00	0.25	194	hours	EHTR-FM
	2	21-MAY-20 13:10	29-MAY-20 12:00	0.25	191	hours	EHTR-FM
pH	1	21-MAY-20 10:26	26-MAY-20 13:00	0.25	123	hours	EHTR-FM
	2	21-MAY-20 13:10	26-MAY-20 13:00	0.25	120	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450637 were received on 22-MAY-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q2_20200521		TURNAROUND TIME: Regular			RUSH: NO											
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO									
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary			Report Format / Distribution									
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets			Email 1: Victoria.Sharpe@teck.com X X X									
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com			Email 2: teckcoal@equisonline.com									
Address PO Box 3000				Address 2559 29th St. NE			Email 3: jay.jones@teck.com X X X									
City Sparwood Province BC				City Calgary Province AB			Email 4: don.sacino@teck.com X X X									
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada												
Phone Number 1-250-425-7321				Phone Number 403 407 1800			PO number VPO00683186									
SAMPLE DETAILS					ANALYSIS REQUESTED											
 L2450637-COFC Sample ID Sample Location (sys loc code) Field Matrix Hazardous Material (Yes/No) Date Time (24hr) G=Grab C=Com # Of Cont.					Fill	F	N	F	F	N						
					PRESERV.	H2SO4	H2SO4	HCl	HNO3	NONE						
					ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW2-SH_WG_2020-04-13_N					CM_MW2-SH	WG	No	2020/05/21	10:26	G	5	1	1	1	1	1
CM_MW10_WG_2020-04-13_N					CM_MW10	WG	No	2020/05/21	13:10	G	5	1	1	1	1	1
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS					RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME					
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.									<i>JS</i>		5/22/20					
SERVICE REQUEST (rush - subject to availability)					Sampler's Name		Mobile #									
Regular (default) X					SH		250-425-7522									
Priority (2-3 business days) - 50% surcharge					<i>ADH</i>											
Emergency (1 Business Day) - 100% surcharge									Date/Time		May 21, 2020					
For Emergency <1 Day, ASAP or Weekend - Contact ALS																



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 07-AUG-20
Report Date: 06-NOV-20 12:47 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2485629
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200806
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-1 CM_MW6-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 06-AUG-20 @ 10:12							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.58		0.50	mg/L		10-AUG-20	R5181999
Total Kjeldahl Nitrogen	0.394		0.050	mg/L		10-AUG-20	R5177777
Total Organic Carbon	1.41		0.50	mg/L		10-AUG-20	R5181999
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-AUG-20	12-AUG-20	R5184259
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-AUG-20	12-AUG-20	R5181836
Dissolved Mercury Filtration Location	FIELD					12-AUG-20	R5182717
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Aluminum (Al)-Dissolved	0.0035		0.0030	mg/L	10-AUG-20	12-AUG-20	R5184259
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Arsenic (As)-Dissolved	0.00046		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Barium (Ba)-Dissolved	0.343		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Boron (B)-Dissolved	0.332		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-AUG-20	12-AUG-20	R5184259
Calcium (Ca)-Dissolved	9.30		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Chromium (Cr)-Dissolved	0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-AUG-20	12-AUG-20	R5184259
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Iron (Fe)-Dissolved	0.138		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Lithium (Li)-Dissolved	0.380		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Magnesium (Mg)-Dissolved	3.09		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Manganese (Mn)-Dissolved	0.0416		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Molybdenum (Mo)-Dissolved	0.00308		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Potassium (K)-Dissolved	1.90		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Selenium (Se)-Dissolved	0.061		0.050	ug/L	10-AUG-20	12-AUG-20	R5184259
Silicon (Si)-Dissolved	3.91		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Sodium (Na)-Dissolved	302		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Strontium (Sr)-Dissolved	1.00		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Uranium (U)-Dissolved	0.000841		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Hardness							
Hardness (as CaCO3)	35.9		0.50	mg/L		13-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	595		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	58.4		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-1 CM_MW6-DP_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 10:12 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Total (as CaCO3)	653		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.420		0.0050	mg/L		12-AUG-20	R5187421
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.147		0.050	mg/L		11-AUG-20	R5180425
Chloride in Water by IC							
Chloride (Cl)	36.6		0.50	mg/L		11-AUG-20	R5180425
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1190		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.457		0.020	mg/L		11-AUG-20	R5180425
Ion Balance Calculation							
Ion Balance	98.0		-100	%		13-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-1.0			%		13-AUG-20	
Anion Sum	14.2			meq/L		13-AUG-20	
Cation Sum	13.9			meq/L		13-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050	HTD	0.0050	mg/L		11-AUG-20	R5180425
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010	HTD	0.0010	mg/L		11-AUG-20	R5180425
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0085		0.0010	mg/L		07-AUG-20	R5176624
Oxidation reduction potential by elect.							
ORP	408		-1000	mV		10-AUG-20	R5178696
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0106		0.0020	mg/L		12-AUG-20	R5182613
Sulfate in Water by IC							
Sulfate (SO4)	5.02		0.30	mg/L		11-AUG-20	R5180425
Total Dissolved Solids							
Total Dissolved Solids	770	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	1.2		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	0.94		0.10	NTU		07-AUG-20	R5176652
pH							
pH	8.79		0.10	pH		12-AUG-20	R5182917
L2485629-2 CM_MW6-SH_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 10:15 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	3.29	DTC	0.50	mg/L		10-AUG-20	R5181999
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		10-AUG-20	R5177777
Total Organic Carbon	2.01	DTC	0.50	mg/L		10-AUG-20	R5181999
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-AUG-20	12-AUG-20	R5184259
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-AUG-20	12-AUG-20	R5181836
Dissolved Mercury Filtration Location	FIELD					12-AUG-20	R5182717
Dissolved Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-2 CM_MW6-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 06-AUG-20 @ 10:15							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Aluminum (Al)-Dissolved	0.0035		0.0030	mg/L	10-AUG-20	12-AUG-20	R5184259
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Arsenic (As)-Dissolved	0.00079		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Barium (Ba)-Dissolved	0.149		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Boron (B)-Dissolved	0.044		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-AUG-20	12-AUG-20	R5184259
Calcium (Ca)-Dissolved	20.4		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cobalt (Co)-Dissolved	0.15		0.10	ug/L	10-AUG-20	12-AUG-20	R5184259
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Iron (Fe)-Dissolved	0.246		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Lithium (Li)-Dissolved	0.0422		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Magnesium (Mg)-Dissolved	8.35		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Manganese (Mn)-Dissolved	0.271		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Molybdenum (Mo)-Dissolved	0.00586		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Potassium (K)-Dissolved	0.352		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-AUG-20	12-AUG-20	R5184259
Silicon (Si)-Dissolved	3.37		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Sodium (Na)-Dissolved	78.0		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Strontium (Sr)-Dissolved	0.225		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Uranium (U)-Dissolved	0.000517		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Hardness							
Hardness (as CaCO3)	85.3		0.50	mg/L		13-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	196		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	10.2		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	206		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0141		0.0050	mg/L		12-AUG-20	R5187421
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.118		0.050	mg/L		11-AUG-20	R5180425
Chloride in Water by IC							
Chloride (Cl)	20.5		0.50	mg/L		11-AUG-20	R5180425
Electrical Conductivity (EC)							
Conductivity (@ 25C)	421		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	1.67		0.020	mg/L		11-AUG-20	R5180425
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-2 CM_MW6-SH_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 10:15 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	2.6			%		13-AUG-20	
Anion Sum	4.87			meq/L		13-AUG-20	
Cation Sum	5.13			meq/L		13-AUG-20	
Ion Balance Calculation							
Ion Balance	105		-100	%		13-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0230	HTD	0.0050	mg/L		11-AUG-20	R5180425
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0014	HTD	0.0010	mg/L		11-AUG-20	R5180425
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-AUG-20	R5176624
Oxidation redution potential by elect.							
ORP	303		-1000	mV		10-AUG-20	R5178696
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-AUG-20	R5182613
Sulfate in Water by IC							
Sulfate (SO4)	4.00		0.30	mg/L		11-AUG-20	R5180425
Total Dissolved Solids							
Total Dissolved Solids	262	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	2.14		0.10	NTU		07-AUG-20	R5176652
pH							
pH	8.51		0.10	pH		12-AUG-20	R5182917
L2485629-3 CM_MW7-DP_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 13:27 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		10-AUG-20	R5181999
Total Kjeldahl Nitrogen	0.117		0.050	mg/L		10-AUG-20	R5177777
Total Organic Carbon	<0.50		0.50	mg/L		10-AUG-20	R5181999
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	10-AUG-20	12-AUG-20	R5184259
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-AUG-20	12-AUG-20	R5181836
Dissolved Mercury Filtration Location	FIELD					12-AUG-20	R5182717
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-AUG-20	12-AUG-20	R5184259
Antimony (Sb)-Dissolved	0.00020		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Barium (Ba)-Dissolved	0.0144		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Boron (B)-Dissolved	0.065		0.020	mg/L	10-AUG-20	12-AUG-20	R5184259
Cadmium (Cd)-Dissolved	0.144		0.010	ug/L	10-AUG-20	12-AUG-20	R5184259
Calcium (Ca)-Dissolved	338		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Chromium (Cr)-Dissolved	0.00037		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	10-AUG-20	12-AUG-20	R5184259

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-3 CM_MW7-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 06-AUG-20 @ 13:27							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00049		0.00040	mg/L	10-AUG-20	12-AUG-20	R5184259
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	10-AUG-20	12-AUG-20	R5184259
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Lithium (Li)-Dissolved	0.0696		0.0020	mg/L	10-AUG-20	12-AUG-20	R5184259
Magnesium (Mg)-Dissolved	141		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Manganese (Mn)-Dissolved	0.0636		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Molybdenum (Mo)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Nickel (Ni)-Dissolved	0.0116		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Potassium (K)-Dissolved	2.63		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Selenium (Se)-Dissolved	2.79		0.10	ug/L	10-AUG-20	12-AUG-20	R5184259
Silicon (Si)-Dissolved	2.47		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-AUG-20	12-AUG-20	R5184259
Sodium (Na)-Dissolved	31.2		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Strontium (Sr)-Dissolved	0.878		0.00040	mg/L	10-AUG-20	12-AUG-20	R5184259
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-AUG-20	12-AUG-20	R5184259
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Uranium (U)-Dissolved	0.00529		0.000020	mg/L	10-AUG-20	12-AUG-20	R5184259
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Zinc (Zn)-Dissolved	0.0174		0.0020	mg/L	10-AUG-20	12-AUG-20	R5184259
Hardness							
Hardness (as CaCO3)	1420		0.50	mg/L		13-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	14.4		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	343		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	343		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0152		0.0050	mg/L		12-AUG-20	R5187421
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		08-AUG-20	R5180425
Chloride in Water by IC							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		08-AUG-20	R5180425
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1970		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		08-AUG-20	R5180425
Ion Balance Calculation							
Ion Balance	104		-100	%		13-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		13-AUG-20	
Anion Sum	28.8			meq/L		13-AUG-20	
Cation Sum	29.9			meq/L		13-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.928	DLHC	0.025	mg/L		08-AUG-20	R5180425
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.143	DLHC	0.0050	mg/L		08-AUG-20	R5180425
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-AUG-20	R5176624

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-3 CM_MW7-DP_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 13:27 Matrix: WG							
Oxidation redution potential by elect. ORP	502		-1000	mV		10-AUG-20	R5178696
Phosphorus (P)-Total Phosphorus (P)-Total	<0.0020		0.0020	mg/L		12-AUG-20	R5182613
Sulfate in Water by IC Sulfate (SO4)	1050	DLHC	1.5	mg/L		08-AUG-20	R5180425
Total Dissolved Solids Total Dissolved Solids	1650	DLHC	40	mg/L		12-AUG-20	R5186202
Total Suspended Solids Total Suspended Solids	1.5		1.0	mg/L		12-AUG-20	R5185979
Turbidity Turbidity	0.57		0.10	NTU		07-AUG-20	R5176652
pH pH	7.94		0.10	pH		12-AUG-20	R5182917
L2485629-4 CM_MW7-SH_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 13:47 Matrix: WG							
Miscellaneous Parameters Dissolved Organic Carbon	1.63		0.50	mg/L		10-AUG-20	R5181999
Total Kjeldahl Nitrogen	0.097		0.050	mg/L		10-AUG-20	R5177777
Total Organic Carbon	3.37		0.50	mg/L		10-AUG-20	R5181999
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-AUG-20	12-AUG-20	R5184259
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-AUG-20	12-AUG-20	R5181836
Dissolved Mercury Filtration Location	FIELD					12-AUG-20	R5182717
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-AUG-20	12-AUG-20	R5184259
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Arsenic (As)-Dissolved	0.00121		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Barium (Ba)-Dissolved	0.0349		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Boron (B)-Dissolved	0.044		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-AUG-20	12-AUG-20	R5184259
Calcium (Ca)-Dissolved	109		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cobalt (Co)-Dissolved	0.65		0.10	ug/L	10-AUG-20	12-AUG-20	R5184259
Copper (Cu)-Dissolved	0.00048		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Iron (Fe)-Dissolved	1.24		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Lithium (Li)-Dissolved	0.0080		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Magnesium (Mg)-Dissolved	39.1		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Manganese (Mn)-Dissolved	0.179		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Molybdenum (Mo)-Dissolved	0.00170		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Nickel (Ni)-Dissolved	0.00140		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Potassium (K)-Dissolved	1.77		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-AUG-20	12-AUG-20	R5184259
Silicon (Si)-Dissolved	5.18		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-4 CM_MW7-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 06-AUG-20 @ 13:47							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Sodium (Na)-Dissolved	19.8		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Strontium (Sr)-Dissolved	0.490		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Tin (Sn)-Dissolved	0.00017		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Uranium (U)-Dissolved	0.00112		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Hardness							
Hardness (as CaCO3)	433		0.50	mg/L		13-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	5.5		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	246		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	246		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0578		0.0050	mg/L		12-AUG-20	R5187421
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.051		0.050	mg/L		11-AUG-20	R5180425
Chloride in Water by IC							
Chloride (Cl)	13.1		0.50	mg/L		11-AUG-20	R5180425
Electrical Conductivity (EC)							
Conductivity (@ 25C)	710		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.249		0.020	mg/L		11-AUG-20	R5180425
Ion Balance Calculation							
Cation - Anion Balance	6.4			%		13-AUG-20	
Anion Sum	8.46			meq/L		13-AUG-20	
Cation Sum	9.62			meq/L		13-AUG-20	
Ion Balance Calculation							
Ion Balance	114		-100	%		13-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050	HTD	0.0050	mg/L		11-AUG-20	R5180425
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010	HTD	0.0010	mg/L		11-AUG-20	R5180425
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-AUG-20	R5176624
Oxidation redution potential by elect.							
ORP	318		-1000	mV		10-AUG-20	R5178696
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0175		0.0020	mg/L		12-AUG-20	R5182613
Sulfate in Water by IC							
Sulfate (SO4)	152		0.30	mg/L		11-AUG-20	R5180425
Total Dissolved Solids							
Total Dissolved Solids	521	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	36.8		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	25.2		0.10	NTU		07-AUG-20	R5176652

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-4 CM_MW7-SH_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 13:47 Matrix: WG							
pH pH	8.06		0.10	pH		12-AUG-20	R5182917
L2485629-5 CM_MW8_WG_2020-07-13_N Sampled By: SH/JD on 06-AUG-20 @ 00:49 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		10-AUG-20	R5181999
Total Kjeldahl Nitrogen	0.804		0.050	mg/L		10-AUG-20	R5177777
Total Organic Carbon	<0.50		0.50	mg/L		10-AUG-20	R5181999
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-AUG-20	12-AUG-20	R5184259
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-AUG-20	12-AUG-20	R5181836
Dissolved Mercury Filtration Location	FIELD					12-AUG-20	R5182717
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					10-AUG-20	R5178880
Aluminum (Al)-Dissolved	0.0041		0.0030	mg/L	10-AUG-20	12-AUG-20	R5184259
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Arsenic (As)-Dissolved	0.00038		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Barium (Ba)-Dissolved	0.135		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Boron (B)-Dissolved	0.345		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-AUG-20	12-AUG-20	R5184259
Calcium (Ca)-Dissolved	76.4		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Cobalt (Co)-Dissolved	1.01		0.10	ug/L	10-AUG-20	12-AUG-20	R5184259
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Iron (Fe)-Dissolved	1.10		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Lithium (Li)-Dissolved	0.0787		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Magnesium (Mg)-Dissolved	22.0		0.10	mg/L	10-AUG-20	12-AUG-20	R5184259
Manganese (Mn)-Dissolved	0.388		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Molybdenum (Mo)-Dissolved	0.000878		0.000050	mg/L	10-AUG-20	12-AUG-20	R5184259
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Potassium (K)-Dissolved	2.92		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-AUG-20	12-AUG-20	R5184259
Silicon (Si)-Dissolved	6.41		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Sodium (Na)-Dissolved	53.0		0.050	mg/L	10-AUG-20	12-AUG-20	R5184259
Strontium (Sr)-Dissolved	5.93		0.00020	mg/L	10-AUG-20	12-AUG-20	R5184259
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Tin (Sn)-Dissolved	0.00020		0.00010	mg/L	10-AUG-20	12-AUG-20	R5184259
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-AUG-20	12-AUG-20	R5184259
Uranium (U)-Dissolved	0.000487		0.000010	mg/L	10-AUG-20	12-AUG-20	R5184259
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-AUG-20	12-AUG-20	R5184259
Zinc (Zn)-Dissolved	0.0024		0.0010	mg/L	10-AUG-20	12-AUG-20	R5184259
Hardness							
Hardness (as CaCO3)	282		0.50	mg/L		13-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485629-5 CM_MW8_WG_2020-07-13_N							
Sampled By: SH/JD on 06-AUG-20 @ 00:49							
Matrix: WG							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	299		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	299		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.812	DLHC	0.025	mg/L		12-AUG-20	R5187421
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-AUG-20	R5180425
Chloride in Water by IC							
Chloride (Cl)	1.95		0.50	mg/L		08-AUG-20	R5180425
Electrical Conductivity (EC)							
Conductivity (@ 25C)	573		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.276		0.020	mg/L		08-AUG-20	R5180425
Ion Balance Calculation							
Cation - Anion Balance	7.0			%		13-AUG-20	
Anion Sum	7.02			meq/L		13-AUG-20	
Cation Sum	8.08			meq/L		13-AUG-20	
Ion Balance Calculation							
Ion Balance	115		-100	%		13-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		08-AUG-20	R5180425
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-AUG-20	R5180425
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-AUG-20	R5176624
Oxidation redution potential by elect.							
ORP	358		-1000	mV		10-AUG-20	R5178696
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0096		0.0020	mg/L		12-AUG-20	R5182613
Sulfate in Water by IC							
Sulfate (SO4)	46.9		0.30	mg/L		08-AUG-20	R5180425
Total Dissolved Solids							
Total Dissolved Solids	394	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	3.2		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	20.5		0.10	NTU		07-AUG-20	R5176652
pH							
pH	8.23		0.10	pH		12-AUG-20	R5182917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200806

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2485629

Report Date: 06-NOV-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5181876							
WG3381432-8	LCS							
Acidity (as CaCO3)			99.8		%		85-115	11-AUG-20
WG3381432-7	MB							
Acidity (as CaCO3)			1.6		mg/L		2	11-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5182917							
WG3381829-8	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	12-AUG-20
WG3381829-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5184259							
WG3380308-2	LCS							
Beryllium (Be)-Dissolved			100.8		%		80-120	12-AUG-20
WG3380308-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5180425							
WG3380874-10	LCS							
Bromide (Br)			99.5		%		85-115	08-AUG-20
WG3380874-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5181999							
WG3381480-14	LCS							
Dissolved Organic Carbon			105.2		%		80-120	10-AUG-20
WG3381480-13	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-AUG-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5181999							
WG3381480-14	LCS							
Total Organic Carbon			98.3		%		80-120	10-AUG-20
WG3381480-13	MB							
Total Organic Carbon			<0.50		mg/L		0.5	10-AUG-20
CL-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2485629

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-CL								
Batch R5180425								
WG3380874-10	LCS							
Chloride (Cl)			98.1		%		90-110	08-AUG-20
WG3380874-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-AUG-20
EC-L-PCT-CL								
Batch R5182917								
WG3381829-8	LCS							
Conductivity (@ 25C)			95.6		%		90-110	12-AUG-20
WG3381829-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-AUG-20
F-IC-N-CL								
Batch R5180425								
WG3380874-10	LCS							
Fluoride (F)			95.3		%		90-110	08-AUG-20
WG3380874-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	08-AUG-20
HG-D-CVAA-VA								
Batch R5181836								
WG3381762-11	DUP	L2485629-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	12-AUG-20
WG3381762-10	LCS							
Mercury (Hg)-Dissolved			93.7		%		80-120	12-AUG-20
WG3381762-9	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	12-AUG-20
WG3381762-12	MS	L2485629-5						
Mercury (Hg)-Dissolved			91.4		%		70-130	12-AUG-20
MET-D-CCMS-VA								
Batch R5184259								
WG3380308-2	LCS							
Aluminum (Al)-Dissolved			115.4		%		80-120	12-AUG-20
Antimony (Sb)-Dissolved			115.6		%		80-120	12-AUG-20
Arsenic (As)-Dissolved			107.6		%		80-120	12-AUG-20
Barium (Ba)-Dissolved			105.0		%		80-120	12-AUG-20
Bismuth (Bi)-Dissolved			125.2	MES	%		80-120	12-AUG-20
Boron (B)-Dissolved			110.5		%		80-120	12-AUG-20
Cadmium (Cd)-Dissolved			99.0		%		80-120	12-AUG-20
Calcium (Ca)-Dissolved			100.0		%		80-120	12-AUG-20



Quality Control Report

Workorder: L2485629

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5184259							
WG3380308-2	LCS							
Chromium (Cr)-Dissolved			111.5		%		80-120	12-AUG-20
Cobalt (Co)-Dissolved			106.2		%		80-120	12-AUG-20
Copper (Cu)-Dissolved			108.7		%		80-120	12-AUG-20
Iron (Fe)-Dissolved			105.9		%		80-120	12-AUG-20
Lead (Pb)-Dissolved			113.0		%		80-120	12-AUG-20
Lithium (Li)-Dissolved			105.1		%		80-120	12-AUG-20
Magnesium (Mg)-Dissolved			105.1		%		80-120	12-AUG-20
Manganese (Mn)-Dissolved			110.5		%		80-120	12-AUG-20
Molybdenum (Mo)-Dissolved			114.1		%		80-120	12-AUG-20
Nickel (Ni)-Dissolved			109.5		%		80-120	12-AUG-20
Potassium (K)-Dissolved			105.3		%		80-120	12-AUG-20
Selenium (Se)-Dissolved			105.9		%		80-120	12-AUG-20
Silicon (Si)-Dissolved			108.9		%		60-140	12-AUG-20
Silver (Ag)-Dissolved			115.2		%		80-120	12-AUG-20
Sodium (Na)-Dissolved			110.0		%		80-120	12-AUG-20
Strontium (Sr)-Dissolved			112.2		%		80-120	12-AUG-20
Thallium (Tl)-Dissolved			116.2		%		80-120	12-AUG-20
Tin (Sn)-Dissolved			110.1		%		80-120	12-AUG-20
Titanium (Ti)-Dissolved			106.8		%		80-120	12-AUG-20
Uranium (U)-Dissolved			113.9		%		80-120	12-AUG-20
Vanadium (V)-Dissolved			112.2		%		80-120	12-AUG-20
Zinc (Zn)-Dissolved			113.9		%		80-120	12-AUG-20
WG3380308-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-AUG-20



Quality Control Report

Workorder: L2485629

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5184259							
WG3380308-1	MB	NP						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5187421							
WG3382237-22	LCS							
Ammonia as N			107.2		%		85-115	12-AUG-20
WG3382237-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5180425							
WG3380874-10	LCS							
Nitrite (as N)			97.7		%		90-110	08-AUG-20
WG3380874-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-AUG-20
NO3-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2485629

Report Date: 06-NOV-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5180425							
WG3380874-10	LCS							
Nitrate (as N)			98.3		%		90-110	08-AUG-20
WG3380874-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-AUG-20
ORP-CL	Water							
Batch	R5178696							
WG3380117-19	CRM	CL-ORP						
ORP			225		mV		210-230	10-AUG-20
WG3380117-20	DUP	L2485629-5						
ORP		358	352	J	mV	5.5	15	10-AUG-20
P-T-L-COL-CL	Water							
Batch	R5182613							
WG3381726-18	LCS							
Phosphorus (P)-Total			108.3		%		80-120	12-AUG-20
WG3381726-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-AUG-20
PH-CL	Water							
Batch	R5182917							
WG3381829-8	LCS							
pH			6.99		pH		6.9-7.1	12-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5176624							
WG3378882-14	LCS							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	07-AUG-20
WG3378882-13	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-AUG-20
SO4-IC-N-CL	Water							
Batch	R5180425							
WG3380874-10	LCS							
Sulfate (SO4)			99.0		%		90-110	08-AUG-20
WG3380874-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-AUG-20
SOLIDS-TDS-CL	Water							



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5186202							
WG3381440-3	DUP	L2485629-3						
Total Dissolved Solids		1650	1690		mg/L	2.4	20	12-AUG-20
WG3381440-2	LCS							
Total Dissolved Solids			102.9		%		85-115	12-AUG-20
WG3381440-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-AUG-20
TKN-L-F-CL								
	Water							
Batch	R5177777							
WG3379993-11	LCS							
Total Kjeldahl Nitrogen			93.3		%		75-125	10-AUG-20
WG3379993-15	LCS							
Total Kjeldahl Nitrogen			95.4		%		75-125	10-AUG-20
WG3379993-19	LCS							
Total Kjeldahl Nitrogen			98.3		%		75-125	10-AUG-20
WG3379993-21	LCS							
Total Kjeldahl Nitrogen			95.4		%		75-125	10-AUG-20
WG3379993-26	LCS							
Total Kjeldahl Nitrogen			97.8		%		75-125	10-AUG-20
WG3379993-28	LCS							
Total Kjeldahl Nitrogen			95.6		%		75-125	10-AUG-20
WG3379993-10	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
WG3379993-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
WG3379993-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
WG3379993-20	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
WG3379993-25	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
WG3379993-27	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-AUG-20
TSS-L-CL								
	Water							
Batch	R5185979							
WG3381948-2	LCS							
Total Suspended Solids			101.4		%		85-115	12-AUG-20
WG3381948-1	MB							
Total Suspended Solids			<1.0		mg/L		1	12-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL								
	Water							
Batch	R5176652							
WG3378871-18	DUP	L2485629-4						
Turbidity		25.2	23.6		NTU	6.6	15	07-AUG-20
WG3378871-17	LCS							
Turbidity			98.5		%		85-115	07-AUG-20
WG3378871-16	MB							
Turbidity			<0.10		NTU		0.1	07-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	06-AUG-20 10:12	10-AUG-20 12:45	0.25	99	hours	EHTR-FM
	2	06-AUG-20 10:15	10-AUG-20 12:45	0.25	98	hours	EHTR-FM
	3	06-AUG-20 13:27	10-AUG-20 12:45	0.25	95	hours	EHTR-FM
	4	06-AUG-20 13:47	10-AUG-20 12:45	0.25	95	hours	EHTR-FM
	5	06-AUG-20 00:49	10-AUG-20 12:45	0.25	108	hours	EHTR-FM
pH							
	1	06-AUG-20 10:12	12-AUG-20 13:00	0.25	147	hours	EHTR-FM
	2	06-AUG-20 10:15	12-AUG-20 13:00	0.25	147	hours	EHTR-FM
	3	06-AUG-20 13:27	12-AUG-20 13:00	0.25	144	hours	EHTR-FM
	4	06-AUG-20 13:47	12-AUG-20 13:00	0.25	143	hours	EHTR-FM
	5	06-AUG-20 00:49	12-AUG-20 13:00	0.25	156	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	06-AUG-20 10:12	11-AUG-20 10:02	3	5	days	EHT
	2	06-AUG-20 10:15	11-AUG-20 10:02	3	5	days	EHT
	4	06-AUG-20 13:47	11-AUG-20 10:02	3	5	days	EHT
Nitrite in Water by IC (Low Level)							
	1	06-AUG-20 10:12	11-AUG-20 10:02	3	5	days	EHT
	2	06-AUG-20 10:15	11-AUG-20 10:02	3	5	days	EHT
	4	06-AUG-20 13:47	11-AUG-20 10:02	3	5	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
 EHT: Exceeded ALS recommended hold time prior to analysis.
 Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2485629 were received on 07-AUG-20 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC_WG_Q3_20200806**

TURNAROUND TIME: Regular

RUSH: No

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	inayat.dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	VPO00683186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2485629-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED					ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA
								F	N	F	F	N					
CM_MW6-DP_WG_2020-07-13_N	CM_MW6-DP	WG	No	2020/08/6	10:12	G	5	1	1	1	1	1					
CM_MW6-SH_WG_2020-07-13_N	CM_MW6-SH	WG	No	2020/08/6	10:15	G	5	1	1	1	1	1					
CM_MW7-DP_WG_2020-07-13_N	CM_MW7-DP	WG	No	2020/08/6	13:27	G	5	1	1	1	1	1					
CM_MW7-SH_WG_2020-07-13_N	CM_MW7-SH	WG	No	2020/08/6	13:47	G	5	1	1	1	1	1					
CM_MW8_WG_2020-07-13_N	CM_MW8	WG	No	2020/08/6	12:49	G	5	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Request analyses of bicarbonate and HCO₃, hydroxide as OH and carbonate as CO₃ rather than bicarbonate as CaCO₃, Carbonate as CaCO₃ and hydroxide as CaCO₃.

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

JM
08/07 9:15

SERVICE REQUEST (rush - subject to availability)

Regular (default) X
Priority (2-3 business days) - 50% surcharge
Emergency (1 Business Day) - 100% surcharge
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

SH/JD

Mobile #

250-425-7522

Sampler's Signature

[Signature]

Date/Time

August 6, 2020

20



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 08-AUG-20
Report Date: 04-FEB-21 11:01 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2485709
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200807
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 16:48
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-1 CM_MW1-DP_WG_2020-07-13_N							
Sampled By: VS/JD on 07-AUG-20 @ 11:50							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	404		5.0	mg/L		12-AUG-20	R5182917
Carbonate (CO3)	16.7		5.0	mg/L		12-AUG-20	R5182917
Dissolved Organic Carbon	1.66		0.50	mg/L		12-AUG-20	R5183138
Hydroxide (OH)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Total Kjeldahl Nitrogen	0.606		0.050	mg/L		12-AUG-20	R5183796
Total Organic Carbon	1.66		0.50	mg/L		12-AUG-20	R5183138
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-AUG-20	14-AUG-20	R5189450
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186840
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-AUG-20	13-AUG-20	R5184499
Dissolved Mercury Filtration Location	FIELD					13-AUG-20	R5186376
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186840
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-AUG-20	14-AUG-20	R5189450
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Arsenic (As)-Dissolved	0.00244		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Barium (Ba)-Dissolved	10.8		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Boron (B)-Dissolved	0.227		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	13-AUG-20	14-AUG-20	R5189450
Calcium (Ca)-Dissolved	27.9		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cobalt (Co)-Dissolved	0.23		0.10	ug/L	13-AUG-20	14-AUG-20	R5189450
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Iron (Fe)-Dissolved	0.610		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Lithium (Li)-Dissolved	0.698		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Magnesium (Mg)-Dissolved	15.8		0.10	mg/L	13-AUG-20	14-AUG-20	R5189450
Manganese (Mn)-Dissolved	0.113		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Molybdenum (Mo)-Dissolved	0.00367		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Potassium (K)-Dissolved	5.36		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	13-AUG-20	14-AUG-20	R5189450
Silicon (Si)-Dissolved	4.68		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Silver (Ag)-Dissolved	0.000031		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Sodium (Na)-Dissolved	244		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Strontium (Sr)-Dissolved	2.48		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Uranium (U)-Dissolved	0.000418		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Zinc (Zn)-Dissolved	0.0059		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Hardness							
Hardness (as CaCO3)	135		0.50	mg/L		14-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-1 CM_MW1-DP_WG_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 11:50 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	331		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	27.8		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	359		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.545	DLHC	0.050	mg/L		14-AUG-20	R5187676
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.86	DLHC	0.25	mg/L		08-AUG-20	R5177038
Chloride in Water by IC							
Chloride (Cl)	232	DLHC	2.5	mg/L		08-AUG-20	R5177038
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1300		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.16	DLHC	0.10	mg/L		08-AUG-20	R5177038
Ion Balance Calculation							
Ion Balance	98.2		-100	%		14-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.9			%		14-AUG-20	
Anion Sum	13.7			meq/L		14-AUG-20	
Cation Sum	13.5			meq/L		14-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.048	DLHC	0.025	mg/L		08-AUG-20	R5177038
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		08-AUG-20	R5177038
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0329		0.0010	mg/L		09-AUG-20	R5177111
Oxidation redution potential by elect.							
ORP	388		-1000	mV		11-AUG-20	R5179964
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0308		0.0020	mg/L		11-AUG-20	R5179818
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		08-AUG-20	R5177038
Total Dissolved Solids							
Total Dissolved Solids	788	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	3.8		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	11.5		0.10	NTU		09-AUG-20	R5177015
pH							
pH	8.63		0.10	pH		12-AUG-20	R5182917
L2485709-2 CM_MW1-OB_WG_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 11:10 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	348		5.0	mg/L		12-AUG-20	R5182917
Carbonate (CO3)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Dissolved Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Hydroxide (OH)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Total Kjeldahl Nitrogen	0.252		0.050	mg/L		13-AUG-20	R5183796
Total Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-2 CM_MW1-OB_WG_2020-07-13_N							
Sampled By: VS/JD on 07-AUG-20 @ 11:10							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-AUG-20	14-AUG-20	R5189450
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186840
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-AUG-20	13-AUG-20	R5184499
Dissolved Mercury Filtration Location	FIELD					13-AUG-20	R5186376
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186840
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-AUG-20	14-AUG-20	R5189450
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Barium (Ba)-Dissolved	0.103		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Boron (B)-Dissolved	0.038		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cadmium (Cd)-Dissolved	0.0555		0.0050	ug/L	13-AUG-20	14-AUG-20	R5189450
Calcium (Ca)-Dissolved	125		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Chromium (Cr)-Dissolved	0.00088		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	13-AUG-20	14-AUG-20	R5189450
Copper (Cu)-Dissolved	0.00341		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Lead (Pb)-Dissolved	0.000117		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Lithium (Li)-Dissolved	0.0212		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Magnesium (Mg)-Dissolved	38.2		0.10	mg/L	13-AUG-20	14-AUG-20	R5189450
Manganese (Mn)-Dissolved	0.00021		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Molybdenum (Mo)-Dissolved	0.000376		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Nickel (Ni)-Dissolved	0.00070		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Potassium (K)-Dissolved	2.49		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Selenium (Se)-Dissolved	3.90		0.050	ug/L	13-AUG-20	14-AUG-20	R5189450
Silicon (Si)-Dissolved	3.46		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Sodium (Na)-Dissolved	76.9		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Strontium (Sr)-Dissolved	0.381		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Thallium (Tl)-Dissolved	0.000022		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Uranium (U)-Dissolved	0.00123		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Zinc (Zn)-Dissolved	0.0498		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Hardness							
Hardness (as CaCO3)	469		0.50	mg/L		14-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	285		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	7.2		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	292		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0051		0.0050	mg/L		13-AUG-20	R5187676
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		08-AUG-20	R5177038
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-2 CM_MW1-OB_WG_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 11:10 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	90.6	DLHC	2.5	mg/L		08-AUG-20	R5177038
Electrical Conductivity (EC) Conductivity (@ 25C)	1090		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC Fluoride (F)	0.12	DLHC	0.10	mg/L		08-AUG-20	R5177038
Ion Balance Calculation Ion Balance	101		-100	%		14-AUG-20	
Ion Balance Calculation Cation - Anion Balance	0.7			%		14-AUG-20	
Anion Sum	12.6			meq/L		14-AUG-20	
Cation Sum	12.8			meq/L		14-AUG-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.713	DLHC	0.025	mg/L		08-AUG-20	R5177038
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		08-AUG-20	R5177038
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0037		0.0010	mg/L		09-AUG-20	R5177111
Oxidation redution potential by elect. ORP	417		-1000	mV		11-AUG-20	R5179964
Phosphorus (P)-Total Phosphorus (P)-Total	0.0034		0.0020	mg/L		11-AUG-20	R5179818
Sulfate in Water by IC Sulfate (SO4)	200	DLHC	1.5	mg/L		08-AUG-20	R5177038
Total Dissolved Solids Total Dissolved Solids	788	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		12-AUG-20	R5185979
Turbidity Turbidity	0.18		0.10	NTU		09-AUG-20	R5177015
pH pH	8.34		0.10	pH		12-AUG-20	R5182917
L2485709-3 CM_MW1-SH_WG_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 10:45 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	239		5.0	mg/L		12-AUG-20	R5182917
Carbonate (CO3)	6.6		5.0	mg/L		12-AUG-20	R5182917
Dissolved Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Hydroxide (OH)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Total Kjeldahl Nitrogen	0.066		0.050	mg/L		13-AUG-20	R5183796
Total Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-AUG-20	14-AUG-20	R5189450
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-AUG-20	13-AUG-20	R5184499
Dissolved Mercury Filtration Location	FIELD					13-AUG-20	R5186376
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-AUG-20	14-AUG-20	R5189450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-3 CM_MW1-SH_WG_2020-07-13_N							
Sampled By: VS/JD on 07-AUG-20 @ 10:45							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Arsenic (As)-Dissolved	0.00213		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Barium (Ba)-Dissolved	0.343		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Boron (B)-Dissolved	0.053		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cadmium (Cd)-Dissolved	<0.025	DLM	0.025	ug/L	13-AUG-20	14-AUG-20	R5189450
Calcium (Ca)-Dissolved	28.3		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	13-AUG-20	14-AUG-20	R5189450
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Iron (Fe)-Dissolved	0.560		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Lithium (Li)-Dissolved	0.0195		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Magnesium (Mg)-Dissolved	9.88		0.10	mg/L	13-AUG-20	14-AUG-20	R5189450
Manganese (Mn)-Dissolved	0.148		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Molybdenum (Mo)-Dissolved	0.0537		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Potassium (K)-Dissolved	1.15		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Selenium (Se)-Dissolved	0.421		0.050	ug/L	13-AUG-20	14-AUG-20	R5189450
Silicon (Si)-Dissolved	3.44		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Sodium (Na)-Dissolved	170		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Strontium (Sr)-Dissolved	0.311		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Uranium (U)-Dissolved	0.000664		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Hardness							
Hardness (as CaCO3)	111		0.50	mg/L		14-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	196		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	11.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	207		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0502		0.0050	mg/L		13-AUG-20	R5187676
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.790		0.050	mg/L		08-AUG-20	R5177038
Chloride in Water by IC							
Chloride (Cl)	190		0.50	mg/L		08-AUG-20	R5177038
Electrical Conductivity (EC)							
Conductivity (@ 25C)	957		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.795		0.020	mg/L		08-AUG-20	R5177038
Ion Balance Calculation							
Cation - Anion Balance	0.2			%		14-AUG-20	
Anion Sum	9.67			meq/L		14-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-3 CM_MW1-SH_WG_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 10:45 Matrix: WG							
Ion Balance Calculation							
Cation Sum	9.71			meq/L		14-AUG-20	
Ion Balance Calculation							
Ion Balance	100		-100	%		14-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		08-AUG-20	R5177038
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-AUG-20	R5177038
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		09-AUG-20	R5177111
Oxidation redution potential by elect.							
ORP	366		-1000	mV		11-AUG-20	R5179964
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0056		0.0020	mg/L		11-AUG-20	R5179818
Sulfate in Water by IC							
Sulfate (SO4)	7.32		0.30	mg/L		08-AUG-20	R5177038
Total Dissolved Solids							
Total Dissolved Solids	533	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids							
Total Suspended Solids	1.1		1.0	mg/L		12-AUG-20	R5185979
Turbidity							
Turbidity	5.07		0.10	NTU		09-AUG-20	R5177015
pH							
pH	8.50		0.10	pH		12-AUG-20	R5182917
L2485709-4 CM_NNP2_WS_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	239		5.0	mg/L		12-AUG-20	R5182917
Carbonate (CO3)	7.0		5.0	mg/L		12-AUG-20	R5182917
Dissolved Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Hydroxide (OH)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Total Kjeldahl Nitrogen	0.145		0.050	mg/L		13-AUG-20	R5183796
Total Organic Carbon	<0.50		0.50	mg/L		12-AUG-20	R5183138
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-AUG-20	14-AUG-20	R5189450
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-AUG-20	13-AUG-20	R5184499
Dissolved Mercury Filtration Location	FIELD					13-AUG-20	R5186376
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-AUG-20	14-AUG-20	R5189450
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Arsenic (As)-Dissolved	0.00219		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Barium (Ba)-Dissolved	0.336		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Boron (B)-Dissolved	0.053		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cadmium (Cd)-Dissolved	<0.025	DLM	0.025	ug/L	13-AUG-20	14-AUG-20	R5189450
Calcium (Ca)-Dissolved	28.4		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-4 CM_NNP2_WS_2020-07-13_N							
Sampled By: VS/JD on 07-AUG-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	13-AUG-20	14-AUG-20	R5189450
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Iron (Fe)-Dissolved	0.598		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Lithium (Li)-Dissolved	0.0197		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Magnesium (Mg)-Dissolved	9.83		0.10	mg/L	13-AUG-20	14-AUG-20	R5189450
Manganese (Mn)-Dissolved	0.153		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Molybdenum (Mo)-Dissolved	0.0515		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Potassium (K)-Dissolved	1.19		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	13-AUG-20	14-AUG-20	R5189450
Silicon (Si)-Dissolved	3.48		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Sodium (Na)-Dissolved	172		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Strontium (Sr)-Dissolved	0.300		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Uranium (U)-Dissolved	0.000659		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Hardness							
Hardness (as CaCO3)	111		0.50	mg/L		14-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	196		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	11.6		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	208		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	0.0452		0.0050	mg/L		13-AUG-20	R5187676
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.776		0.050	mg/L		08-AUG-20	R5177038
Chloride in Water by IC							
Chloride (Cl)	177		0.50	mg/L		08-AUG-20	R5177038
Electrical Conductivity (EC)							
Conductivity (@ 25C)	912		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	0.781		0.020	mg/L		08-AUG-20	R5177038
Ion Balance Calculation							
Cation - Anion Balance	2.4			%		14-AUG-20	
Anion Sum	9.32			meq/L		14-AUG-20	
Cation Sum	9.77			meq/L		14-AUG-20	
Ion Balance Calculation							
Ion Balance	105		-100	%		14-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		08-AUG-20	R5177038
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-AUG-20	R5177038
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-4 CM_NNP2_WS_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 12:00 Matrix: WG							
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		09-AUG-20	R5177111
Oxidation redution potential by elect. ORP	368		-1000	mV		11-AUG-20	R5179964
Phosphorus (P)-Total Phosphorus (P)-Total	0.0099		0.0020	mg/L		11-AUG-20	R5179818
Sulfate in Water by IC Sulfate (SO4)	6.26		0.30	mg/L		08-AUG-20	R5177038
Total Dissolved Solids Total Dissolved Solids	519	DLHC	20	mg/L		12-AUG-20	R5186202
Total Suspended Solids Total Suspended Solids	1.2		1.0	mg/L		12-AUG-20	R5185979
Turbidity Turbidity	5.75		0.10	NTU		09-AUG-20	R5177015
pH pH	8.52		0.10	pH		12-AUG-20	R5182917
L2485709-5 CM_TRP_WS_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Carbonate (CO3)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-AUG-20	R5189508
Hydroxide (OH)	<5.0		5.0	mg/L		12-AUG-20	R5182917
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		12-AUG-20	R5183796
Total Organic Carbon	<0.50		0.50	mg/L		14-AUG-20	R5189508
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-AUG-20	14-AUG-20	R5189450
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-AUG-20	13-AUG-20	R5184499
Dissolved Mercury Filtration Location	FIELD					13-AUG-20	R5186376
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					13-AUG-20	R5186841
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-AUG-20	14-AUG-20	R5189450
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Boron (B)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	13-AUG-20	14-AUG-20	R5189450
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	13-AUG-20	14-AUG-20	R5189450
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	13-AUG-20	14-AUG-20	R5189450
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	13-AUG-20	14-AUG-20	R5189450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-5 CM_TRP_WS_2020-07-13_N							
Sampled By: VS/JD on 07-AUG-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Potassium (K)-Dissolved	<0.050		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	13-AUG-20	14-AUG-20	R5189450
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	13-AUG-20	14-AUG-20	R5189450
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	13-AUG-20	14-AUG-20	R5189450
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-AUG-20	14-AUG-20	R5189450
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-AUG-20	14-AUG-20	R5189450
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	13-AUG-20	14-AUG-20	R5189450
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-AUG-20	14-AUG-20	R5189450
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	13-AUG-20	14-AUG-20	R5189450
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		14-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		11-AUG-20	R5181876
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		12-AUG-20	R5182917
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		13-AUG-20	R5187676
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		08-AUG-20	R5177038
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		08-AUG-20	R5177038
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		12-AUG-20	R5182917
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		08-AUG-20	R5177038
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		14-AUG-20	
Anion Sum	<0.10			meq/L		14-AUG-20	
Cation Sum	<0.10			meq/L		14-AUG-20	
Ion Balance Calculation							
Ion Balance	0.0		-100	%		14-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		08-AUG-20	R5177038
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		08-AUG-20	R5177038
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		09-AUG-20	R5177111
Oxidation redution potential by elect.							
ORP	451		-1000	mV		11-AUG-20	R5179964
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		11-AUG-20	R5179818
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		08-AUG-20	R5177038
Total Dissolved Solids							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2485709-5 CM_TRP_WS_2020-07-13_N Sampled By: VS/JD on 07-AUG-20 @ 12:00 Matrix: WG Total Dissolved Solids Total Dissolved Solids	<10		10	mg/L		12-AUG-20	R5186202
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		12-AUG-20	R5185979
Turbidity Turbidity	<0.10		0.10	NTU		09-AUG-20	R5177015
pH pH	5.60		0.10	pH		12-AUG-20	R5182917

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200807

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2485709

Report Date: 04-FEB-21

Page 1 of 11

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL		Water						
Batch	R5181876							
WG3381432-11	LCS							
Acidity (as CaCO3)			96.1		%		85-115	11-AUG-20
WG3381432-10	MB							
Acidity (as CaCO3)			1.4		mg/L		2	11-AUG-20
ALK-MAN-CL		Water						
Batch	R5182917							
WG3381829-8	LCS							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	12-AUG-20
WG3381829-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-AUG-20
BE-D-L-CCMS-VA		Water						
Batch	R5189450							
WG3383123-2	LCS							
Beryllium (Be)-Dissolved			109.9		%		80-120	14-AUG-20
WG3383124-2	LCS							
Beryllium (Be)-Dissolved			104.9		%		80-120	14-AUG-20
WG3383123-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-AUG-20
WG3383124-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-AUG-20
BIC-CL		Water						
Batch	R5182917							
WG3381829-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-AUG-20
BR-L-IC-N-CL		Water						
Batch	R5177038							
WG3379464-6	LCS							
Bromide (Br)			104.1		%		85-115	08-AUG-20
WG3379464-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	08-AUG-20
C-DIS-ORG-LOW-CL		Water						
Batch	R5183138							
WG3381908-6	LCS							
Dissolved Organic Carbon			106.9		%		80-120	12-AUG-20
WG3381908-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5189508							
WG3384194-2	LCS							
Dissolved Organic Carbon			110.5		%		80-120	14-AUG-20
WG3384194-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-AUG-20
WG3384194-4	MS	L2485709-5						
Dissolved Organic Carbon			110.2		%		70-130	14-AUG-20
C-TOT-ORG-LOW-CL								
	Water							
Batch	R5183138							
WG3381908-6	LCS							
Total Organic Carbon			107.8		%		80-120	12-AUG-20
WG3381908-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-AUG-20
Batch	R5189508							
WG3384194-3	DUP	L2485709-5						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-AUG-20
WG3384194-2	LCS							
Total Organic Carbon			114.0		%		80-120	14-AUG-20
WG3384194-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-AUG-20
WG3384194-4	MS	L2485709-5						
Total Organic Carbon			124.7		%		70-130	14-AUG-20
CL-IC-N-CL								
	Water							
Batch	R5177038							
WG3379464-6	LCS							
Chloride (Cl)			98.3		%		90-110	08-AUG-20
WG3379464-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	08-AUG-20
CO3-CL								
	Water							
Batch	R5182917							
WG3381829-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	12-AUG-20
EC-L-PCT-CL								
	Water							
Batch	R5182917							
WG3381829-8	LCS							
Conductivity (@ 25C)			95.6		%		90-110	12-AUG-20
WG3381829-7	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-L-PCT-CL								
Water								
Batch R5182917								
WG3381829-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-AUG-20
F-IC-N-CL								
Water								
Batch R5177038								
WG3379464-6 LCS								
Fluoride (F)			101.7		%		90-110	08-AUG-20
WG3379464-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	08-AUG-20
HG-D-CVAA-VA								
Water								
Batch R5184499								
WG3382863-2 LCS								
Mercury (Hg)-Dissolved			101.1		%		80-120	13-AUG-20
WG3382863-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	13-AUG-20
MET-D-CCMS-VA								
Water								
Batch R5189450								
WG3383123-2 LCS								
Aluminum (Al)-Dissolved			109.1		%		80-120	14-AUG-20
Antimony (Sb)-Dissolved			111.7		%		80-120	14-AUG-20
Arsenic (As)-Dissolved			118.3		%		80-120	14-AUG-20
Barium (Ba)-Dissolved			113.7		%		80-120	14-AUG-20
Bismuth (Bi)-Dissolved			106.5		%		80-120	14-AUG-20
Boron (B)-Dissolved			96.4		%		80-120	14-AUG-20
Cadmium (Cd)-Dissolved			119.5		%		80-120	14-AUG-20
Calcium (Ca)-Dissolved			102.7		%		80-120	14-AUG-20
Chromium (Cr)-Dissolved			105.4		%		80-120	14-AUG-20
Cobalt (Co)-Dissolved			106.7		%		80-120	14-AUG-20
Copper (Cu)-Dissolved			111.2		%		80-120	14-AUG-20
Iron (Fe)-Dissolved			109.0		%		80-120	14-AUG-20
Lead (Pb)-Dissolved			110.3		%		80-120	14-AUG-20
Lithium (Li)-Dissolved			100.6		%		80-120	14-AUG-20
Magnesium (Mg)-Dissolved			98.8		%		80-120	14-AUG-20
Manganese (Mn)-Dissolved			108.7		%		80-120	14-AUG-20
Molybdenum (Mo)-Dissolved			107.5		%		80-120	14-AUG-20
Nickel (Ni)-Dissolved			107.1		%		80-120	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5189450							
WG3383123-2	LCS							
Potassium (K)-Dissolved			118.7		%		80-120	14-AUG-20
Selenium (Se)-Dissolved			125.4	MES	%		80-120	14-AUG-20
Silicon (Si)-Dissolved			99.7		%		60-140	14-AUG-20
Silver (Ag)-Dissolved			113.8		%		80-120	14-AUG-20
Sodium (Na)-Dissolved			111.4		%		80-120	14-AUG-20
Strontium (Sr)-Dissolved			115.4		%		80-120	14-AUG-20
Thallium (Tl)-Dissolved			109.6		%		80-120	14-AUG-20
Tin (Sn)-Dissolved			108.0		%		80-120	14-AUG-20
Titanium (Ti)-Dissolved			103.8		%		80-120	14-AUG-20
Uranium (U)-Dissolved			109.3		%		80-120	14-AUG-20
Vanadium (V)-Dissolved			105.7		%		80-120	14-AUG-20
Zinc (Zn)-Dissolved			126.0	MES	%		80-120	14-AUG-20
WG3383124-2	LCS							
Aluminum (Al)-Dissolved			102.8		%		80-120	14-AUG-20
Antimony (Sb)-Dissolved			104.2		%		80-120	14-AUG-20
Arsenic (As)-Dissolved			111.2		%		80-120	14-AUG-20
Barium (Ba)-Dissolved			109.6		%		80-120	14-AUG-20
Bismuth (Bi)-Dissolved			102.1		%		80-120	14-AUG-20
Boron (B)-Dissolved			95.3		%		80-120	14-AUG-20
Cadmium (Cd)-Dissolved			109.6		%		80-120	14-AUG-20
Calcium (Ca)-Dissolved			100.1		%		80-120	14-AUG-20
Chromium (Cr)-Dissolved			101.8		%		80-120	14-AUG-20
Cobalt (Co)-Dissolved			100.6		%		80-120	14-AUG-20
Copper (Cu)-Dissolved			103.2		%		80-120	14-AUG-20
Iron (Fe)-Dissolved			108.2		%		80-120	14-AUG-20
Lead (Pb)-Dissolved			107.5		%		80-120	14-AUG-20
Lithium (Li)-Dissolved			99.6		%		80-120	14-AUG-20
Magnesium (Mg)-Dissolved			95.9		%		80-120	14-AUG-20
Manganese (Mn)-Dissolved			102.4		%		80-120	14-AUG-20
Molybdenum (Mo)-Dissolved			101.5		%		80-120	14-AUG-20
Nickel (Ni)-Dissolved			101.2		%		80-120	14-AUG-20
Potassium (K)-Dissolved			112.8		%		80-120	14-AUG-20
Selenium (Se)-Dissolved			124.5	MES	%		80-120	14-AUG-20
Silicon (Si)-Dissolved			100.2		%		60-140	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5189450							
WG3383124-2	LCS							
Silver (Ag)-Dissolved			107.4		%		80-120	14-AUG-20
Sodium (Na)-Dissolved			102.1		%		80-120	14-AUG-20
Strontium (Sr)-Dissolved			109.8		%		80-120	14-AUG-20
Thallium (Tl)-Dissolved			104.9		%		80-120	14-AUG-20
Tin (Sn)-Dissolved			100.5		%		80-120	14-AUG-20
Titanium (Ti)-Dissolved			98.7		%		80-120	14-AUG-20
Uranium (U)-Dissolved			108.3		%		80-120	14-AUG-20
Vanadium (V)-Dissolved			101.1		%		80-120	14-AUG-20
Zinc (Zn)-Dissolved			121.2	MES	%		80-120	14-AUG-20
WG3383123-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5189450							
WG3383123-1	MB	NP						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
WG3383124-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Batch	R5189450							
WG3383124-1	MB	NP						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-AUG-20
NH3-L-F-CL								
Batch	R5187676							
WG3383050-10	LCS							
Ammonia as N			102.9		%		85-115	13-AUG-20
WG3383050-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	13-AUG-20
NO2-L-IC-N-CL								
Batch	R5177038							
WG3379464-6	LCS							
Nitrite (as N)			100.6		%		90-110	08-AUG-20
WG3379464-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	08-AUG-20
NO3-L-IC-N-CL								
Batch	R5177038							
WG3379464-6	LCS							
Nitrate (as N)			98.6		%		90-110	08-AUG-20
WG3379464-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	08-AUG-20
OH-CL								
Batch	R5182917							
WG3381829-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	12-AUG-20
ORP-CL								
Batch	R5179964							
WG3380694-4	CRM	CL-ORP						
ORP			219		mV		210-230	11-AUG-20
WG3380694-6	CRM	CL-ORP						
ORP			221		mV		210-230	11-AUG-20
P-T-L-COL-CL								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5179818							
WG3380548-18 LCS								
Phosphorus (P)-Total			110.0		%		80-120	11-AUG-20
WG3380548-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-AUG-20
PH-CL	Water							
Batch	R5182917							
WG3381829-8 LCS								
pH			6.99		pH		6.9-7.1	12-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5177111							
WG3379422-2 LCS								
Orthophosphate-Dissolved (as P)			96.0		%		80-120	09-AUG-20
WG3379422-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-AUG-20
SO4-IC-N-CL	Water							
Batch	R5177038							
WG3379464-6 LCS								
Sulfate (SO4)			99.2		%		90-110	08-AUG-20
WG3379464-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	08-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5186202							
WG3381440-15 DUP		L2485709-5						
Total Dissolved Solids		<10	<10	RPD-NA	mg/L	N/A	20	12-AUG-20
WG3381440-11 LCS								
Total Dissolved Solids			99.6		%		85-115	12-AUG-20
WG3381440-14 LCS								
Total Dissolved Solids			99.1		%		85-115	12-AUG-20
WG3381440-10 MB								
Total Dissolved Solids			<10		mg/L		10	12-AUG-20
WG3381440-13 MB								
Total Dissolved Solids			<10		mg/L		10	12-AUG-20
TKN-L-F-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5183796							
WG3382095-10	LCS							
Total Kjeldahl Nitrogen			103.9		%		75-125	12-AUG-20
WG3382095-16	LCS							
Total Kjeldahl Nitrogen			100.6		%		75-125	12-AUG-20
WG3382095-2	LCS							
Total Kjeldahl Nitrogen			100.3		%		75-125	12-AUG-20
WG3382095-22	LCS							
Total Kjeldahl Nitrogen			102.3		%		75-125	12-AUG-20
WG3382095-6	LCS							
Total Kjeldahl Nitrogen			100.3		%		75-125	12-AUG-20
WG3382095-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-AUG-20
WG3382095-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-AUG-20
WG3382095-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-AUG-20
WG3382095-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-AUG-20
WG3382095-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-AUG-20
TSS-L-CL		Water						
Batch	R5185979							
WG3381948-4	LCS							
Total Suspended Solids			109.7		%		85-115	12-AUG-20
WG3381948-6	LCS							
Total Suspended Solids			87.5		%		85-115	12-AUG-20
WG3381948-3	MB							
Total Suspended Solids			<1.0		mg/L		1	12-AUG-20
WG3381948-5	MB							
Total Suspended Solids			<1.0		mg/L		1	12-AUG-20
TURBIDITY-CL		Water						
Batch	R5177015							
WG3379441-2	LCS							
Turbidity			98.5		%		85-115	09-AUG-20
WG3379441-1	MB							
Turbidity			<0.10		NTU		0.1	09-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	07-AUG-20 11:50	11-AUG-20 07:30	0.25	92	hours	EHTR-FM
	2	07-AUG-20 11:10	11-AUG-20 07:30	0.25	92	hours	EHTR-FM
	3	07-AUG-20 10:45	11-AUG-20 07:30	0.25	93	hours	EHTR-FM
	4	07-AUG-20 12:00	11-AUG-20 07:30	0.25	91	hours	EHTR-FM
	5	07-AUG-20 12:00	11-AUG-20 08:00	0.25	92	hours	EHTR-FM
pH							
	1	07-AUG-20 11:50	12-AUG-20 13:00	0.25	121	hours	EHTR-FM
	2	07-AUG-20 11:10	12-AUG-20 13:00	0.25	122	hours	EHTR-FM
	3	07-AUG-20 10:45	12-AUG-20 13:00	0.25	122	hours	EHTR-FM
	4	07-AUG-20 12:00	12-AUG-20 13:00	0.25	121	hours	EHTR-FM
	5	07-AUG-20 12:00	12-AUG-20 13:00	0.25	121	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2485709 were received on 08-AUG-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q3_20200807		TURNAROUND TIME: Regular			RUSH: No															
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO													
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary			Report Format / Distribution			Excel	PDF	EDD										
Project Manager Jay Jones		Lab Contact Inayat Dhaliwal			Email 1: Victoria.Sharpe@teck.com			X	X	X										
Email Jay.Jones@teck.com		Email inayat.dhaliwal@alsglobal.com			Email 2: teckcoal@equisonline.com					X										
Address PO Box 3000		Address 2559 29th St. NE			Email 3: jay.jones@teck.com			X	X	X										
City Sparwood		Province BC	City Calgary			Province AB	Email 4: don.sacino@teck.com			X	X	X								
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5			Country Canada														
Phone Number 1-250-425-7321		Phone Number 403 407 1800			PO number			VPO00683186												
SAMPLE DETAILS				ANALYSIS REQUESTED <small>Filtered - F: Field, L: Lab, FL: Field & Lab, N: None</small>																
 L2485709-COFC	Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N						
									PRESERV.	H2SO4	H2SO4	HCl	HNO3	NONE						
									ANALYS.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
	CM_MW1-DP_WG_2020-07-13_N	CM_MW1-DP	WG	No	2020/08/07	11:50	G	5		1	1	1	1	1						
	CM_MW1-OB_WG_2020-07-13_N	CM_MW1-OB	WG	No	2020/08/07	11:10	G	5		1	1	1	1	1						
	CM_MW1-SH_WG_2020-07-13_N	CM_MW1-SH	WG	No	2020/08/07	10:45	G	5		1	1	1	1	1						
	CM_NNP2_WS_2020-07-13_N	CM_NNP2	WG	No	2020/08/07	-	G	5		1	1	1	1	1						
	CM_TRP_WS_2020-07-13_N	CM_TRP	WG	No	2020/08/07	-	G	5		1	1	1	1	1						
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME		ACCEPTED BY/AFFILIATION			DATE/TIME							
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.										DK			8/8 0830							
SERVICE REQUEST (rush - subject to availability)																				
Regular (default) X				Sampler's Name				VS/JD		Mobile #		250-425-7522								
Priority (2-3 business days) - 50% surcharge				Sampler's Signature				D. Sharpe		Date/Time		August 7, 2020								
Emergency (1 Business Day) - 100% surcharge																				
For Emergency <1 Day, ASAP or Weekend - Contact ALS																				

A'u



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 12-AUG-20
Report Date: 04-FEB-21 11:01 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2487707
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200811
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 16:50
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487707-1 CM_MW4-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 11-AUG-20 @ 13:48							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	1010		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	51.7		5.0	mg/L		14-AUG-20	R5189622
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189999
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	0.553		0.050	mg/L		13-AUG-20	R5185601
Total Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189999
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	18-AUG-20	19-AUG-20	R5193279
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5191207
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-AUG-20	14-AUG-20	R5187338
Dissolved Mercury Filtration Location	FIELD					14-AUG-20	R5188805
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5191207
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-AUG-20	19-AUG-20	R5193279
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Barium (Ba)-Dissolved	0.544		0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Boron (B)-Dissolved	0.393		0.020	mg/L	18-AUG-20	19-AUG-20	R5193279
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	18-AUG-20	19-AUG-20	R5193279
Calcium (Ca)-Dissolved	8.10		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	18-AUG-20	19-AUG-20	R5193279
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	18-AUG-20	19-AUG-20	R5193279
Iron (Fe)-Dissolved	0.071		0.020	mg/L	18-AUG-20	19-AUG-20	R5193279
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Lithium (Li)-Dissolved	1.03		0.0020	mg/L	18-AUG-20	19-AUG-20	R5193279
Magnesium (Mg)-Dissolved	1.93		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Manganese (Mn)-Dissolved	0.00314		0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Molybdenum (Mo)-Dissolved	0.00030		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	18-AUG-20	19-AUG-20	R5193279
Potassium (K)-Dissolved	1.22		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	18-AUG-20	19-AUG-20	R5193279
Silicon (Si)-Dissolved	3.68		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	18-AUG-20	19-AUG-20	R5193279
Sodium (Na)-Dissolved	632		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Strontium (Sr)-Dissolved	1.18		0.00040	mg/L	18-AUG-20	19-AUG-20	R5193279
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	18-AUG-20	19-AUG-20	R5193279
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-AUG-20	19-AUG-20	R5193279
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	18-AUG-20	19-AUG-20	R5193279
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	18-AUG-20	19-AUG-20	R5193279
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	18-AUG-20	19-AUG-20	R5193279
Hardness							
Hardness (as CaCO3)	28.2		0.50	mg/L		20-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		13-AUG-20	R5187436
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487707-1 CM_MW4-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 11-AUG-20 @ 13:48							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	826		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	86.2		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	912		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							
Ammonia as N	0.624	DLHC	0.025	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.06	DLHC	0.25	mg/L		13-AUG-20	R5188018
Chloride in Water by IC							
Chloride (Cl)	544	DLHC	2.5	mg/L		13-AUG-20	R5188018
Electrical Conductivity (EC)							
Conductivity (@ 25C)	3020		2.0	uS/cm		14-AUG-20	R5189622
Fluoride in Water by IC							
Fluoride (F)	0.33	DLHC	0.10	mg/L		13-AUG-20	R5188018
Ion Balance Calculation							
Cation - Anion Balance	-8.9			%		20-AUG-20	
Anion Sum	33.6			meq/L		20-AUG-20	
Cation Sum	28.1			meq/L		20-AUG-20	
Ion Balance Calculation							
Ion Balance	83.7		-100	%		20-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		13-AUG-20	R5188018
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-AUG-20	R5188018
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0104		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect.							
ORP	423		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.016	DLM	0.010	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		13-AUG-20	R5188018
Total Dissolved Solids							
Total Dissolved Solids	1960	DLHC	40	mg/L		17-AUG-20	R5191157
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-AUG-20	R5191091
Turbidity							
Turbidity	3.18		0.10	NTU		12-AUG-20	R5184202
pH							
pH	8.80		0.10	pH		14-AUG-20	R5189622
L2487707-2 CM_MW4-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 11-AUG-20 @ 13:50							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	663		5.0	mg/L		14-AUG-20	R5189622
Carbonate (CO3)	28.7		5.0	mg/L		14-AUG-20	R5189622
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189999
Hydroxide (OH)	<5.0		5.0	mg/L		14-AUG-20	R5189622
Total Kjeldahl Nitrogen	0.412		0.050	mg/L		13-AUG-20	R5185601
Total Organic Carbon	<0.50		0.50	mg/L		16-AUG-20	R5189999
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487707-2 CM_MW4-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 11-AUG-20 @ 13:50							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-AUG-20	19-AUG-20	R5193279
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5191207
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-AUG-20	14-AUG-20	R5187338
Dissolved Mercury Filtration Location	FIELD					14-AUG-20	R5188805
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-AUG-20	R5191207
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-AUG-20	19-AUG-20	R5193279
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Barium (Ba)-Dissolved	0.295		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-AUG-20	19-AUG-20	R5193279
Boron (B)-Dissolved	0.367		0.010	mg/L	18-AUG-20	19-AUG-20	R5193279
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	18-AUG-20	19-AUG-20	R5193279
Calcium (Ca)-Dissolved	6.80		0.050	mg/L	18-AUG-20	19-AUG-20	R5193279
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	18-AUG-20	19-AUG-20	R5193279
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Iron (Fe)-Dissolved	0.073		0.010	mg/L	18-AUG-20	19-AUG-20	R5193279
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-AUG-20	19-AUG-20	R5193279
Lithium (Li)-Dissolved	0.436		0.0010	mg/L	18-AUG-20	19-AUG-20	R5193279
Magnesium (Mg)-Dissolved	2.18		0.10	mg/L	18-AUG-20	19-AUG-20	R5193279
Manganese (Mn)-Dissolved	0.00411		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Molybdenum (Mo)-Dissolved	0.000791		0.000050	mg/L	18-AUG-20	19-AUG-20	R5193279
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-AUG-20	19-AUG-20	R5193279
Potassium (K)-Dissolved	1.01		0.050	mg/L	18-AUG-20	19-AUG-20	R5193279
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	18-AUG-20	19-AUG-20	R5193279
Silicon (Si)-Dissolved	3.97		0.050	mg/L	18-AUG-20	19-AUG-20	R5193279
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-AUG-20	19-AUG-20	R5193279
Sodium (Na)-Dissolved	336		0.050	mg/L	18-AUG-20	19-AUG-20	R5193279
Strontium (Sr)-Dissolved	0.765		0.00020	mg/L	18-AUG-20	19-AUG-20	R5193279
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-AUG-20	19-AUG-20	R5193279
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-AUG-20	19-AUG-20	R5193279
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-AUG-20	19-AUG-20	R5193279
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	18-AUG-20	19-AUG-20	R5193279
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-AUG-20	19-AUG-20	R5193279
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5193279
Hardness							
Hardness (as CaCO3)	26.0		0.50	mg/L		20-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		13-AUG-20	R5187436
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	544		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Carbonate (as CaCO3)	47.8		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		14-AUG-20	R5189622
Alkalinity, Total (as CaCO3)	592		1.0	mg/L		14-AUG-20	R5189622
Ammonia, Total (as N)							
Ammonia as N	0.403		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.55	DLHC	0.25	mg/L		13-AUG-20	R5188018
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2487707-2 CM_MW4-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 11-AUG-20 @ 13:50							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	148	DLHC	2.5	mg/L		13-AUG-20	R5188018
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1410		2.0	uS/cm		14-AUG-20	R5189622
Fluoride in Water by IC							
Fluoride (F)	0.31	DLHC	0.10	mg/L		13-AUG-20	R5188018
Ion Balance Calculation							
Ion Balance	94.9		-100	%		20-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.6			%		20-AUG-20	
Anion Sum	16.0			meq/L		20-AUG-20	
Cation Sum	15.2			meq/L		20-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		13-AUG-20	R5188018
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-AUG-20	R5188018
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0116		0.0010	mg/L		12-AUG-20	R5184087
Oxidation redution potential by elect.							
ORP	432		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.014	DLM	0.010	mg/L		14-AUG-20	R5189342
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		13-AUG-20	R5188018
Total Dissolved Solids							
Total Dissolved Solids	906	DLHC	20	mg/L		17-AUG-20	R5191157
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-AUG-20	R5191091
Turbidity							
Turbidity	0.59		0.10	NTU		12-AUG-20	R5184202
pH							
pH	8.79		0.10	pH		14-AUG-20	R5189622

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200811

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2487707

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5187436							
WG3383362-5	LCS							
Acidity (as CaCO3)			93.8		%		85-115	13-AUG-20
WG3383362-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	13-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5189622							
WG3384293-14	LCS							
Alkalinity, Total (as CaCO3)			98.4		%		85-115	14-AUG-20
WG3384293-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5193279							
WG3386191-2	LCS							
Beryllium (Be)-Dissolved			98.3		%		80-120	19-AUG-20
WG3386191-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-AUG-20
BIC-CL								
	Water							
Batch	R5189622							
WG3384293-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	14-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5188018							
WG3383527-6	LCS							
Bromide (Br)			108.1		%		85-115	13-AUG-20
WG3383527-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5189999							
WG3384787-7	DUP	L2487707-1						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-AUG-20
WG3384787-6	LCS							
Dissolved Organic Carbon			83.5		%		80-120	16-AUG-20
WG3384787-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
WG3384787-8	MS	L2487707-1						
Dissolved Organic Carbon			112.6		%		70-130	16-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5189999							
WG3384787-7	DUP	L2487707-1						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-AUG-20
WG3384787-6	LCS							
Total Organic Carbon			93.0		%		80-120	17-AUG-20
WG3384787-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-AUG-20
WG3384787-8	MS	L2487707-1						
Total Organic Carbon			117.9		%		70-130	16-AUG-20
CL-IC-N-CL								
Water								
Batch	R5188018							
WG3383527-6	LCS							
Chloride (Cl)			102.4		%		90-110	13-AUG-20
WG3383527-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
CO3-CL								
Water								
Batch	R5189622							
WG3384293-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	14-AUG-20
EC-L-PCT-CL								
Water								
Batch	R5189622							
WG3384293-14	LCS							
Conductivity (@ 25C)			97.3		%		90-110	14-AUG-20
WG3384293-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-AUG-20
F-IC-N-CL								
Water								
Batch	R5188018							
WG3383527-6	LCS							
Fluoride (F)			104.1		%		90-110	13-AUG-20
WG3383527-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20
HG-D-CVAA-VA								
Water								
Batch	R5187338							
WG3383765-2	LCS							
Mercury (Hg)-Dissolved			99.1		%		80-120	14-AUG-20
WG3383765-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5193279							
WG3386191-2	LCS							
Aluminum (Al)-Dissolved			98.6		%		80-120	19-AUG-20
Antimony (Sb)-Dissolved			95.9		%		80-120	19-AUG-20
Arsenic (As)-Dissolved			96.6		%		80-120	19-AUG-20
Barium (Ba)-Dissolved			97.5		%		80-120	19-AUG-20
Bismuth (Bi)-Dissolved			100.3		%		80-120	19-AUG-20
Boron (B)-Dissolved			102.4		%		80-120	19-AUG-20
Cadmium (Cd)-Dissolved			97.6		%		80-120	19-AUG-20
Calcium (Ca)-Dissolved			102.6		%		80-120	19-AUG-20
Chromium (Cr)-Dissolved			94.0		%		80-120	19-AUG-20
Cobalt (Co)-Dissolved			95.0		%		80-120	19-AUG-20
Copper (Cu)-Dissolved			94.2		%		80-120	19-AUG-20
Iron (Fe)-Dissolved			96.4		%		80-120	19-AUG-20
Lead (Pb)-Dissolved			95.9		%		80-120	19-AUG-20
Lithium (Li)-Dissolved			98.3		%		80-120	19-AUG-20
Magnesium (Mg)-Dissolved			94.5		%		80-120	19-AUG-20
Manganese (Mn)-Dissolved			96.2		%		80-120	19-AUG-20
Molybdenum (Mo)-Dissolved			97.1		%		80-120	19-AUG-20
Nickel (Ni)-Dissolved			94.4		%		80-120	19-AUG-20
Potassium (K)-Dissolved			99.96		%		80-120	19-AUG-20
Selenium (Se)-Dissolved			102.5		%		80-120	19-AUG-20
Silicon (Si)-Dissolved			102.6		%		60-140	19-AUG-20
Silver (Ag)-Dissolved			99.3		%		80-120	19-AUG-20
Sodium (Na)-Dissolved			99.8		%		80-120	19-AUG-20
Strontium (Sr)-Dissolved			103.7		%		80-120	19-AUG-20
Thallium (Tl)-Dissolved			98.3		%		80-120	19-AUG-20
Tin (Sn)-Dissolved			97.1		%		80-120	19-AUG-20
Titanium (Ti)-Dissolved			93.6		%		80-120	19-AUG-20
Uranium (U)-Dissolved			96.4		%		80-120	19-AUG-20
Vanadium (V)-Dissolved			96.0		%		80-120	19-AUG-20
Zinc (Zn)-Dissolved			98.0		%		80-120	19-AUG-20
WG3386191-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5193279							
WG3386191-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5190500							
WG3384081-18	LCS							
Ammonia as N			94.0		%		85-115	14-AUG-20
WG3384081-17	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5188018							
WG3383527-6	LCS							
Nitrite (as N)			101.3		%		90-110	13-AUG-20
WG3383527-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5188018							
WG3383527-6	LCS							
Nitrate (as N)			103.6		%		90-110	13-AUG-20
WG3383527-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
OH-CL	Water							
Batch	R5189622							
WG3384293-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	14-AUG-20
ORP-CL	Water							
Batch	R5189407							
WG3383539-1	CRM	CL-ORP						
ORP			229		mV		210-230	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5189342							
WG3383701-26	LCS							
Phosphorus (P)-Total			104.5		%		80-120	14-AUG-20
WG3383701-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-AUG-20
PH-CL	Water							
Batch	R5189622							
WG3384293-14	LCS							
pH			7.01		pH		6.9-7.1	14-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5184087							
WG3382006-18	LCS							
Orthophosphate-Dissolved (as P)			103.2		%		80-120	12-AUG-20
WG3382006-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R5188018								
WG3383527-6	LCS							
Sulfate (SO4)			104.2		%		90-110	13-AUG-20
WG3383527-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
SOLIDS-TDS-CL								
Batch R5191157								
WG3384691-11	LCS							
Total Dissolved Solids			99.2		%		85-115	17-AUG-20
WG3384691-10	MB							
Total Dissolved Solids			<10		mg/L		10	17-AUG-20
TKN-L-F-CL								
Batch R5185601								
WG3382826-13	LCS							
Total Kjeldahl Nitrogen			96.0		%		75-125	13-AUG-20
WG3382826-2	LCS							
Total Kjeldahl Nitrogen			98.5		%		75-125	13-AUG-20
WG3382826-6	LCS							
Total Kjeldahl Nitrogen			97.4		%		75-125	13-AUG-20
WG3382826-9	LCS							
Total Kjeldahl Nitrogen			95.6		%		75-125	13-AUG-20
WG3382826-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
WG3382826-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-AUG-20
TSS-L-CL								
Batch R5191091								
WG3384690-6	LCS							
Total Suspended Solids			102.5		%		85-115	17-AUG-20
WG3384690-8	LCS							
Total Suspended Solids			106.6		%		85-115	17-AUG-20
WG3384690-5	MB							
Total Suspended Solids			<1.0		mg/L		1	17-AUG-20
WG3384690-7	MB							
Total Suspended Solids			<1.0		mg/L		1	17-AUG-20



Quality Control Report

Workorder: L2487707

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5184202							
WG3382222-11	LCS							
Turbidity			97.5		%		85-115	12-AUG-20
WG3382222-10	MB							
Turbidity			<0.10		NTU		0.1	12-AUG-20

Quality Control Report

Workorder: L2487707

Report Date: 04-FEB-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2487707

Report Date: 04-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	11-AUG-20 13:48	14-AUG-20 08:30	0.25	67	hours	EHTR-FM
	2	11-AUG-20 13:50	14-AUG-20 08:30	0.25	67	hours	EHTR-FM
pH	1	11-AUG-20 13:48	14-AUG-20 13:00	0.25	71	hours	EHTR-FM
	2	11-AUG-20 13:50	14-AUG-20 13:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2487707 were received on 12-AUG-20 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q3_20200811		TURNAROUND TIME: Regular			RUSH: No				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jay Jones				Lab Contact Inayat Dhaliwal			Email 1: Victoria.Sharpe@teck.com		
Email Jay.Jones@teck.com				Email inayat.dhaliwal@alsglobal.com			Email 2: teckcoal@equisonline.com		
Address PO Box 3000				Address 2559 29th St. NE			Email 3: jay.jones@teck.com		
City Sparwood				City Calgary			Email 4: don.sacino@teck.com		
Province BC				Province AB			Excel X		
Postal Code V0B 2G0				Postal Code T1Y 7B5			PDF X		
Country Canada				Country Canada			EDD X		
Phone Number 1-250-425-7321				Phone Number 403 407 1800			PO number VPO00683186		

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N					
								PRESEV.	H2SO4	H2SO4	HCl	HNO3	NONE					
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW4-DP_WG_2020-07-13_N	CM_MW4-DP	WG	No	2020/08/11	13:48	G	5		1	1	1	1	1					
CM_MW4-SH_WG_2020-07-13_N	CM_MW4-SH	WG	No	2020/08/11	13:50	G	5		1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.						<i>JD</i>		8/11/2020	

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>			
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
Sampler's Name		SH/JD	
Sampler's Signature <i>SH/JD</i>		Mobile #	
Date/Time		August 11, 2020	

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TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 13-AUG-20
Report Date: 04-FEB-21 11:02 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2488180
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200812
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 16:51
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-1 CM_MW5-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 13:15							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	398		5.0	mg/L		17-AUG-20	R5190218
Carbonate (CO3)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Dissolved Organic Carbon	1.33	DTC	0.50	mg/L		19-AUG-20	R5190895
Hydroxide (OH)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Total Kjeldahl Nitrogen	0.676		0.050	mg/L		14-AUG-20	R5188598
Total Organic Carbon	<0.50	DTC	0.50	mg/L		17-AUG-20	R5190895
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-AUG-20	17-AUG-20	R5190489
Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-AUG-20	18-AUG-20	R5190571
Dissolved Mercury Filtration Location	FIELD					18-AUG-20	R5191124
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-AUG-20	17-AUG-20	R5190489
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Barium (Ba)-Dissolved	1.25		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Boron (B)-Dissolved	0.111		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-AUG-20	17-AUG-20	R5190489
Calcium (Ca)-Dissolved	76.7		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-AUG-20	17-AUG-20	R5190489
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Iron (Fe)-Dissolved	1.29		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Lithium (Li)-Dissolved	0.0645		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Magnesium (Mg)-Dissolved	26.2		0.10	mg/L	17-AUG-20	17-AUG-20	R5190489
Manganese (Mn)-Dissolved	0.0396		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Molybdenum (Mo)-Dissolved	0.000479		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Nickel (Ni)-Dissolved	0.00056		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Potassium (K)-Dissolved	3.19		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Selenium (Se)-Dissolved	0.075		0.050	ug/L	17-AUG-20	17-AUG-20	R5190489
Silicon (Si)-Dissolved	5.90		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Sodium (Na)-Dissolved	66.9		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Strontium (Sr)-Dissolved	1.89		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Uranium (U)-Dissolved	0.000063		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Zinc (Zn)-Dissolved	0.0030		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Hardness							
Hardness (as CaCO3)	300		0.50	mg/L		17-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.4		1.0	mg/L		13-AUG-20	R5187436
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-1 CM_MW5-DP_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 13:15							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	443		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Total (as CaCO3)	443		1.0	mg/L		17-AUG-20	R5190218
Ammonia, Total (as N)							
Ammonia as N	0.589	DLHC	0.025	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	11.4		0.50	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC)							
Conductivity (@ 25C)	582		2.0	uS/cm		17-AUG-20	R5190218
Fluoride in Water by IC							
Fluoride (F)	0.279		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Ion Balance	98.8		-100	%		20-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.6			%		20-AUG-20	
Anion Sum	9.20			meq/L		20-AUG-20	
Cation Sum	9.09			meq/L		20-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-AUG-20	R5186820
Oxidation redution potential by elect.							
ORP	429		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0034		0.0020	mg/L		17-AUG-20	R5190317
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							
Total Dissolved Solids	429	DLHC	20	mg/L		18-AUG-20	R5191924
Total Suspended Solids							
Total Suspended Solids	2.3		1.0	mg/L		18-AUG-20	R5191850
Turbidity							
Turbidity	21.3		0.10	NTU		13-AUG-20	R5187018
pH							
pH	7.88		0.10	pH		17-AUG-20	R5190218
L2488180-2 CM_MW5-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 13:02							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	247		5.0	mg/L		17-AUG-20	R5190218
Carbonate (CO3)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Dissolved Organic Carbon	<0.50		0.50	mg/L		17-AUG-20	R5190895
Hydroxide (OH)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Total Kjeldahl Nitrogen	0.224		0.050	mg/L		14-AUG-20	R5188598
Total Organic Carbon	<0.50		0.50	mg/L		17-AUG-20	R5190895
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-2 CM_MW5-SH_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 13:02							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-AUG-20	17-AUG-20	R5190489
Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-AUG-20	18-AUG-20	R5190571
Dissolved Mercury Filtration Location	FIELD					18-AUG-20	R5191124
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-AUG-20	17-AUG-20	R5190489
Antimony (Sb)-Dissolved	0.00033		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Barium (Ba)-Dissolved	0.0513		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Boron (B)-Dissolved	0.035		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cadmium (Cd)-Dissolved	0.0298		0.0050	ug/L	17-AUG-20	17-AUG-20	R5190489
Calcium (Ca)-Dissolved	108		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Chromium (Cr)-Dissolved	0.00025		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-AUG-20	17-AUG-20	R5190489
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Lithium (Li)-Dissolved	0.0185		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Magnesium (Mg)-Dissolved	47.1		0.10	mg/L	17-AUG-20	17-AUG-20	R5190489
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Molybdenum (Mo)-Dissolved	0.00232		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Nickel (Ni)-Dissolved	0.00143		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Potassium (K)-Dissolved	1.95		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Selenium (Se)-Dissolved	7.08		0.050	ug/L	17-AUG-20	17-AUG-20	R5190489
Silicon (Si)-Dissolved	2.01		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Sodium (Na)-Dissolved	15.5		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Strontium (Sr)-Dissolved	0.332		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Thallium (Tl)-Dissolved	0.000040		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Uranium (U)-Dissolved	0.00318		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Hardness							
Hardness (as CaCO3)	464		0.50	mg/L		17-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.7		1.0	mg/L		13-AUG-20	R5187436
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	203		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Carbonate (as CaCO3)	1.6		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		17-AUG-20	R5190218
Ammonia, Total (as N)							
Ammonia as N	0.0097		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-2 CM_MW5-SH_WG_2020-07-13_N Sampled By: SH/JD on 12-AUG-20 @ 13:02 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	2.35		0.50	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC) Conductivity (@ 25C)	825		2.0	uS/cm		17-AUG-20	R5190218
Fluoride in Water by IC Fluoride (F)	0.206		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation Ion Balance	106		-100	%		18-AUG-20	
Ion Balance Calculation Cation - Anion Balance	2.9			%		18-AUG-20	
Anion Sum	9.43			meq/L		18-AUG-20	
Cation Sum	9.98			meq/L		18-AUG-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	1.25		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0050		0.0010	mg/L		13-AUG-20	R5186820
Oxidation redution potential by elect. ORP	300		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total Phosphorus (P)-Total	0.0211		0.0020	mg/L		17-AUG-20	R5190317
Sulfate in Water by IC Sulfate (SO4)	249		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids Total Dissolved Solids	1100	DLHC	20	mg/L		18-AUG-20	R5191924
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		18-AUG-20	R5191850
Turbidity Turbidity	<0.10		0.10	NTU		13-AUG-20	R5187018
pH pH	8.32		0.10	pH		17-AUG-20	R5190218
L2488180-3 CM_MW10_WG_2020-07-13_N Sampled By: SH/JD on 12-AUG-20 @ 10:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	267		5.0	mg/L		17-AUG-20	R5190218
Carbonate (CO3)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Dissolved Organic Carbon	2.96	DTC	0.50	mg/L		17-AUG-20	R5190895
Hydroxide (OH)	<5.0		5.0	mg/L		17-AUG-20	R5190218
Total Kjeldahl Nitrogen	0.075		0.050	mg/L		14-AUG-20	R5188598
Total Organic Carbon	0.72	DTC	0.50	mg/L		17-AUG-20	R5190895
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-AUG-20	17-AUG-20	R5190489
Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-AUG-20	18-AUG-20	R5190571
Dissolved Mercury Filtration Location	FIELD					18-AUG-20	R5191124
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					17-AUG-20	R5190281
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-AUG-20	17-AUG-20	R5190489

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-3 CM_MW10_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 10:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Arsenic (As)-Dissolved	0.00246		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Barium (Ba)-Dissolved	0.166		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Boron (B)-Dissolved	0.021		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-AUG-20	17-AUG-20	R5190489
Calcium (Ca)-Dissolved	90.8		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	17-AUG-20	17-AUG-20	R5190489
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Iron (Fe)-Dissolved	2.79		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Lithium (Li)-Dissolved	0.0101		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Magnesium (Mg)-Dissolved	22.6		0.10	mg/L	17-AUG-20	17-AUG-20	R5190489
Manganese (Mn)-Dissolved	0.0982		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Molybdenum (Mo)-Dissolved	0.00312		0.000050	mg/L	17-AUG-20	17-AUG-20	R5190489
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Potassium (K)-Dissolved	0.770		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-AUG-20	17-AUG-20	R5190489
Silicon (Si)-Dissolved	4.68		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Sodium (Na)-Dissolved	26.6		0.050	mg/L	17-AUG-20	17-AUG-20	R5190489
Strontium (Sr)-Dissolved	0.247		0.00020	mg/L	17-AUG-20	17-AUG-20	R5190489
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-AUG-20	17-AUG-20	R5190489
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-AUG-20	17-AUG-20	R5190489
Uranium (U)-Dissolved	0.000377		0.000010	mg/L	17-AUG-20	17-AUG-20	R5190489
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-AUG-20	17-AUG-20	R5190489
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	17-AUG-20	17-AUG-20	R5190489
Hardness							
Hardness (as CaCO3)	320		0.50	mg/L		17-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.7		1.0	mg/L		13-AUG-20	R5187436
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	263		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-AUG-20	R5190218
Alkalinity, Total (as CaCO3)	263		1.0	mg/L		17-AUG-20	R5190218
Ammonia, Total (as N)							
Ammonia as N	0.0385		0.0050	mg/L		14-AUG-20	R5190500
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-AUG-20	R5189702
Chloride in Water by IC							
Chloride (Cl)	0.67		0.50	mg/L		13-AUG-20	R5189702
Electrical Conductivity (EC)							
Conductivity (@ 25C)	595		2.0	uS/cm		17-AUG-20	R5190218
Fluoride in Water by IC							
Fluoride (F)	0.938		0.020	mg/L		13-AUG-20	R5189702
Ion Balance Calculation							
Cation - Anion Balance	2.8			%		20-AUG-20	
Anion Sum	7.30			meq/L		20-AUG-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488180-3 CM_MW10_WG_2020-07-13_N							
Sampled By: SH/JD on 12-AUG-20 @ 10:00							
Matrix: WG							
Ion Balance Calculation							
Cation Sum	7.72			meq/L		20-AUG-20	
Ion Balance Calculation							
Ion Balance	106		-100	%		20-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-AUG-20	R5189702
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-AUG-20	R5189702
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-AUG-20	R5186820
Oxidation redution potential by elect.							
ORP	426		-1000	mV		14-AUG-20	R5189407
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0081		0.0020	mg/L		17-AUG-20	R5190317
Sulfate in Water by IC							
Sulfate (SO4)	94.8		0.30	mg/L		13-AUG-20	R5189702
Total Dissolved Solids							
Total Dissolved Solids	406	DLHC	20	mg/L		18-AUG-20	R5191924
Total Suspended Solids							
Total Suspended Solids	9.7		1.0	mg/L		18-AUG-20	R5191850
Turbidity							
Turbidity	47.8		0.10	NTU		13-AUG-20	R5187018
pH							
pH	7.90		0.10	pH		17-AUG-20	R5190218

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200812

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2488180

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5187436							
WG3383362-5	LCS							
Acidity (as CaCO3)			93.8		%		85-115	13-AUG-20
WG3383362-4	MB							
Acidity (as CaCO3)			1.3		mg/L		2	13-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5190218							
WG3385041-17	LCS							
Alkalinity, Total (as CaCO3)			97.6		%		85-115	17-AUG-20
WG3385041-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5190489							
WG3385078-3	DUP	L2488180-1						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	17-AUG-20
WG3385078-2	LCS							
Beryllium (Be)-Dissolved			101.1		%		80-120	17-AUG-20
WG3385078-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-20
WG3385078-4	MS	L2488180-2						
Beryllium (Be)-Dissolved			102.2		%		70-130	17-AUG-20
BIC-CL								
	Water							
Batch	R5190218							
WG3385041-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5189702							
WG3384396-10	LCS							
Bromide (Br)			98.7		%		85-115	13-AUG-20
WG3384396-9	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5190895							
WG3385657-7	DUP	L2488180-3						
Dissolved Organic Carbon		2.96	2.85		mg/L	3.9	20	17-AUG-20
WG3385657-6	LCS							
Dissolved Organic Carbon			91.6		%		80-120	17-AUG-20



Quality Control Report

Workorder: L2488180

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5190895							
WG3385657-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
WG3385657-8	MS	L2488180-3						
Dissolved Organic Carbon			94.5		%		70-130	17-AUG-20
C-TOT-ORG-LOW-CL Water								
Batch	R5190895							
WG3385657-7	DUP	L2488180-3						
Total Organic Carbon			0.72	0.87	mg/L	18	20	17-AUG-20
WG3385657-6	LCS							
Total Organic Carbon			95.2		%		80-120	17-AUG-20
WG3385657-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-AUG-20
WG3385657-8	MS	L2488180-3						
Total Organic Carbon			99.8		%		70-130	17-AUG-20
CL-IC-N-CL Water								
Batch	R5189702							
WG3384396-10	LCS							
Chloride (Cl)			99.9		%		90-110	13-AUG-20
WG3384396-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	13-AUG-20
CO3-CL Water								
Batch	R5190218							
WG3385041-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	17-AUG-20
EC-L-PCT-CL Water								
Batch	R5190218							
WG3385041-17	LCS							
Conductivity (@ 25C)			98.9		%		90-110	17-AUG-20
WG3385041-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-AUG-20
F-IC-N-CL Water								
Batch	R5189702							
WG3384396-10	LCS							
Fluoride (F)			106.0		%		90-110	13-AUG-20
WG3384396-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
Water								
Batch	R5190571							
WG3386023-3	DUP	L2488180-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	18-AUG-20
WG3386023-2	LCS							
Mercury (Hg)-Dissolved			99.0		%		80-120	18-AUG-20
WG3386023-1	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	18-AUG-20
MET-D-CCMS-VA								
Water								
Batch	R5190489							
WG3385078-3	DUP	L2488180-1						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	17-AUG-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-20
Arsenic (As)-Dissolved		<0.00010	0.00010	RPD-NA	mg/L	N/A	20	17-AUG-20
Barium (Ba)-Dissolved		1.25	1.23		mg/L	1.8	20	17-AUG-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-20
Boron (B)-Dissolved		0.111	0.114		mg/L	1.9	20	17-AUG-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	17-AUG-20
Calcium (Ca)-Dissolved		76.7	76.0		mg/L	1.0	20	17-AUG-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	17-AUG-20
Iron (Fe)-Dissolved		1.29	1.26		mg/L	2.3	20	17-AUG-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-20
Lithium (Li)-Dissolved		0.0645	0.0678		mg/L	4.9	20	17-AUG-20
Magnesium (Mg)-Dissolved		26.2	26.7		mg/L	1.9	20	17-AUG-20
Manganese (Mn)-Dissolved		0.0396	0.0407		mg/L	2.8	20	17-AUG-20
Molybdenum (Mo)-Dissolved		0.000479	0.000501		mg/L	4.4	20	17-AUG-20
Nickel (Ni)-Dissolved		0.00056	0.00055		mg/L	1.7	20	17-AUG-20
Potassium (K)-Dissolved		3.19	3.27		mg/L	2.4	20	17-AUG-20
Selenium (Se)-Dissolved		0.000075	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-20
Silicon (Si)-Dissolved		5.90	6.15		mg/L	4.2	20	17-AUG-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-AUG-20
Sodium (Na)-Dissolved		66.9	68.0		mg/L	1.7	20	17-AUG-20
Strontium (Sr)-Dissolved		1.89	1.93		mg/L	1.8	20	17-AUG-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-AUG-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-20
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190489							
WG3385078-3	DUP	L2488180-1						
Uranium (U)-Dissolved		0.000063	0.000058		mg/L	8.2	20	17-AUG-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-AUG-20
Zinc (Zn)-Dissolved		0.0030	0.0038	J	mg/L	0.0008	0.002	17-AUG-20
WG3385078-2	LCS							
Aluminum (Al)-Dissolved			103.3		%		80-120	17-AUG-20
Antimony (Sb)-Dissolved			102.0		%		80-120	17-AUG-20
Arsenic (As)-Dissolved			99.7		%		80-120	17-AUG-20
Barium (Ba)-Dissolved			107.7		%		80-120	17-AUG-20
Bismuth (Bi)-Dissolved			101.4		%		80-120	17-AUG-20
Boron (B)-Dissolved			104.1		%		80-120	17-AUG-20
Cadmium (Cd)-Dissolved			105.0		%		80-120	17-AUG-20
Calcium (Ca)-Dissolved			107.7		%		80-120	17-AUG-20
Chromium (Cr)-Dissolved			103.9		%		80-120	17-AUG-20
Cobalt (Co)-Dissolved			101.5		%		80-120	17-AUG-20
Copper (Cu)-Dissolved			102.3		%		80-120	17-AUG-20
Iron (Fe)-Dissolved			104.5		%		80-120	17-AUG-20
Lead (Pb)-Dissolved			102.1		%		80-120	17-AUG-20
Lithium (Li)-Dissolved			92.2		%		80-120	17-AUG-20
Magnesium (Mg)-Dissolved			103.6		%		80-120	17-AUG-20
Manganese (Mn)-Dissolved			107.4		%		80-120	17-AUG-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	17-AUG-20
Nickel (Ni)-Dissolved			100.2		%		80-120	17-AUG-20
Potassium (K)-Dissolved			103.3		%		80-120	17-AUG-20
Selenium (Se)-Dissolved			103.7		%		80-120	17-AUG-20
Silicon (Si)-Dissolved			102.0		%		60-140	17-AUG-20
Silver (Ag)-Dissolved			103.2		%		80-120	17-AUG-20
Sodium (Na)-Dissolved			112.5		%		80-120	17-AUG-20
Strontium (Sr)-Dissolved			102.5		%		80-120	17-AUG-20
Thallium (Tl)-Dissolved			102.2		%		80-120	17-AUG-20
Tin (Sn)-Dissolved			100.1		%		80-120	17-AUG-20
Titanium (Ti)-Dissolved			98.6		%		80-120	17-AUG-20
Uranium (U)-Dissolved			110.1		%		80-120	17-AUG-20
Vanadium (V)-Dissolved			104.4		%		80-120	17-AUG-20
Zinc (Zn)-Dissolved			110.2		%		80-120	17-AUG-20
WG3385078-1	MB	NP						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190489							
WG3385078-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-20
WG3385078-4	MS	L2488180-2						
Aluminum (Al)-Dissolved			95.0		%		70-130	17-AUG-20
Antimony (Sb)-Dissolved			107.6		%		70-130	17-AUG-20
Arsenic (As)-Dissolved			102.4		%		70-130	17-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5190489							
WG3385078-4	MS	L2488180-2						
Barium (Ba)-Dissolved			N/A	MS-B	%		-	17-AUG-20
Bismuth (Bi)-Dissolved			89.5		%		70-130	17-AUG-20
Boron (B)-Dissolved			100.8		%		70-130	17-AUG-20
Cadmium (Cd)-Dissolved			100.8		%		70-130	17-AUG-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	17-AUG-20
Chromium (Cr)-Dissolved			101.4		%		70-130	17-AUG-20
Cobalt (Co)-Dissolved			94.2		%		70-130	17-AUG-20
Copper (Cu)-Dissolved			91.5		%		70-130	17-AUG-20
Iron (Fe)-Dissolved			97.2		%		70-130	17-AUG-20
Lead (Pb)-Dissolved			93.9		%		70-130	17-AUG-20
Lithium (Li)-Dissolved			95.0		%		70-130	17-AUG-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	17-AUG-20
Manganese (Mn)-Dissolved			101.4		%		70-130	17-AUG-20
Molybdenum (Mo)-Dissolved			101.3		%		70-130	17-AUG-20
Nickel (Ni)-Dissolved			93.0		%		70-130	17-AUG-20
Potassium (K)-Dissolved			98.0		%		70-130	17-AUG-20
Selenium (Se)-Dissolved			111.1		%		70-130	17-AUG-20
Silicon (Si)-Dissolved			90.2		%		70-130	17-AUG-20
Silver (Ag)-Dissolved			101.2		%		70-130	17-AUG-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	17-AUG-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	17-AUG-20
Thallium (Tl)-Dissolved			93.6		%		70-130	17-AUG-20
Tin (Sn)-Dissolved			101.4		%		70-130	17-AUG-20
Titanium (Ti)-Dissolved			100.5		%		70-130	17-AUG-20
Uranium (U)-Dissolved			104.6		%		70-130	17-AUG-20
Vanadium (V)-Dissolved			101.1		%		70-130	17-AUG-20
Zinc (Zn)-Dissolved			104.0		%		70-130	17-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5190500							
WG3384081-30	LCS							
Ammonia as N			100.5		%		85-115	14-AUG-20
WG3384081-29	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-AUG-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Nitrite (as N)			97.5		%		90-110	13-AUG-20
WG3384396-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10	LCS							
Nitrate (as N)			100.8		%		90-110	13-AUG-20
WG3384396-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-AUG-20
OH-CL	Water							
Batch	R5190218							
WG3385041-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-AUG-20
ORP-CL	Water							
Batch	R5189407							
WG3383539-5	CRM	CL-ORP						
ORP			226		mV		210-230	14-AUG-20
P-T-L-COL-CL	Water							
Batch	R5190317							
WG3385016-14	LCS							
Phosphorus (P)-Total			105.6		%		80-120	17-AUG-20
WG3385016-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-AUG-20
PH-CL	Water							
Batch	R5190218							
WG3385041-17	LCS							
pH			7.00		pH		6.9-7.1	17-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-2	LCS							
Orthophosphate-Dissolved (as P)			97.9		%		80-120	13-AUG-20
WG3382949-6	LCS							
Orthophosphate-Dissolved (as P)			98.5		%		80-120	13-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-L-COL-CL	Water							
Batch	R5186820							
WG3382949-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20
WG3382949-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-AUG-20
SO4-IC-N-CL	Water							
Batch	R5189702							
WG3384396-10 LCS								
Sulfate (SO4)			98.4		%		90-110	13-AUG-20
WG3384396-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	13-AUG-20
SOLIDS-TDS-CL	Water							
Batch	R5191924							
WG3385511-2 LCS								
Total Dissolved Solids			97.6		%		85-115	18-AUG-20
WG3385511-1 MB								
Total Dissolved Solids			<10		mg/L		10	18-AUG-20
TKN-L-F-CL	Water							
Batch	R5188598							
WG3383662-10 LCS								
Total Kjeldahl Nitrogen			93.9		%		75-125	14-AUG-20
WG3383662-12 LCS								
Total Kjeldahl Nitrogen			92.6		%		75-125	14-AUG-20
WG3383662-2 LCS								
Total Kjeldahl Nitrogen			96.3		%		75-125	14-AUG-20
WG3383662-6 LCS								
Total Kjeldahl Nitrogen			95.9		%		75-125	14-AUG-20
WG3383662-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-11 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
WG3383662-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-20
TSS-L-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5191850							
WG3385510-2	LCS							
Total Suspended Solids			88.4		%		85-115	18-AUG-20
WG3385510-1	MB							
Total Suspended Solids			<1.0		mg/L		1	18-AUG-20
TURBIDITY-CL	Water							
Batch	R5187018							
WG3383089-2	LCS							
Turbidity			98.0		%		85-115	13-AUG-20
WG3383089-1	MB							
Turbidity			<0.10		NTU		0.1	13-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	12-AUG-20 13:15	14-AUG-20 08:00	0.25	43	hours	EHTR-FM
	2	12-AUG-20 13:02	14-AUG-20 08:00	0.25	43	hours	EHTR-FM
	3	12-AUG-20 10:00	14-AUG-20 08:00	0.25	46	hours	EHTR-FM
pH	1	12-AUG-20 13:15	17-AUG-20 13:00	0.25	120	hours	EHTR-FM
	2	12-AUG-20 13:02	17-AUG-20 13:00	0.25	120	hours	EHTR-FM
	3	12-AUG-20 10:00	17-AUG-20 13:00	0.25	123	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2488180 were received on 13-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 20-AUG-20
Report Date: 05-FEB-21 11:41 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2491649
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200819
Legal Site Desc:

Comments: ADDITIONAL 25-JAN-21 16:52

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-1 CM_MW3-DP_WG_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 13:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	248		5.0	mg/L		21-AUG-20	R5198082
Carbonate (CO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Hydroxide (OH)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Total Kjeldahl Nitrogen	0.581		0.050	mg/L		21-AUG-20	R5195197
Total Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	21-AUG-20	23-AUG-20	R5199384
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5200217
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Aluminum (Al)-Dissolved	0.0056		0.0030	mg/L	21-AUG-20	23-AUG-20	R5199384
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Arsenic (As)-Dissolved	0.00054		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Barium (Ba)-Dissolved	0.775		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Boron (B)-Dissolved	0.537		0.020	mg/L	21-AUG-20	23-AUG-20	R5199384
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	21-AUG-20	23-AUG-20	R5199384
Calcium (Ca)-Dissolved	12.1		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	21-AUG-20	23-AUG-20	R5199384
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	21-AUG-20	23-AUG-20	R5199384
Iron (Fe)-Dissolved	0.036		0.020	mg/L	21-AUG-20	23-AUG-20	R5199384
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Lithium (Li)-Dissolved	1.37		0.0020	mg/L	21-AUG-20	23-AUG-20	R5199384
Magnesium (Mg)-Dissolved	4.29		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Manganese (Mn)-Dissolved	0.0267		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Molybdenum (Mo)-Dissolved	0.00175		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Potassium (K)-Dissolved	2.14		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	21-AUG-20	23-AUG-20	R5199384
Silicon (Si)-Dissolved	3.36		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	21-AUG-20	23-AUG-20	R5199384
Sodium (Na)-Dissolved	575		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Strontium (Sr)-Dissolved	1.16		0.00040	mg/L	21-AUG-20	23-AUG-20	R5199384
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	21-AUG-20	23-AUG-20	R5199384
Tin (Sn)-Dissolved	0.00025		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Uranium (U)-Dissolved	0.000259		0.000020	mg/L	21-AUG-20	23-AUG-20	R5199384
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	21-AUG-20	23-AUG-20	R5199384
Hardness							
Hardness (as CaCO3)	47.8		0.50	mg/L		24-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5197957
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-1 CM_MW3-DP_WG_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 13:00							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	203		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Carbonate (as CaCO3)	6.4		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Total (as CaCO3)	210		1.0	mg/L		21-AUG-20	R5198082
Ammonia, Total (as N)							
Ammonia as N	0.630	DLHC	0.025	mg/L		21-AUG-20	R5196697
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.59	DLHC	0.25	mg/L		21-AUG-20	R5197639
Chloride in Water by IC							
Chloride (Cl)	750	DLHC	2.5	mg/L		21-AUG-20	R5197639
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2630		2.0	uS/cm		21-AUG-20	R5198082
Fluoride in Water by IC							
Fluoride (F)	0.45	DLHC	0.10	mg/L		21-AUG-20	R5197639
Ion Balance Calculation							
Ion Balance	103		-100	%		24-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	1.4			%		24-AUG-20	
Anion Sum	25.4			meq/L		24-AUG-20	
Cation Sum	26.1			meq/L		24-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		21-AUG-20	R5197639
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-AUG-20	R5197639
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		20-AUG-20	R5194040
Oxidation redution potential by elect.							
ORP	406		-1000	mV		20-AUG-20	R5194198
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.011	DLM	0.010	mg/L		24-AUG-20	R5199212
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		21-AUG-20	R5197639
Total Dissolved Solids							
Total Dissolved Solids	1400	DLHC	40	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	1.33		0.10	NTU		20-AUG-20	R5194236
pH							
pH	8.41		0.10	pH		21-AUG-20	R5198082
L2491649-2 CM_MW3-SH_WG_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 13:05							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	214		5.0	mg/L		21-AUG-20	R5198082
Carbonate (CO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Hydroxide (OH)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Total Kjeldahl Nitrogen	0.261		0.050	mg/L		21-AUG-20	R5195197
Total Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-2 CM_MW3-SH_WG_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 13:05							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-AUG-20	23-AUG-20	R5199384
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5200217
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-AUG-20	23-AUG-20	R5199384
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Barium (Ba)-Dissolved	0.0887		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Boron (B)-Dissolved	0.024		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	21-AUG-20	23-AUG-20	R5199384
Calcium (Ca)-Dissolved	55.0		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-AUG-20	23-AUG-20	R5199384
Copper (Cu)-Dissolved	0.00068		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Lithium (Li)-Dissolved	0.0079		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Magnesium (Mg)-Dissolved	11.5		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Molybdenum (Mo)-Dissolved	0.000647		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Potassium (K)-Dissolved	0.678		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Selenium (Se)-Dissolved	0.244		0.050	ug/L	21-AUG-20	23-AUG-20	R5199384
Silicon (Si)-Dissolved	2.66		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Sodium (Na)-Dissolved	4.01		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Strontium (Sr)-Dissolved	0.308		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Uranium (U)-Dissolved	0.000193		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Hardness							
Hardness (as CaCO3)	185		0.50	mg/L		24-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5197957
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Carbonate (as CaCO3)	1.8		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Total (as CaCO3)	177		1.0	mg/L		21-AUG-20	R5198082
Ammonia, Total (as N)							
Ammonia as N	0.0079		0.0050	mg/L		21-AUG-20	R5196697
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-AUG-20	R5197639
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-2 CM_MW3-SH_WG_2020-07-13_N Sampled By: SH/JE on 19-AUG-20 @ 13:05 Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	0.62		0.50	mg/L		21-AUG-20	R5197639
Electrical Conductivity (EC)							
Conductivity (@ 25C)	333		2.0	uS/cm		21-AUG-20	R5198082
Fluoride in Water by IC							
Fluoride (F)	0.094		0.020	mg/L		21-AUG-20	R5197639
Ion Balance Calculation							
Ion Balance	99.4		-100	%		24-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-0.3			%		24-AUG-20	
Anion Sum	3.90			meq/L		24-AUG-20	
Cation Sum	3.88			meq/L		24-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0113		0.0050	mg/L		21-AUG-20	R5197639
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-AUG-20	R5197639
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0034		0.0010	mg/L		20-AUG-20	R5194040
Oxidation redution potential by elect.							
ORP	469		-1000	mV		20-AUG-20	R5194198
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0038		0.0020	mg/L		24-AUG-20	R5199212
Sulfate in Water by IC							
Sulfate (SO4)	16.5		0.30	mg/L		21-AUG-20	R5197639
Total Dissolved Solids							
Total Dissolved Solids	205	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	<0.10		0.10	NTU		20-AUG-20	R5194236
pH							
pH	8.32		0.10	pH		21-AUG-20	R5198082
L2491649-3 CM_NNP_WS_2020-07-13_N Sampled By: SH/JE on 19-AUG-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	213		5.0	mg/L		21-AUG-20	R5198082
Carbonate (CO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Dissolved Organic Carbon	0.58		0.50	mg/L		23-AUG-20	R5198658
Hydroxide (OH)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Total Kjeldahl Nitrogen	0.390		0.050	mg/L		21-AUG-20	R5195197
Total Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-AUG-20	23-AUG-20	R5199384
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5200217
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-AUG-20	23-AUG-20	R5199384

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-3 CM_NNP_WS_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Barium (Ba)-Dissolved	0.0886		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Boron (B)-Dissolved	0.023		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	21-AUG-20	23-AUG-20	R5199384
Calcium (Ca)-Dissolved	55.9		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-AUG-20	23-AUG-20	R5199384
Copper (Cu)-Dissolved	0.00074		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Lithium (Li)-Dissolved	0.0076		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Magnesium (Mg)-Dissolved	11.6		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Molybdenum (Mo)-Dissolved	0.000659		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Potassium (K)-Dissolved	0.692		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Selenium (Se)-Dissolved	0.264		0.050	ug/L	21-AUG-20	23-AUG-20	R5199384
Silicon (Si)-Dissolved	2.62		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Sodium (Na)-Dissolved	4.05		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Strontium (Sr)-Dissolved	0.297		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Uranium (U)-Dissolved	0.000198		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Hardness							
Hardness (as CaCO3)	187		0.50	mg/L		24-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5197957
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Carbonate (as CaCO3)	1.6		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Total (as CaCO3)	176		1.0	mg/L		21-AUG-20	R5198082
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		21-AUG-20	R5196697
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-AUG-20	R5197639
Chloride in Water by IC							
Chloride (Cl)	0.61		0.50	mg/L		21-AUG-20	R5197639
Electrical Conductivity (EC)							
Conductivity (@ 25C)	339		2.0	uS/cm		21-AUG-20	R5198082
Fluoride in Water by IC							
Fluoride (F)	0.094		0.020	mg/L		21-AUG-20	R5197639
Ion Balance Calculation							
Ion Balance	101		-100	%		24-AUG-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-3 CM_NNP_WS_2020-07-13_N Sampled By: SH/JE on 19-AUG-20 @ 12:00 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	0.6			%		24-AUG-20	
Anion Sum	3.89			meq/L		24-AUG-20	
Cation Sum	3.94			meq/L		24-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0131		0.0050	mg/L		21-AUG-20	R5197639
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-AUG-20	R5197639
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0026		0.0010	mg/L		20-AUG-20	R5194040
Oxidation redution potential by elect.							
ORP	422		-1000	mV		20-AUG-20	R5194198
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		24-AUG-20	R5199212
Sulfate in Water by IC							
Sulfate (SO4)	16.5		0.30	mg/L		21-AUG-20	R5197639
Total Dissolved Solids							
Total Dissolved Solids	201	DLHC	20	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	<0.10		0.10	NTU		20-AUG-20	R5194236
pH							
pH	8.34		0.10	pH		21-AUG-20	R5198082
L2491649-4 CM_NNT_WS_2020-07-13_N Sampled By: SH/JE on 19-AUG-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Carbonate (CO3)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Dissolved Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Hydroxide (OH)	<5.0		5.0	mg/L		21-AUG-20	R5198082
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		26-AUG-20	R5195197
Total Organic Carbon	<0.50		0.50	mg/L		23-AUG-20	R5198658
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	21-AUG-20	23-AUG-20	R5199384
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5200454
Dissolved Mercury Filtration Location	FIELD					26-AUG-20	R5200217
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					21-AUG-20	R5196737
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	21-AUG-20	23-AUG-20	R5199384
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Boron (B)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	21-AUG-20	23-AUG-20	R5199384
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-4 CM_NNT_WS_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	21-AUG-20	23-AUG-20	R5199384
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	21-AUG-20	23-AUG-20	R5199384
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	21-AUG-20	23-AUG-20	R5199384
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Potassium (K)-Dissolved	<0.050		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	21-AUG-20	23-AUG-20	R5199384
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	21-AUG-20	23-AUG-20	R5199384
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	21-AUG-20	23-AUG-20	R5199384
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	21-AUG-20	23-AUG-20	R5199384
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	21-AUG-20	23-AUG-20	R5199384
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	21-AUG-20	23-AUG-20	R5199384
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	21-AUG-20	23-AUG-20	R5199384
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	21-AUG-20	23-AUG-20	R5199384
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		24-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.1		1.0	mg/L		21-AUG-20	R5197957
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		21-AUG-20	R5198082
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		21-AUG-20	R5196697
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		21-AUG-20	R5197639
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		21-AUG-20	R5197639
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		21-AUG-20	R5198082
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		21-AUG-20	R5197639
Ion Balance Calculation							
Ion Balance	0.0		-100	%		24-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		24-AUG-20	
Anion Sum	<0.10			meq/L		24-AUG-20	
Cation Sum	<0.10			meq/L		24-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		21-AUG-20	R5197639
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-AUG-20	R5197639
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2491649-4 CM_NNT_WS_2020-07-13_N							
Sampled By: SH/JE on 19-AUG-20 @ 12:00							
Matrix: WG							
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		20-AUG-20	R5194040
Oxidation redution potential by elect.							
ORP	539		-1000	mV		20-AUG-20	R5194198
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-20	R5199212
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		21-AUG-20	R5197639
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		25-AUG-20	R5202201
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		25-AUG-20	R5202097
Turbidity							
Turbidity	<0.10		0.10	NTU		20-AUG-20	R5194236
pH							
pH	5.54		0.10	pH		21-AUG-20	R5198082

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200819

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2491649

Report Date: 05-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5197957							
WG3389516-5	LCS							
Acidity (as CaCO3)			102.6		%		85-115	21-AUG-20
WG3389516-4	MB							
Acidity (as CaCO3)			1.6		mg/L		2	21-AUG-20
ALK-MAN-CL								
	Water							
Batch	R5198082							
WG3389563-14	LCS							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	21-AUG-20
WG3389563-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-2	LCS							
Beryllium (Be)-Dissolved			105.4		%		80-120	23-AUG-20
WG3388960-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-20
BIC-CL								
	Water							
Batch	R5198082							
WG3389563-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-20
BR-L-IC-N-CL								
	Water							
Batch	R5197639							
WG3389339-7	DUP	L2491649-4						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6	LCS							
Bromide (Br)			102.3		%		85-115	21-AUG-20
WG3389339-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-20
WG3389339-8	MS	L2491649-4						
Bromide (Br)			109.9		%		75-125	21-AUG-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5198658							
WG3389781-10	LCS							
Dissolved Organic Carbon			101.2		%		80-120	23-AUG-20
WG3389781-9	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-AUG-20



Quality Control Report

Workorder: L2491649

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5198658							
WG3389781-11	DUP	L2491649-1						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-AUG-20
WG3389781-10	LCS							
Total Organic Carbon			100.4		%		80-120	23-AUG-20
WG3389781-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	23-AUG-20
WG3389781-12	MS	L2491649-1						
Total Organic Carbon			97.3		%		70-130	23-AUG-20
CL-IC-N-CL								
Water								
Batch	R5197639							
WG3389339-7	DUP	L2491649-4						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6	LCS							
Chloride (Cl)			100.7		%		90-110	21-AUG-20
WG3389339-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-20
WG3389339-8	MS	L2491649-4						
Chloride (Cl)			107.2		%		75-125	21-AUG-20
CO3-CL								
Water								
Batch	R5198082							
WG3389563-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-20
EC-L-PCT-CL								
Water								
Batch	R5198082							
WG3389563-14	LCS							
Conductivity (@ 25C)			97.7		%		90-110	21-AUG-20
WG3389563-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-20
F-IC-N-CL								
Water								
Batch	R5197639							
WG3389339-7	DUP	L2491649-4						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6	LCS							
Fluoride (F)			104.0		%		90-110	21-AUG-20
WG3389339-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
WG3389339-8	MS	L2491649-4						



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-CL								
Water								
Batch	R5197639							
WG3389339-8	MS	L2491649-4						
Fluoride (F)			103.7		%		75-125	21-AUG-20
HG-D-CVAA-VA								
Water								
Batch	R5200454							
WG3391237-7	DUP	L2491649-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	26-AUG-20
WG3391237-6	LCS							
Mercury (Hg)-Dissolved			92.1		%		80-120	26-AUG-20
WG3391237-5	MB	NP						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-20
MET-D-CCMS-VA								
Water								
Batch	R5199384							
WG3388960-2	LCS							
Aluminum (Al)-Dissolved			103.1		%		80-120	23-AUG-20
Antimony (Sb)-Dissolved			112.9		%		80-120	23-AUG-20
Arsenic (As)-Dissolved			101.9		%		80-120	23-AUG-20
Barium (Ba)-Dissolved			108.3		%		80-120	23-AUG-20
Bismuth (Bi)-Dissolved			107.3		%		80-120	23-AUG-20
Boron (B)-Dissolved			104.4		%		80-120	23-AUG-20
Cadmium (Cd)-Dissolved			102.3		%		80-120	23-AUG-20
Calcium (Ca)-Dissolved			104.4		%		80-120	23-AUG-20
Chromium (Cr)-Dissolved			105.3		%		80-120	23-AUG-20
Cobalt (Co)-Dissolved			102.6		%		80-120	23-AUG-20
Copper (Cu)-Dissolved			101.7		%		80-120	23-AUG-20
Iron (Fe)-Dissolved			98.7		%		80-120	23-AUG-20
Lead (Pb)-Dissolved			102.7		%		80-120	23-AUG-20
Lithium (Li)-Dissolved			105.8		%		80-120	23-AUG-20
Magnesium (Mg)-Dissolved			100.1		%		80-120	23-AUG-20
Manganese (Mn)-Dissolved			101.8		%		80-120	23-AUG-20
Molybdenum (Mo)-Dissolved			111.1		%		80-120	23-AUG-20
Nickel (Ni)-Dissolved			103.0		%		80-120	23-AUG-20
Potassium (K)-Dissolved			105.3		%		80-120	23-AUG-20
Selenium (Se)-Dissolved			102.9		%		80-120	23-AUG-20
Silicon (Si)-Dissolved			107.7		%		60-140	23-AUG-20
Silver (Ag)-Dissolved			107.8		%		80-120	23-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-2	LCS							
Sodium (Na)-Dissolved			109.6		%		80-120	23-AUG-20
Strontium (Sr)-Dissolved			111.2		%		80-120	23-AUG-20
Thallium (Tl)-Dissolved			104.9		%		80-120	23-AUG-20
Tin (Sn)-Dissolved			100.7		%		80-120	23-AUG-20
Titanium (Ti)-Dissolved			101.3		%		80-120	23-AUG-20
Uranium (U)-Dissolved			102.7		%		80-120	23-AUG-20
Vanadium (V)-Dissolved			102.8		%		80-120	23-AUG-20
Zinc (Zn)-Dissolved			99.1		%		80-120	23-AUG-20
WG3388960-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199384							
WG3388960-1	MB	NP						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5196697							
WG3388669-15	DUP	L2491649-4						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3388669-14	LCS							
Ammonia as N			100.4		%		85-115	21-AUG-20
WG3388669-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	21-AUG-20
WG3388669-16	MS	L2491649-4						
Ammonia as N			98.4		%		75-125	21-AUG-20
NO2-L-IC-N-CL								
	Water							
Batch	R5197639							
WG3389339-7	DUP	L2491649-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6	LCS							
Nitrite (as N)			100.3		%		90-110	21-AUG-20
WG3389339-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
WG3389339-8	MS	L2491649-4						
Nitrite (as N)			109.6		%		75-125	21-AUG-20
NO3-L-IC-N-CL								
	Water							
Batch	R5197639							
WG3389339-7	DUP	L2491649-4						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6	LCS							
Nitrate (as N)			101.1		%		90-110	21-AUG-20
WG3389339-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
WG3389339-8	MS	L2491649-4						
Nitrate (as N)			107.6		%		75-125	21-AUG-20
OH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OH-CL	Water							
Batch	R5198082							
WG3389563-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-20
ORP-CL	Water							
Batch	R5194198							
WG3388065-4 CRM		CL-ORP						
ORP			222		mV		210-230	20-AUG-20
P-T-L-COL-CL	Water							
Batch	R5199212							
WG3389864-10 LCS								
Phosphorus (P)-Total			107.1		%		80-120	24-AUG-20
WG3389864-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-20
PH-CL	Water							
Batch	R5198082							
WG3389563-14 LCS								
pH			6.98		pH		6.9-7.1	21-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5194040							
WG3387794-10 LCS								
Orthophosphate-Dissolved (as P)			97.0		%		80-120	20-AUG-20
WG3387794-9 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-20
WG3387794-12 MS		L2491649-4						
Orthophosphate-Dissolved (as P)			93.5		%		70-130	20-AUG-20
SO4-IC-N-CL	Water							
Batch	R5197639							
WG3389339-7 DUP		L2491649-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	21-AUG-20
WG3389339-6 LCS								
Sulfate (SO4)			101.8		%		90-110	21-AUG-20
WG3389339-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
WG3389339-8 MS		L2491649-4						
Sulfate (SO4)			107.6		%		75-125	21-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
Water								
Batch	R5202201							
WG3390367-2	LCS							
Total Dissolved Solids			99.5		%		85-115	25-AUG-20
WG3390367-1	MB							
Total Dissolved Solids			<10		mg/L		10	25-AUG-20
TKN-L-F-CL								
Water								
Batch	R5195197							
WG3388365-10	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	21-AUG-20
WG3388365-2	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	20-AUG-20
WG3388365-4	LCS							
Total Kjeldahl Nitrogen			89.7		%		75-125	20-AUG-20
WG3388365-6	LCS							
Total Kjeldahl Nitrogen			102.6		%		75-125	20-AUG-20
WG3388365-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-AUG-20
WG3388365-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-AUG-20
WG3388365-8	MS	L2491649-4						
Total Kjeldahl Nitrogen			129.3		%		70-130	21-AUG-20
TSS-L-CL								
Water								
Batch	R5202097							
WG3390199-2	LCS							
Total Suspended Solids			95.5		%		85-115	25-AUG-20
WG3390199-1	MB							
Total Suspended Solids			<1.0		mg/L		1	25-AUG-20
TURBIDITY-CL								
Water								
Batch	R5194236							
WG3387916-5	LCS							
Turbidity			97.0		%		85-115	20-AUG-20
WG3387916-4	MB							
Turbidity			<0.10		NTU		0.1	20-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	19-AUG-20 13:00	20-AUG-20 18:00	0.25	29	hours	EHTR-FM
	2	19-AUG-20 13:05	20-AUG-20 18:00	0.25	29	hours	EHTR-FM
	3	19-AUG-20 12:00	20-AUG-20 18:00	0.25	30	hours	EHTR-FM
	4	19-AUG-20 12:00	20-AUG-20 18:00	0.25	30	hours	EHTR-FM
pH							
	1	19-AUG-20 13:00	21-AUG-20 13:00	0.25	48	hours	EHTR-FM
	2	19-AUG-20 13:05	21-AUG-20 13:00	0.25	48	hours	EHTR-FM
	3	19-AUG-20 12:00	21-AUG-20 13:00	0.25	49	hours	EHTR-FM
	4	19-AUG-20 12:00	21-AUG-20 13:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2491649 were received on 20-AUG-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q3_20200819		TURNAROUND TIME: Regular		RUSH: No				
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jay Jones		Lab Contact Inayat Dhaliwal		Email 1: Victoria.Sharpe@teck.com		X	X	X
Email Jay.Jones@teck.com		Email inayat.dhaliwal@alsglobal.com		Email 2: teckcoal@equisonline.com				X
Address PO Box 3000		Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X
				Email 4: don.sacino@teck.com		X	X	X
City Sparwood	Province BC	City Calgary	Province AB			X	X	X
Postal Code V0B 2G0	Country Canada	Postal Code T1Y 7B5	Country Canada					
Phone Number 1-250-425-7321		Phone Number 403 407 1800		PO number	VPO00683186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2491649-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	ANALYSIS REQUESTED					ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA
									F	N	F	F	N					
CM_MW3-DP_WG_2020-07-13_N	CM_MW3-DP	WG	No	2020/08/19	13:00	G	5		H2SO4	H2SO4	HCl	HNO3	NONE					
CM_MW3-SH_WG_2020-07-13_N	CM_MW3-SH	WG	No	2020/08/19	13:05	G	5											
CM_NNP_WS_2020-07-13_N	CM_NNP	WG	No	2020/08/19	--	G	5											
CM_NNT_WS_2020-07-13_N	CM_NNT	WG	No	2020/08/19	--	G	5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.						Jm		8/20 9:00	
SERVICE REQUEST (rush - subject to availability)									
Regular (default) <input checked="" type="checkbox"/>		Sampler's Name		SH/JE		Mobile #		250-425-7529	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		<i>[Signature]</i>		Date/Time		August 19, 2020	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									

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TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 21-AUG-20
Report Date: 04-FEB-21 11:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2492282
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q3_20200820
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:41
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492282-1 CM_MW2-SH_WG_2020-07-13_N							
Sampled By: SH on 20-AUG-20 @ 11:24							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	415		5.0	mg/L		24-AUG-20	R5198982
Carbonate (CO3)	<5.0		5.0	mg/L		24-AUG-20	R5198982
Dissolved Organic Carbon	1.13	RRV	0.50	mg/L		25-AUG-20	R5199932
Hydroxide (OH)	<5.0		5.0	mg/L		24-AUG-20	R5198982
Total Kjeldahl Nitrogen	0.597		0.050	mg/L		24-AUG-20	R5202200
Total Organic Carbon	0.87	RRV	0.50	mg/L		25-AUG-20	R5199932
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	24-AUG-20	24-AUG-20	R5199449
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	25-AUG-20	25-AUG-20	R5199559
Dissolved Mercury Filtration Location	FIELD					25-AUG-20	R5199833
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					24-AUG-20	R5199352
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Barium (Ba)-Dissolved	0.115		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Boron (B)-Dissolved	0.042		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Cadmium (Cd)-Dissolved	0.157		0.0050	ug/L	24-AUG-20	24-AUG-20	R5199449
Calcium (Ca)-Dissolved	199		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	24-AUG-20	24-AUG-20	R5199449
Copper (Cu)-Dissolved	0.00078		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Lithium (Li)-Dissolved	0.0258		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Magnesium (Mg)-Dissolved	53.5		0.10	mg/L	24-AUG-20	24-AUG-20	R5199449
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Molybdenum (Mo)-Dissolved	0.000128		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199449
Nickel (Ni)-Dissolved	0.00063		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Potassium (K)-Dissolved	1.82		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Selenium (Se)-Dissolved	0.090		0.050	ug/L	24-AUG-20	24-AUG-20	R5199449
Silicon (Si)-Dissolved	5.29		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Silver (Ag)-Dissolved	0.000013		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Sodium (Na)-Dissolved	28.7		0.050	mg/L	24-AUG-20	24-AUG-20	R5199449
Strontium (Sr)-Dissolved	0.611		0.00020	mg/L	24-AUG-20	24-AUG-20	R5199449
Thallium (Tl)-Dissolved	0.000010		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	24-AUG-20	24-AUG-20	R5199449
Uranium (U)-Dissolved	0.000208		0.000010	mg/L	24-AUG-20	24-AUG-20	R5199449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199449
Zinc (Zn)-Dissolved	0.0039		0.0010	mg/L	24-AUG-20	24-AUG-20	R5199449
Hardness							
Hardness (as CaCO3)	717		0.50	mg/L		25-AUG-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.2		1.0	mg/L		25-AUG-20	R5200538
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492282-1 CM_MW2-SH_WG_2020-07-13_N							
Sampled By: SH on 20-AUG-20 @ 11:24							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	340		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		24-AUG-20	R5198982
Alkalinity, Total (as CaCO3)	340		1.0	mg/L		24-AUG-20	R5198982
Ammonia, Total (as N)							
Ammonia as N	0.0101		0.0050	mg/L		24-AUG-20	R5199255
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-AUG-20	R5197601
Chloride in Water by IC							
Chloride (Cl)	3.3	DLHC	2.5	mg/L		21-AUG-20	R5197601
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1250		2.0	uS/cm		24-AUG-20	R5198982
Fluoride in Water by IC							
Fluoride (F)	0.11	DLHC	0.10	mg/L		21-AUG-20	R5197601
Ion Balance Calculation							
Ion Balance	96.1		-100	%		26-AUG-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.0			%		26-AUG-20	
Anion Sum	16.3			meq/L		26-AUG-20	
Cation Sum	15.6			meq/L		26-AUG-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.048	DLHC	0.025	mg/L		21-AUG-20	R5197601
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-AUG-20	R5197601
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		21-AUG-20	R5196636
Oxidation redution potential by elect.							
ORP	491		-1000	mV		21-AUG-20	R5196696
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-AUG-20	R5199828
Sulfate in Water by IC							
Sulfate (SO4)	450	DLHC	1.5	mg/L		21-AUG-20	R5197601
Total Dissolved Solids							
Total Dissolved Solids	997	DLHC	20	mg/L		26-AUG-20	R5202973
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-20	R5202984
Turbidity							
Turbidity	<0.10		0.10	NTU		21-AUG-20	R5196698
pH							
pH	8.17		0.10	pH		24-AUG-20	R5198982

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q3_20200820

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2492282

Report Date: 04-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5200538							
WG3391329-3	DUP	L2492282-1						
Acidity (as CaCO3)		1.2	1.6	J	mg/L	0.4	2	25-AUG-20
WG3391329-2	LCS		103.6		%		85-115	25-AUG-20
Acidity (as CaCO3)								
WG3391329-1	MB		1.8		mg/L		2	25-AUG-20
Acidity (as CaCO3)								
ALK-MAN-CL								
	Water							
Batch	R5198982							
WG3389872-8	LCS		101.4		%		85-115	24-AUG-20
Alkalinity, Total (as CaCO3)								
WG3389872-7	MB		<1.0		mg/L		1	24-AUG-20
Alkalinity, Total (as CaCO3)								
BE-D-L-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2	LCS		95.8		%		80-120	24-AUG-20
Beryllium (Be)-Dissolved								
WG3389976-1	MB	NP	<0.000020		mg/L		0.00002	24-AUG-20
Beryllium (Be)-Dissolved								
BIC-CL								
	Water							
Batch	R5198982							
WG3389872-7	MB		<5.0		mg/L		5	24-AUG-20
Bicarbonate (HCO3)								
BR-L-IC-N-CL								
	Water							
Batch	R5197601							
WG3389325-10	LCS		106.8		%		85-115	21-AUG-20
Bromide (Br)								
WG3389325-9	MB		<0.050		mg/L		0.05	21-AUG-20
Bromide (Br)								
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5199932							
WG3390486-6	LCS		97.5		%		80-120	24-AUG-20
Dissolved Organic Carbon								
WG3390486-5	MB		<0.50		mg/L		0.5	24-AUG-20
Dissolved Organic Carbon								
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2492282

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5199932							
WG3390486-6	LCS							
Total Organic Carbon			101.2		%		80-120	24-AUG-20
WG3390486-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	24-AUG-20
CL-IC-N-CL	Water							
Batch	R5197601							
WG3389325-10	LCS							
Chloride (Cl)			99.2		%		90-110	21-AUG-20
WG3389325-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-20
CO3-CL	Water							
Batch	R5198982							
WG3389872-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	24-AUG-20
EC-L-PCT-CL	Water							
Batch	R5198982							
WG3389872-8	LCS							
Conductivity (@ 25C)			96.7		%		90-110	24-AUG-20
WG3389872-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-AUG-20
F-IC-N-CL	Water							
Batch	R5197601							
WG3389325-10	LCS							
Fluoride (F)			104.6		%		90-110	21-AUG-20
WG3389325-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-20
HG-D-CVAA-VA	Water							
Batch	R5199559							
WG3390759-2	LCS							
Mercury (Hg)-Dissolved			96.3		%		80-120	25-AUG-20
WG3390759-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-AUG-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2492282

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-2	LCS							
Aluminum (Al)-Dissolved			98.1		%		80-120	24-AUG-20
Antimony (Sb)-Dissolved			96.3		%		80-120	24-AUG-20
Arsenic (As)-Dissolved			97.1		%		80-120	24-AUG-20
Barium (Ba)-Dissolved			98.0		%		80-120	24-AUG-20
Bismuth (Bi)-Dissolved			101.0		%		80-120	24-AUG-20
Boron (B)-Dissolved			92.7		%		80-120	24-AUG-20
Cadmium (Cd)-Dissolved			97.2		%		80-120	24-AUG-20
Calcium (Ca)-Dissolved			96.7		%		80-120	24-AUG-20
Chromium (Cr)-Dissolved			96.8		%		80-120	24-AUG-20
Cobalt (Co)-Dissolved			96.4		%		80-120	24-AUG-20
Copper (Cu)-Dissolved			95.5		%		80-120	24-AUG-20
Iron (Fe)-Dissolved			104.5		%		80-120	24-AUG-20
Lead (Pb)-Dissolved			98.6		%		80-120	24-AUG-20
Lithium (Li)-Dissolved			97.1		%		80-120	24-AUG-20
Magnesium (Mg)-Dissolved			95.4		%		80-120	24-AUG-20
Manganese (Mn)-Dissolved			99.0		%		80-120	24-AUG-20
Molybdenum (Mo)-Dissolved			98.1		%		80-120	24-AUG-20
Nickel (Ni)-Dissolved			96.7		%		80-120	24-AUG-20
Potassium (K)-Dissolved			104.1		%		80-120	24-AUG-20
Selenium (Se)-Dissolved			99.8		%		80-120	24-AUG-20
Silicon (Si)-Dissolved			112.7		%		60-140	24-AUG-20
Silver (Ag)-Dissolved			100.1		%		80-120	24-AUG-20
Sodium (Na)-Dissolved			100.3		%		80-120	24-AUG-20
Strontium (Sr)-Dissolved			100.7		%		80-120	24-AUG-20
Thallium (Tl)-Dissolved			100.4		%		80-120	24-AUG-20
Tin (Sn)-Dissolved			97.0		%		80-120	24-AUG-20
Titanium (Ti)-Dissolved			97.8		%		80-120	24-AUG-20
Uranium (U)-Dissolved			102.8		%		80-120	24-AUG-20
Vanadium (V)-Dissolved			97.5		%		80-120	24-AUG-20
Zinc (Zn)-Dissolved			97.1		%		80-120	24-AUG-20
WG3389976-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5199449							
WG3389976-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-AUG-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-AUG-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-AUG-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-AUG-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-AUG-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-AUG-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-AUG-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-AUG-20
NH3-L-F-CL								
	Water							
Batch	R5199255							
WG3389883-22	LCS							
Ammonia as N			96.7		%		85-115	24-AUG-20
WG3389883-21	MB							
Ammonia as N			<0.0050		mg/L		0.005	24-AUG-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5197601							
WG3389325-10	LCS							
Nitrite (as N)			98.6		%		90-110	21-AUG-20
WG3389325-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-20
NO3-L-IC-N-CL	Water							
Batch	R5197601							
WG3389325-10	LCS							
Nitrate (as N)			103.0		%		90-110	21-AUG-20
WG3389325-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-20
OH-CL	Water							
Batch	R5198982							
WG3389872-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	24-AUG-20
ORP-CL	Water							
Batch	R5196696							
WG3388952-1	CRM	CL-ORP						
ORP			222		mV		210-230	21-AUG-20
P-T-L-COL-CL	Water							
Batch	R5199828							
WG3390762-6	LCS							
Phosphorus (P)-Total			106.2		%		80-120	25-AUG-20
WG3390762-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-AUG-20
PH-CL	Water							
Batch	R5198982							
WG3389872-8	LCS							
pH			6.99		pH		6.9-7.1	24-AUG-20
PO4-DO-L-COL-CL	Water							
Batch	R5196636							
WG3388785-6	LCS							
Orthophosphate-Dissolved (as P)			102.8		%		80-120	21-AUG-20
WG3388785-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-AUG-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch	R5197601							
WG3389325-10	LCS							
Sulfate (SO4)			101.1		%		90-110	21-AUG-20
WG3389325-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-20
SOLIDS-TDS-CL								
Batch	R5202973							
WG3391334-2	LCS							
Total Dissolved Solids			96.2		%		85-115	26-AUG-20
WG3391334-1	MB							
Total Dissolved Solids			<10		mg/L		10	26-AUG-20
TKN-L-F-CL								
Batch	R5202200							
WG3391977-3	DUP	L2492282-1						
Total Kjeldahl Nitrogen		0.597	0.597		mg/L	0.0	20	24-AUG-20
WG3391977-13	LCS							
Total Kjeldahl Nitrogen			92.5		%		75-125	24-AUG-20
WG3391977-17	LCS							
Total Kjeldahl Nitrogen			93.5		%		75-125	24-AUG-20
WG3391977-2	LCS							
Total Kjeldahl Nitrogen			97.0		%		75-125	24-AUG-20
WG3391977-6	LCS							
Total Kjeldahl Nitrogen			95.2		%		75-125	24-AUG-20
WG3391977-9	LCS							
Total Kjeldahl Nitrogen			94.1		%		75-125	24-AUG-20
WG3391977-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-AUG-20
WG3391977-4	MS	L2492282-1						
Total Kjeldahl Nitrogen			110.9		%		70-130	24-AUG-20
TSS-L-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5202984							
WG3391335-2	LCS							
Total Suspended Solids			88.4		%		85-115	26-AUG-20
WG3391335-1	MB							
Total Suspended Solids			<1.0		mg/L		1	26-AUG-20
TURBIDITY-CL	Water							
Batch	R5196698							
WG3388930-5	LCS							
Turbidity			95.9		%		85-115	21-AUG-20
WG3388930-4	MB							
Turbidity			<0.10		NTU		0.1	21-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	20-AUG-20 11:24	21-AUG-20 20:00	0.25	33	hours	EHTR-FM
pH	1	20-AUG-20 11:24	24-AUG-20 12:00	0.25	97	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2492282 were received on 21-AUG-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q3_20200820		TURNAROUND TIME: Regular			RUSH: No				
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO		
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jay Jones				Lab Contact Inayat Dhaliwal			Excel PDF EDD		
Email Jay.Jones@teck.com				Email inayat.dhaliwal@alsglobal.com			Email 1: Victoria.Sharpe@teck.com X X X		
Address PO Box 3000				Address 2559 29th St. NE			Email 2: teckcoal@equisonline.com X X X		
City Sparwood Province BC				City Calgary Province AB			Email 3: jay.jones@teck.com X X X		
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada			Email 4: don.sacino@teck.com X X X		
Phone Number 1-250-425-7321				Phone Number 403 407 1800			PO number VPO00683186		

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FIL	ANALYSIS REQUESTED						
									F	N	F	F	N		
								PRESEV.	H2SO4	H2SO4	HCl	HNO3	NONE		
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA		
CM_MW2-SH_WG_2020-07-13_N	CM_MW2-SH	WG	No	2020/08/20	11:24	G	5		1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME	ACCEPTED BY/AFFILIATION		DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.					7/4		08/21 8:45
SERVICE REQUEST (rush - subject to availability)							
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name		SH		Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge		Sampler's Signature				Date/Time	August 20, 2020
Emergency (1 Business Day) - 100% surcharge							
For Emergency <1 Day, ASAP or Weekend - Contact ALS							

90



SNC-Lavalin
ATTN: MARK NEWMAN
Teck Resources Limited c/o SNC-Lavalin
3 - 520 Lake Street
Nelson BC V1L 4C6

Date Received: 02-SEP-20
Report Date: 10-SEP-20 16:43 (MT)
Version: FINAL

Client Phone: 250-464-5672

Certificate of Analysis

Lab Work Order #: L2498068
Project P.O. #: 672225
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2498068-1 WG 01-SEP-20 12:10 CM_MW_AG1A_W G_2020_09_01_NP	L2498068-2 WG 01-SEP-20 13:00 CM_MW_AG1B_W G_2020_09_01_NP		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (@ 25C) (uS/cm)	924	783		
	Hardness (as CaCO3) (mg/L)	430	557		
	pH (pH)	7.93	7.83		
	ORP (mV)	205	246		
	Total Suspended Solids (mg/L)	25.9	<1.0		
	Total Dissolved Solids (mg/L)	694 ^{DLHC}	595 ^{DLHC}		
	Turbidity (NTU)	43.4	0.48		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	11.7	15.9		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	511	527		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	511	527		
	Ammonia as N (mg/L)	0.0424	<0.0050		
	Bicarbonate (HCO3) (mg/L)	623	643		
	Bromide (Br) (mg/L)	<0.25 ^{DLHC}	<0.050		
	Carbonate (CO3) (mg/L)	<5.0	<5.0		
	Chloride (Cl) (mg/L)	17.3 ^{DLHC}	1.43		
	Fluoride (F) (mg/L)	0.18 ^{DLHC}	0.086		
	Hydroxide (OH) (mg/L)	<5.0	<5.0		
	Ion Balance (%)	93.7	104		
	Nitrate and Nitrite (as N) (mg/L)	<0.025	0.314		
	Nitrate (as N) (mg/L)	<0.025 ^{DLHC}	0.314		
	Nitrite (as N) (mg/L)	<0.0050 ^{DLHC}	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.130	<0.050		
	Total Nitrogen (mg/L)	0.130	0.314		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0046		
	Phosphorus (P)-Total (mg/L)	0.0129	0.0052		
	Sulfate (SO4) (mg/L)	104 ^{DLHC}	14.1		
	Anion Sum (meq/L)	12.9	10.9		
	Cation Sum (meq/L)	12.1	11.3		
	Cation - Anion Balance (%)	-3.2	1.7		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	4.68	1.16		
	Total Organic Carbon (mg/L)	5.61	1.03		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0015		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2498068-1 WG 01-SEP-20 12:10 CM_MW_AG1A_W G_2020_09_01_NP	L2498068-2 WG 01-SEP-20 13:00 CM_MW_AG1B_W G_2020_09_01_NP		
Grouping	Analyte				
WATER					
Dissolved Metals	Antimony (Sb)-Dissolved (mg/L)	0.00016	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00214	0.00029		
	Barium (Ba)-Dissolved (mg/L)	1.06 ^{RRV}	0.222		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.041	0.028		
	Cadmium (Cd)-Dissolved (mg/L)	0.0000051	0.0000631		
	Calcium (Ca)-Dissolved (mg/L)	125	147		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00018		
	Cobalt (Co)-Dissolved (mg/L)	0.00101	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	2.26	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0236	0.0035		
	Magnesium (Mg)-Dissolved (mg/L)	28.7	46.4		
	Manganese (Mn)-Dissolved (mg/L)	0.271	0.0163		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00221	0.000286		
	Nickel (Ni)-Dissolved (mg/L)	0.00102	0.00063		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	1.45	1.13		
	Selenium (Se)-Dissolved (mg/L)	0.000289	0.000834		
	Silicon (Si)-Dissolved (mg/L)	6.21	6.01		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	75.6	2.61		
	Strontium (Sr)-Dissolved (mg/L)	0.661	0.314		
	Sulfur (S)-Dissolved (mg/L)	30.6	3.99		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000030		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030		
	Uranium (U)-Dissolved (mg/L)	0.00632	0.000566		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2498068-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2498068-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2498068-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-CL	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Reference Information

HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-CL	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
N-T-CALC-CL	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

TKN-L-F-CL Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TSS-L-CL Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



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Client: SNC-Lavalin
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street
 Nelson BC V1L 4C6

Contact: MARK NEWMAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5210148							
WG3398255-20	LCS							
Acidity (as CaCO3)			95.0		%		85-115	03-SEP-20
WG3398255-19	MB							
Acidity (as CaCO3)			1.5		mg/L		2	03-SEP-20
ALK-MAN-CL								
	Water							
Batch	R5214816							
WG3400027-11	LCS							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	08-SEP-20
WG3400027-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-SEP-20
BE-D-L-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2	LCS	TMRM						
Beryllium (Be)-Dissolved			97.1		%		80-120	03-SEP-20
WG3397999-1	MB							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-SEP-20
BIC-CL								
	Water							
Batch	R5214816							
WG3400027-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-SEP-20
BR-L-IC-N-CL								
	Water							
Batch	R5210451							
WG3398372-14	LCS							
Bromide (Br)			105.2		%		85-115	03-SEP-20
WG3398372-13	MB							
Bromide (Br)			<0.050		mg/L		0.05	03-SEP-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5212638							
WG3399122-6	LCS							
Dissolved Organic Carbon			114.3		%		80-120	05-SEP-20
WG3399122-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
C-TOT-ORG-LOW-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch R5212617								
WG3399145-6 LCS								
Total Organic Carbon			88.2		%		80-120	05-SEP-20
Batch R5212638								
WG3399122-6 LCS								
Total Organic Carbon			95.2		%		80-120	05-SEP-20
WG3399122-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	05-SEP-20
CL-L-IC-N-CL	Water							
Batch R5210451								
WG3398372-14 LCS								
Chloride (Cl)			104.2		%		85-115	03-SEP-20
WG3398372-13 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-SEP-20
CO3-CL	Water							
Batch R5214816								
WG3400027-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	08-SEP-20
EC-L-PCT-CL	Water							
Batch R5214816								
WG3400027-11 LCS								
Conductivity (@ 25C)			96.7		%		90-110	08-SEP-20
WG3400027-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-SEP-20
F-IC-N-CL	Water							
Batch R5210451								
WG3398372-14 LCS								
Fluoride (F)			107.2		%		90-110	03-SEP-20
WG3398372-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-SEP-20
HG-D-CVAA-CL	Water							
Batch R5218357								
WG3401040-2 LCS								
Mercury (Hg)-Dissolved			110.0		%		80-120	09-SEP-20
WG3401040-6 LCS								
Mercury (Hg)-Dissolved			114.0		%		80-120	09-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-CL								
	Water							
Batch	R5218357							
WG3401040-1 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
WG3401040-5 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-SEP-20
MET-D-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2 LCS		TMRM						
Aluminum (Al)-Dissolved			98.8		%		80-120	03-SEP-20
Antimony (Sb)-Dissolved			95.0		%		80-120	03-SEP-20
Arsenic (As)-Dissolved			100.1		%		80-120	03-SEP-20
Barium (Ba)-Dissolved			99.8		%		80-120	03-SEP-20
Bismuth (Bi)-Dissolved			99.2		%		80-120	03-SEP-20
Boron (B)-Dissolved			98.3		%		80-120	03-SEP-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	03-SEP-20
Calcium (Ca)-Dissolved			98.3		%		80-120	03-SEP-20
Chromium (Cr)-Dissolved			99.9		%		80-120	03-SEP-20
Cobalt (Co)-Dissolved			99.7		%		80-120	03-SEP-20
Copper (Cu)-Dissolved			99.1		%		80-120	03-SEP-20
Iron (Fe)-Dissolved			87.2		%		80-120	03-SEP-20
Lead (Pb)-Dissolved			99.7		%		80-120	03-SEP-20
Lithium (Li)-Dissolved			90.7		%		80-120	03-SEP-20
Magnesium (Mg)-Dissolved			107.4		%		80-120	03-SEP-20
Manganese (Mn)-Dissolved			99.2		%		80-120	03-SEP-20
Molybdenum (Mo)-Dissolved			97.5		%		80-120	03-SEP-20
Nickel (Ni)-Dissolved			99.7		%		80-120	03-SEP-20
Phosphorus (P)-Dissolved			101.0		%		70-130	03-SEP-20
Potassium (K)-Dissolved			98.3		%		80-120	03-SEP-20
Selenium (Se)-Dissolved			83.8		%		80-120	03-SEP-20
Silicon (Si)-Dissolved			86.3		%		60-140	03-SEP-20
Silver (Ag)-Dissolved			95.9		%		80-120	03-SEP-20
Sodium (Na)-Dissolved			103.0		%		80-120	03-SEP-20
Strontium (Sr)-Dissolved			99.5		%		80-120	03-SEP-20
Sulfur (S)-Dissolved			85.6		%		80-120	03-SEP-20
Thallium (Tl)-Dissolved			97.7		%		80-120	03-SEP-20
Tin (Sn)-Dissolved			98.9		%		80-120	03-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL								
	Water							
Batch	R5210057							
WG3397999-2	LCS	TMRM						
Titanium (Ti)-Dissolved			94.7		%		80-120	03-SEP-20
Uranium (U)-Dissolved			94.3		%		80-120	03-SEP-20
Vanadium (V)-Dissolved			101.2		%		80-120	03-SEP-20
Zinc (Zn)-Dissolved			95.1		%		80-120	03-SEP-20
Zirconium (Zr)-Dissolved			92.9		%		80-120	03-SEP-20
WG3397999-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	03-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-CL Water								
Batch R5210057								
WG3397999-1 MB								
			Titanium (Ti)-Dissolved		<0.00030		mg/L	0.0003 03-SEP-20
			Uranium (U)-Dissolved		<0.000010		mg/L	0.00001 03-SEP-20
			Vanadium (V)-Dissolved		<0.00050		mg/L	0.0005 03-SEP-20
			Zinc (Zn)-Dissolved		<0.0010		mg/L	0.001 03-SEP-20
			Zirconium (Zr)-Dissolved		<0.00020		mg/L	0.0002 03-SEP-20
NH3-L-F-CL Water								
Batch R5210223								
WG3397829-10 LCS								
			Ammonia as N		100.8		%	85-115 03-SEP-20
WG3397829-9 MB								
			Ammonia as N		<0.0050		mg/L	0.005 03-SEP-20
NO2-L-IC-N-CL Water								
Batch R5210451								
WG3398372-14 LCS								
			Nitrite (as N)		100.5		%	90-110 03-SEP-20
WG3398372-13 MB								
			Nitrite (as N)		<0.0010		mg/L	0.001 03-SEP-20
NO3-L-IC-N-CL Water								
Batch R5210451								
WG3398372-14 LCS								
			Nitrate (as N)		105.6		%	90-110 03-SEP-20
WG3398372-13 MB								
			Nitrate (as N)		<0.0050		mg/L	0.005 03-SEP-20
OH-CL Water								
Batch R5214816								
WG3400027-10 MB								
			Hydroxide (OH)		<5.0		mg/L	5 08-SEP-20
ORP-CL Water								
Batch R5211338								
		CL-ORP	WG3398964-8 CRM					
			ORP		222		mV	210-230 04-SEP-20
P-T-L-COL-CL Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL	Water							
Batch	R5210664							
WG3398750-6 LCS								
Phosphorus (P)-Total			104.6		%		80-120	04-SEP-20
WG3398750-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-20
PH-CL	Water							
Batch	R5214816							
WG3400027-11 LCS								
pH			7.00		pH		6.9-7.1	08-SEP-20
PO4-DO-L-COL-CL	Water							
Batch	R5210049							
WG3397927-2 LCS								
Orthophosphate-Dissolved (as P)			100.7		%		80-120	03-SEP-20
WG3397927-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	03-SEP-20
SO4-IC-N-CL	Water							
Batch	R5210451							
WG3398372-14 LCS								
Sulfate (SO4)			104.6		%		90-110	03-SEP-20
WG3398372-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-SEP-20
SOLIDS-TDS-CL	Water							
Batch	R5211861							
WG3398497-5 LCS								
Total Dissolved Solids			103.8		%		85-115	04-SEP-20
WG3398497-4 MB								
Total Dissolved Solids			<10		mg/L		10	04-SEP-20
TKN-L-F-CL	Water							
Batch	R5210523							
WG3398628-13 LCS								
Total Kjeldahl Nitrogen			91.3		%		75-125	04-SEP-20
WG3398628-15 LCS								
Total Kjeldahl Nitrogen			89.4		%		75-125	04-SEP-20
WG3398628-17 LCS								
Total Kjeldahl Nitrogen			88.4		%		75-125	04-SEP-20
WG3398628-2 LCS								
Total Kjeldahl Nitrogen			91.5		%		75-125	04-SEP-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5210523							
WG3398628-7	LCS							
Total Kjeldahl Nitrogen			109.3		%		75-125	04-SEP-20
WG3398628-9	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	04-SEP-20
WG3398628-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-16	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-6	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
WG3398628-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-20
TSS-L-CL								
	Water							
Batch	R5210838							
WG3398093-4	LCS							
Total Suspended Solids			93.4		%		85-115	04-SEP-20
WG3398093-3	MB							
Total Suspended Solids			<1.0		mg/L		1	04-SEP-20
TURBIDITY-CL								
	Water							
Batch	R5210048							
WG3397976-3	DUP	L2498068-1						
Turbidity		43.4	43.5		NTU	0.2	15	03-SEP-20
WG3397976-2	LCS							
Turbidity			97.4		%		85-115	03-SEP-20
WG3397976-1	MB							
Turbidity			<0.10		NTU		0.1	03-SEP-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Workorder: L2498068

Report Date: 10-SEP-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	01-SEP-20 12:10	04-SEP-20 16:30	0.25	76	hours	EHTR-FM
	2	01-SEP-20 13:00	04-SEP-20 16:30	0.25	76	hours	EHTR-FM
pH	1	01-SEP-20 12:10	08-SEP-20 14:00	0.25	170	hours	EHTR-FM
	2	01-SEP-20 13:00	08-SEP-20 14:00	0.25	169	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498068 were received on 02-SEP-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



CERTIFICATE OF ANALYSIS

Work Order : CG2000082
Amendment : 1
Client : SNC-Lavalin Inc.
Contact : Gavin Grundy
Address : # 3 - 520 Lake Street
Nelson BC Canada V1L 4C6
Telephone : 250 354 1664
Project : COAL MOUNTAIN OPERATIONS
PO : VPO00683186
C-O-C number : COC_WG_Q4_20201210_MW_AG
Sampler : SH/CJ
Site : ---
Quote number : Teck Coal Master Quote
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Calgary - Environmental
Account Manager : Inayat Dhaliwal
Address : 2559 29th Street NE
Calgary AB Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 11-Dec-2020 08:50
Date Analysis Commenced : 11-Dec-2020
Issue Date : 09-Feb-2021 13:56

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Lists names like Angela Ren, Anthony Calero, etc., and their roles and departments.



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "**Preliminary Report**" are considered authorized for use.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	CM_MW_AG1A _WG_2020-10-12_N	CM_MW_AG1B _WG_2020-10-12_N	CM_NNP2_WG_ 2020-10-12_N	---	---
Client sampling date / time					10-Dec-2020 11:35	10-Dec-2020 10:22	10-Dec-2020 12:00	---	---	
Analyte	CAS Number	Method	LOR	Unit	CG2000082-001 Result	CG2000082-002 Result	CG2000082-003 Result	----- ---	----- ---	
Physical Tests										
acidity (as CaCO3)	---	E283	2.0	mg/L	23.2	36.5	29.4	---	---	
alkalinity, bicarbonate (as CaCO3)	---	E290	1.0	mg/L	464	493	481	---	---	
alkalinity, carbonate (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	<1.0	---	---	
alkalinity, hydroxide (as CaCO3)	---	E290	1.0	mg/L	<1.0	<1.0	<1.0	---	---	
alkalinity, total (as CaCO3)	---	E290	1.0	mg/L	464	493	481	---	---	
conductivity	---	E100	2.0	µS/cm	782	807	807	---	---	
oxidation-reduction potential [ORP]	---	E125	0.10	mV	408	430	499	---	---	
pH	---	E108	0.10	pH units	7.81	7.63	7.67	---	---	
solids, total dissolved [TDS]	---	E162	10	mg/L	538 ^{DLHC}	615 ^{DLHC}	629 ^{DLHC}	---	---	
solids, total suspended [TSS]	---	E160-L	1.0	mg/L	123	3.8	2.4	---	---	
turbidity	---	E121	0.10	NTU	89.5	3.93	1.93	---	---	
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	460	657	661	---	---	
bicarbonate	71-52-3	E290	1.0	mg/L	566	602	587	---	---	
carbonate	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	---	---	
hydroxide	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	---	---	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0867	0.0233	0.0535	---	---	
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 ^{DLHC}	<0.250 ^{DLHC}	<0.250 ^{DLHC}	---	---	
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.51 ^{DLHC}	0.62 ^{DLHC}	0.61 ^{DLHC}	---	---	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.116 ^{DLHC}	<0.100 ^{DLHC}	<0.100 ^{DLHC}	---	---	
Kjeldahl nitrogen, total [TKN]	---	E318	0.050	mg/L	0.568	0.307	0.248	---	---	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0545 ^{DLHC}	0.242 ^{DLHC}	0.238 ^{DLHC}	---	---	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	<0.0050 ^{DLHC}	---	---	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0038	0.0043	---	---	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0566	0.0081	0.0042	---	---	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	27.0 ^{DLHC}	14.5 ^{DLHC}	14.6 ^{DLHC}	---	---	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	2.94	1.02	1.11	---	---	
carbon, total organic [TOC]	---	E355-L	0.50	mg/L	5.37	1.30	1.23	---	---	



Analytical Results

Sub-Matrix: Water

Client sample ID

(Matrix: Water)

					CM_MW_AG1A _WG_2020-10- 12_N	CM_MW_AG1B _WG_2020-10- 12_N	CM_NNP2_WG_ 2020-10-12_N	----	----
Client sampling date / time					10-Dec-2020 11:35	10-Dec-2020 10:22	10-Dec-2020 12:00	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2000082-001	CG2000082-002	CG2000082-003	-----	-----
					Result	Result	Result	----	----
Ion Balance									
ion balance (cations/anions ratio)	----	EC101	0.010	%	108	130	134	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.10	13.2	14.7	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	0.0015	0.0016	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00249	0.00025	0.00025	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.848	0.238	0.236	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	0.025	0.025	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0633	0.0605	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	177	180	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00017	0.00025	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.30	<0.10	<0.10	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	4.87	<0.010	<0.010	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0266	0.0034	0.0034	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	28.8	52.0	51.3	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.245	0.00140	0.00136	----	----
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00175	0.000157	0.000168	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00062	0.00062	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.32	0.984	0.973	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.079	0.423	0.497	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.27	5.22	5.36	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 ^{DLM}	<0.000010	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.2	2.57	2.52	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.768	0.340	0.336	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000021	0.000023	----	----



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Client sample ID

					CM_MW_AG1A _WG_2020-10- 12_N	CM_MW_AG1B _WG_2020-10- 12_N	CM_NNP2_WG_ 2020-10-12_N	----	----
					10-Dec-2020 11:35	10-Dec-2020 10:22	10-Dec-2020 12:00	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2000082-001	CG2000082-002	CG2000082-003	-----	-----
					Result	Result	Result	----	----
Dissolved Metals									
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00277	0.000566	0.000586	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0011	0.0010	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: CG2000082	Page	: 1 of 16
Amendment	: 1		
Client	: SNC-Lavalin Inc.	Laboratory	: Calgary - Environmental
Contact	: Gavin Grundy	Account Manager	: Inayat Dhaliwal
Address	: # 3 - 520 Lake Street Nelson BC Canada V1L 4C6	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: COAL MOUNTAIN OPERATIONS	Date Samples Received	: 11-Dec-2020 08:50
PO	: VPO00683186	Issue Date	: 09-Feb-2021 13:56
C-O-C number	: COC_WG_Q4_20201210_MW_AG		
Sampler	: SH/CJ		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2020-10-12_N	E298	10-Dec-2020	18-Dec-2020	28 days	7 days	✓	18-Dec-2020	20 days	0 days	✓	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2020-10-12_N	E298	10-Dec-2020	18-Dec-2020	28 days	7 days	✓	18-Dec-2020	20 days	0 days	✓	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid) CM_NNP2_WG_2020-10-12_N	E298	10-Dec-2020	18-Dec-2020	28 days	7 days	✓	18-Dec-2020	20 days	0 days	✓	
Anions and Nutrients : Bromide in Water by IC (Low Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.Br-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Bromide in Water by IC (Low Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.Br-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Bromide in Water by IC (Low Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E235.Br-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Chloride in Water by IC (Low Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.Cl-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Chloride in Water by IC (Low Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.Cl-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✔	
Anions and Nutrients : Chloride in Water by IC (Low Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E235.Cl-L	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✔	
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E378-U	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✔	
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E378-U	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✔	
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E378-U	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✔	
Anions and Nutrients : Fluoride in Water by IC											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.F	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✔	
Anions and Nutrients : Fluoride in Water by IC											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.F	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✔	
Anions and Nutrients : Fluoride in Water by IC											
HDPE CM_NNP2_WG_2020-10-12_N	E235.F	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✔	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.NO3-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✔	



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.NO3-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✓	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E235.NO3-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.NO2-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.NO2-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E235.NO2-L	10-Dec-2020	----	----	----		11-Dec-2020	3 days	1 days	✓	
Anions and Nutrients : Sulfate in Water by IC											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E235.SO4	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Sulfate in Water by IC											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E235.SO4	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Sulfate in Water by IC											
HDPE CM_NNP2_WG_2020-10-12_N	E235.SO4	10-Dec-2020	----	----	----		11-Dec-2020	28 days	1 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2020-10-12_N	E318	10-Dec-2020	16-Dec-2020	28 days	6 days	✓	16-Dec-2020	21 days	0 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2020-10-12_N	E318	10-Dec-2020	16-Dec-2020	28 days	6 days	✔	16-Dec-2020	21 days	0 days	✔	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid) CM_NNP2_WG_2020-10-12_N	E318	10-Dec-2020	16-Dec-2020	28 days	6 days	✔	16-Dec-2020	21 days	0 days	✔	
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)											
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2020-10-12_N	E372-U	10-Dec-2020	16-Dec-2020	28 days	6 days	✔	16-Dec-2020	21 days	0 days	✔	
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)											
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2020-10-12_N	E372-U	10-Dec-2020	16-Dec-2020	28 days	6 days	✔	16-Dec-2020	21 days	0 days	✔	
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)											
Amber glass total (sulfuric acid) CM_NNP2_WG_2020-10-12_N	E372-U	10-Dec-2020	16-Dec-2020	28 days	6 days	✔	16-Dec-2020	21 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) CM_MW_AG1A_WG_2020-10-12_N	E421.Cr-L	10-Dec-2020	14-Dec-2020	180 days	4 days	✔	14-Dec-2020	175 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) CM_MW_AG1B_WG_2020-10-12_N	E421.Cr-L	10-Dec-2020	14-Dec-2020	180 days	4 days	✔	14-Dec-2020	175 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) CM_NNP2_WG_2020-10-12_N	E421.Cr-L	10-Dec-2020	14-Dec-2020	180 days	4 days	✔	14-Dec-2020	175 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) CM_NNP2_WG_2020-10-12_N	E509	10-Dec-2020	14-Dec-2020	28 days	3 days	✔	14-Dec-2020	24 days	0 days	✔	



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) CM_MW_AG1A_WG_2020-10-12_N	E509	10-Dec-2020	15-Dec-2020	28 days	4 days	✓	15-Dec-2020	23 days	0 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) CM_MW_AG1B_WG_2020-10-12_N	E509	10-Dec-2020	14-Dec-2020	28 days	4 days	✓	14-Dec-2020	23 days	0 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) CM_MW_AG1A_WG_2020-10-12_N	E421	10-Dec-2020	14-Dec-2020	180 days	4 days	✓	14-Dec-2020	175 days	0 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) CM_MW_AG1B_WG_2020-10-12_N	E421	10-Dec-2020	14-Dec-2020	180 days	4 days	✓	14-Dec-2020	175 days	0 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) CM_NNP2_WG_2020-10-12_N	E421	10-Dec-2020	14-Dec-2020	180 days	4 days	✓	14-Dec-2020	175 days	0 days	✓	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)											
Amber glass dissolved (sulfuric acid) CM_MW_AG1A_WG_2020-10-12_N	E358-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)											
Amber glass dissolved (sulfuric acid) CM_MW_AG1B_WG_2020-10-12_N	E358-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)											
Amber glass dissolved (sulfuric acid) CM_NNP2_WG_2020-10-12_N	E358-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)											
Amber glass total (sulfuric acid) CM_MW_AG1A_WG_2020-10-12_N	E355-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)											
Amber glass total (sulfuric acid) CM_MW_AG1B_WG_2020-10-12_N	E355-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)											
Amber glass total (sulfuric acid) CM_NNP2_WG_2020-10-12_N	E355-L	10-Dec-2020	11-Dec-2020	28 days	1 days	✓	11-Dec-2020	26 days	0 days	✓	
Physical Tests : Acidity by Titration											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E283	10-Dec-2020	----	----	----		16-Dec-2020	14 days	5 days	✓	
Physical Tests : Acidity by Titration											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E283	10-Dec-2020	----	----	----		16-Dec-2020	14 days	5 days	✓	
Physical Tests : Acidity by Titration											
HDPE CM_NNP2_WG_2020-10-12_N	E283	10-Dec-2020	----	----	----		16-Dec-2020	14 days	5 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E290	10-Dec-2020	----	----	----		17-Dec-2020	14 days	6 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E290	10-Dec-2020	----	----	----		17-Dec-2020	14 days	6 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE CM_NNP2_WG_2020-10-12_N	E290	10-Dec-2020	----	----	----		17-Dec-2020	14 days	6 days	✓	
Physical Tests : Conductivity in Water											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E100	10-Dec-2020	----	----	----		17-Dec-2020	28 days	6 days	✓	



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : Conductivity in Water											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E100	10-Dec-2020	----	----	----		17-Dec-2020	28 days	6 days	✓	
Physical Tests : Conductivity in Water											
HDPE CM_NNP2_WG_2020-10-12_N	E100	10-Dec-2020	----	----	----		17-Dec-2020	28 days	6 days	✓	
Physical Tests : ORP by Electrode											
HDPE CM_NNP2_WG_2020-10-12_N	E125	10-Dec-2020	----	----	----		12-Dec-2020	0.34 hrs	44 hrs	* EHTR-FM	
Physical Tests : ORP by Electrode											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E125	10-Dec-2020	----	----	----		12-Dec-2020	0.34 hrs	45 hrs	* EHTR-FM	
Physical Tests : ORP by Electrode											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E125	10-Dec-2020	----	----	----		12-Dec-2020	0.34 hrs	46 hrs	* EHTR-FM	
Physical Tests : pH by Meter											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E108	10-Dec-2020	----	----	----		17-Dec-2020	0.25 hrs	163 hrs	* EHTR-FM	
Physical Tests : pH by Meter											
HDPE CM_NNP2_WG_2020-10-12_N	E108	10-Dec-2020	----	----	----		17-Dec-2020	0.25 hrs	163 hrs	* EHTR-FM	
Physical Tests : pH by Meter											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E108	10-Dec-2020	----	----	----		17-Dec-2020	0.25 hrs	165 hrs	* EHTR-FM	
Physical Tests : TDS by Gravimetry											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E162	10-Dec-2020	----	----	----		14-Dec-2020	7 days	3 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : TDS by Gravimetry											
HDPE CM_NNP2_WG_2020-10-12_N	E162	10-Dec-2020	----	----	----		14-Dec-2020	7 days	3 days	✔	
Physical Tests : TDS by Gravimetry											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E162	10-Dec-2020	----	----	----		14-Dec-2020	7 days	4 days	✔	
Physical Tests : TSS by Gravimetry (Low Level)											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E160-L	10-Dec-2020	----	----	----		14-Dec-2020	7 days	3 days	✔	
Physical Tests : TSS by Gravimetry (Low Level)											
HDPE CM_NNP2_WG_2020-10-12_N	E160-L	10-Dec-2020	----	----	----		14-Dec-2020	7 days	3 days	✔	
Physical Tests : TSS by Gravimetry (Low Level)											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E160-L	10-Dec-2020	----	----	----		14-Dec-2020	7 days	4 days	✔	
Physical Tests : Turbidity by Nephelometry											
HDPE CM_MW_AG1A_WG_2020-10-12_N	E121	10-Dec-2020	----	----	----		12-Dec-2020	3 days	1 days	✔	
Physical Tests : Turbidity by Nephelometry											
HDPE CM_MW_AG1B_WG_2020-10-12_N	E121	10-Dec-2020	----	----	----		12-Dec-2020	3 days	1 days	✔	
Physical Tests : Turbidity by Nephelometry											
HDPE CM_NNP2_WG_2020-10-12_N	E121	10-Dec-2020	----	----	----		12-Dec-2020	3 days	1 days	✔	

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
 Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	131355	1	3	33.3	5.0	✔
Alkalinity Species by Titration	E290	132072	1	3	33.3	5.0	✔
Ammonia by Fluorescence	E298	132664	1	16	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	129632	1	3	33.3	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	129633	1	3	33.3	5.0	✔
Conductivity in Water	E100	132071	1	3	33.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	130460	1	3	33.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	130455	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	130461	1	15	6.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	129512	1	3	33.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	129618	1	3	33.3	5.0	✔
Fluoride in Water by IC	E235.F	129636	1	3	33.3	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	129634	1	3	33.3	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	129635	1	3	33.3	5.0	✔
ORP by Electrode	E125	129799	1	3	33.3	5.0	✔
pH by Meter	E108	132070	1	3	33.3	5.0	✔
Sulfate in Water by IC	E235.SO4	129631	1	3	33.3	5.0	✔
TDS by Gravimetry	E162	130431	1	3	33.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	131806	1	7	14.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	129508	1	3	33.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	131785	1	9	11.1	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	130433	0	3	0.0	5.0	✖
Turbidity by Nephelometry	E121	129798	1	3	33.3	5.0	✔
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	131355	1	3	33.3	5.0	✔
Alkalinity Species by Titration	E290	132072	1	3	33.3	5.0	✔
Ammonia by Fluorescence	E298	132664	1	16	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	129632	1	3	33.3	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	129633	1	3	33.3	5.0	✔
Conductivity in Water	E100	132071	1	3	33.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	130460	1	3	33.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	130455	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	130461	1	15	6.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	129512	1	3	33.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	129618	1	3	33.3	5.0	✔
Fluoride in Water by IC	E235.F	129636	1	3	33.3	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	129634	1	3	33.3	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Nitrite in Water by IC (Low Level)	E235.NO2-L	129635	1	3	33.3	5.0	✔
ORP by Electrode	E125	129799	1	3	33.3	5.0	✔
pH by Meter	E108	132070	1	3	33.3	5.0	✔
Sulfate in Water by IC	E235.SO4	129631	1	3	33.3	5.0	✔
TDS by Gravimetry	E162	130431	1	3	33.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	131806	1	7	14.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	129508	1	3	33.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	131785	2	9	22.2	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	130433	1	3	33.3	5.0	✔
Turbidity by Nephelometry	E121	129798	1	3	33.3	5.0	✔
Method Blanks (MB)							
Acidity by Titration	E283	131355	1	3	33.3	5.0	✔
Alkalinity Species by Titration	E290	132072	1	3	33.3	5.0	✔
Ammonia by Fluorescence	E298	132664	1	16	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	129632	1	3	33.3	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	129633	1	3	33.3	5.0	✔
Conductivity in Water	E100	132071	1	3	33.3	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	130460	1	3	33.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	130455	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	130461	1	15	6.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	129512	1	3	33.3	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	129618	1	3	33.3	5.0	✔
Fluoride in Water by IC	E235.F	129636	1	3	33.3	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	129634	1	3	33.3	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	129635	1	3	33.3	5.0	✔
Sulfate in Water by IC	E235.SO4	129631	1	3	33.3	5.0	✔
TDS by Gravimetry	E162	130431	1	3	33.3	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	131806	1	7	14.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	129508	1	3	33.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	131785	2	9	22.2	5.0	✔
TSS by Gravimetry (Low Level)	E160-L	130433	1	3	33.3	5.0	✔
Turbidity by Nephelometry	E121	129798	1	3	33.3	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	132664	1	16	6.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	129632	0	3	0.0	5.0	✖
Chloride in Water by IC (Low Level)	E235.Cl-L	129633	0	3	0.0	5.0	✖
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	130460	1	3	33.3	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	130455	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	130461	1	15	6.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	129512	1	3	33.3	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	129618	1	3	33.3	5.0	✔
Fluoride in Water by IC	E235.F	129636	0	3	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	129634	0	3	0.0	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	129635	0	3	0.0	5.0	✖
Sulfate in Water by IC	E235.SO4	129631	0	3	0.0	5.0	✖
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	131806	1	7	14.2	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	129508	1	3	33.3	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	131785	1	9	11.1	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water		Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order : **CG2000082**

Page : 1 of 13

Amendment : **1**

Client : SNC-Lavalin Inc.
Contact : Gavin Grundy
Address : Coal Mountain Operations PO Box 3000 2261 Corbin Road
 Sparwood BC Canada V0B 2G0
Telephone : ----
Project : COAL MOUNTAIN OPERATIONS
PO : VPO00683186
C-O-C number : COC_WG_Q4_20201210_MW_AG
Sampler : SH/CJ
Site : ----
Quote number : Teck Coal Master Quote
No. of samples received : 3
No. of samples analysed : 3

Laboratory : Calgary - Environmental
Account Manager : Inayat Dhaliwal
Address : 2559 29th Street NE
 Calgary, Alberta Canada T1Y 7B5
Telephone : +1 403 407 1800
Date Samples Received : 11-Dec-2020 08:50
Date Analysis Commenced : 11-Dec-2020
Issue Date : 09-Feb-2021 13:56

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
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Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Inorganics, Calgary, Alberta



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

= Indicates a QC result that did not meet the ALS DQO.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 129798)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	turbidity	----	E121	0.10	NTU	89.5	87.6	2.15%	15%	----
Physical Tests (QC Lot: 129799)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	oxidation-reduction potential [ORP]	----	E125	0.10	mV	408	395	3.19%	15%	----
Physical Tests (QC Lot: 130431)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	solids, total dissolved [TDS]	----	E162	20	mg/L	538	526	2.16%	20%	----
Physical Tests (QC Lot: 131355)											
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	acidity (as CaCO3)	----	E283	2.0	mg/L	36.5	36.5	0.110%	20%	----
Physical Tests (QC Lot: 132070)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	pH	----	E108	0.10	pH units	7.81	7.67	1.81%	4%	----
Physical Tests (QC Lot: 132071)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	conductivity	----	E100	2.0	µS/cm	782	804	2.77%	10%	----
Physical Tests (QC Lot: 132072)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	464	480	3.30%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	464	480	3.30%	20%	----
Anions and Nutrients (QC Lot: 129618)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 129631)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	27.0	23.8	12.6%	20%	----
Anions and Nutrients (QC Lot: 129632)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 129633)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.51	3.16	0.34	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 129634)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0545	0.0635	0.0090	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 129635)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 129636)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	fluoride	16984-48-8	E235.F	0.100	mg/L	0.116	0.112	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 131785)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0566	0.0583	2.88%	20%	----
Anions and Nutrients (QC Lot: 131806)											
CG2000082-003	CM_NNP2_WG_2020-10-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.248	0.170	0.078	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 132664)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0867	0.0805	7.42%	20%	----
Organic / Inorganic Carbon (QC Lot: 129508)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.37	5.62	4.49%	20%	----
Organic / Inorganic Carbon (QC Lot: 129512)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.94	2.94	0.002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 130455)											
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 130460)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 130461)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0018	0.0015	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00249	0.00259	3.75%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.848	0.862	1.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.0200	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	0.038	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.00500	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	138	0.630%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.100	mg/L	0.30 µg/L	0.00029	0.00001	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	4.87	4.88	0.123%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 130461) - continued											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0266	0.0262	1.76%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	28.8	28.5	0.810%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.245	0.245	0.0914%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00175	0.00180	2.73%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.32	1.30	1.50%	20%	----
		selenium, dissolved	7782-49-2	E421	0.0500	mg/L	0.079 µg/L	<0.000050	0.000029	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.27	6.25	0.268%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	32.2	32.3	0.134%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.768	0.786	2.26%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00277	0.00272	1.87%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 130862)											
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 129798)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 130431)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 130433)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 131355)						
acidity (as CaCO ₃)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 132071)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 132072)						
alkalinity, bicarbonate (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 129618)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 129631)						
sulfate (as SO ₄)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 129632)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 129633)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 129634)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 129635)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 129636)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 131785)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 131794)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 131806)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 131806) - continued						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
Anions and Nutrients (QCLot: 132664)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
Organic / Inorganic Carbon (QCLot: 129508)						
carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
Organic / Inorganic Carbon (QCLot: 129512)						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
Dissolved Metals (QCLot: 130455)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 130460)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
Dissolved Metals (QCLot: 130461)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
Dissolved Metals (QCLot: 130461) - continued						
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 130862)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 129798)									
turbidity	---	E121	0.1	NTU	200 NTU	95.9	85.0	115	---
Physical Tests (QCLot: 129799)									
oxidation-reduction potential [ORP]	---	E125	---	mV	220 mV	99.4	95.4	104	---
Physical Tests (QCLot: 130431)									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	102	85.0	115	---
Physical Tests (QCLot: 130433)									
solids, total suspended [TSS]	---	E160-L	1	mg/L	150 mg/L	94.4	85.0	115	---
Physical Tests (QCLot: 131355)									
acidity (as CaCO3)	---	E283	2	mg/L	50 mg/L	98.4	85.0	115	---
Physical Tests (QCLot: 132070)									
pH	---	E108	---	pH units	7 pH units	99.8	98.6	101	---
Physical Tests (QCLot: 132071)									
conductivity	---	E100	1	µS/cm	146.9 µS/cm	106	90.0	110	---
Physical Tests (QCLot: 132072)									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	102	85.0	115	---
Anions and Nutrients (QCLot: 129618)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	97.0	80.0	120	---
Anions and Nutrients (QCLot: 129631)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	---
Anions and Nutrients (QCLot: 129632)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	---
Anions and Nutrients (QCLot: 129633)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	103	90.0	110	---
Anions and Nutrients (QCLot: 129634)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	---
Anions and Nutrients (QCLot: 129635)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	---
Anions and Nutrients (QCLot: 129636)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	---
Anions and Nutrients (QCLot: 131785)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	81.4	80.0	120	---
Anions and Nutrients (QCLot: 131794)									



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 131794) - continued									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	81.4	80.0	120	----
Anions and Nutrients (QCLot: 131806)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 132664)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	102	85.0	115	----
Organic / Inorganic Carbon (QCLot: 129508)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	101	80.0	120	----
Organic / Inorganic Carbon (QCLot: 129512)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	100	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.9	80.0	120	----
Dissolved Metals (QCLot: 130460)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
Dissolved Metals (QCLot: 130461)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.2	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.5	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	109	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.1	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 130461) - continued									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	88.1	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.4	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.4	80.0	120	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 129618)										
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0409 mg/L	0.05 mg/L	81.9	70.0	130	----
Anions and Nutrients (QCLot: 131785)										
CG2000082-001	CM_MW_AG1A_WG_2020-10-12_N	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 131806)										
CG2000082-003	CM_NNP2_WG_2020-10-12_N	Kjeldahl nitrogen, total [TKN]	----	E318	2.68 mg/L	2.5 mg/L	107	70.0	130	----
Anions and Nutrients (QCLot: 132664)										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
Organic / Inorganic Carbon (QCLot: 129508)										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	carbon, total organic [TOC]	----	E355-L	23.1 mg/L	23.9 mg/L	96.6	70.0	130	----
Organic / Inorganic Carbon (QCLot: 129512)										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	carbon, dissolved organic [DOC]	----	E358-L	23.3 mg/L	23.9 mg/L	97.6	70.0	130	----
Dissolved Metals (QCLot: 130455)										
CG2000082-003	CM_NNP2_WG_2020-10-12_N	mercury, dissolved	7439-97-6	E509	0.0000931 mg/L	0.0001 mg/L	93.1	70.0	130	----
Dissolved Metals (QCLot: 130460)										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
Dissolved Metals (QCLot: 130461)										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0438 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00758 mg/L	0.01 mg/L	75.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.112 mg/L	0.1 mg/L	112	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 130461) - continued										
CG2000082-002	CM_MW_AG1B_WG_2020-10-12_N	cobalt, dissolved	7440-48-4	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0173 mg/L	0.02 mg/L	86.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.0	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.115 mg/L	0.1 mg/L	115	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0351 mg/L	0.04 mg/L	87.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0513 mg/L	0.04 mg/L	128	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.04 mg/L	10 mg/L	90.4	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00606 mg/L	0.008 mg/L	75.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
titanium, dissolved	7440-32-6	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----		
uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.9	70.0	130	----		
vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----		
zinc, dissolved	7440-66-6	E421	0.359 mg/L	0.4 mg/L	89.7	70.0	130	----		
Dissolved Metals (QCLot: 130862)										
VA20C3209-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000983 mg/L	0.0001 mg/L	98.3	70.0	130	----

COC ID: **COC_WG_Q4_20201210_MW_A**

TURNAROUND TIME: **REGULAR**

RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com ✓	X	X	X
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Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com ✓	X	X	X
								Email 4:	don.sacino@teck.com ✓	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	VPO00683186			


SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW_AGIA_WG_2020-10-12_N ✓	CM_MW_AGIA ✓	WG ✓	No	2020/12/10	11:35	G	5	1	1	1	1	1						
CM_MW_AGIB_WG_2020-10-12_N ✓	CM_MW_AGIB ✓	WG ✓	No	2020/12/10	10:22	G	5	1	1	1	1	1						
CM_NNP2_WG_2020-10-12_N ✓	CM_NNP2 ✓	WG ✓	No	2020/12/10	7	G	5	1	1	1	1	1						

CG2000082_003_AF

Purple/white
Amber glass dissolved (sulfuric acid)

Client ID **CM_NNP2_WG_20-10-12_N**

Sampled **10-Dec-2020**
E358-L



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .			<i>[Signature]</i>	12/11/2020
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	SH/CJ	Mobile #	250-425-7522
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	December 10, 2020
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 29-OCT-20
Report Date: 04-FEB-21 11:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2523142
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: WG_Q4_20201028_MW6
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:43
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523142-1 CM_MW6-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 28-OCT-20 @ 12:10							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	758		5.0	mg/L		30-OCT-20	R5272286
Carbonate (CO3)	40.6		5.0	mg/L		30-OCT-20	R5272286
Dissolved Organic Carbon	<0.50		0.50	mg/L		31-OCT-20	R5272465
Hydroxide (OH)	<5.0		5.0	mg/L		30-OCT-20	R5272286
Total Kjeldahl Nitrogen	0.506		0.050	mg/L		30-OCT-20	R5271747
Total Organic Carbon	<0.50		0.50	mg/L		31-OCT-20	R5272465
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-20	02-NOV-20	R5276568
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273496
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-NOV-20	03-NOV-20	R5274580
Dissolved Mercury Filtration Location	FIELD					03-NOV-20	R5274522
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273496
Aluminum (Al)-Dissolved	0.0050		0.0030	mg/L	02-NOV-20	02-NOV-20	R5276568
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Arsenic (As)-Dissolved	0.00077		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Barium (Ba)-Dissolved	0.285		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Boron (B)-Dissolved	0.308		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-20	02-NOV-20	R5276568
Calcium (Ca)-Dissolved	8.72		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-20	02-NOV-20	R5276568
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-20	02-NOV-20	R5276568
Iron (Fe)-Dissolved	0.244		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Lithium (Li)-Dissolved	0.407		0.0010	mg/L	02-NOV-20	02-NOV-20	R5276568
Magnesium (Mg)-Dissolved	2.51		0.10	mg/L	02-NOV-20	02-NOV-20	R5276568
Manganese (Mn)-Dissolved	0.0765		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Molybdenum (Mo)-Dissolved	0.00143		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	02-NOV-20	R5276568
Potassium (K)-Dissolved	2.08		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-NOV-20	03-NOV-20	R5276842
Silicon (Si)-Dissolved	4.37		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Sodium (Na)-Dissolved	341		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Strontium (Sr)-Dissolved	0.971		0.00020	mg/L	02-NOV-20	02-NOV-20	R5276568
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Uranium (U)-Dissolved	0.000483		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	02-NOV-20	R5276568
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-20	02-NOV-20	R5276568
Hardness							
Hardness (as CaCO3)	32.1		0.50	mg/L		03-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		30-OCT-20	R5272188
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523142-1 CM_MW6-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 28-OCT-20 @ 12:10							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	621		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Carbonate (as CaCO3)	67.6		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Total (as CaCO3)	689		1.0	mg/L		30-OCT-20	R5272286
Ammonia, Total (as N)							
Ammonia as N	0.511	DLHC	0.050	mg/L		02-NOV-20	R5272822
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.108		0.050	mg/L		30-OCT-20	R5272281
Chloride in Water by IC							
Chloride (Cl)	37.2		0.10	mg/L		30-OCT-20	R5272281
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1230		2.0	uS/cm		30-OCT-20	R5272286
Fluoride in Water by IC							
Fluoride (F)	0.505		0.020	mg/L		30-OCT-20	R5272281
Ion Balance Calculation							
Ion Balance	105		-100	%		03-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	2.3			%		03-NOV-20	
Anion Sum	14.9			meq/L		03-NOV-20	
Cation Sum	15.6			meq/L		03-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-OCT-20	R5272281
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-OCT-20	R5272281
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0236		0.0010	mg/L		29-OCT-20	R5271394
Oxidation redution potential by elect.							
ORP	413		-1000	mV		29-OCT-20	R5271401
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0312		0.0020	mg/L		30-OCT-20	R5271887
Sulfate in Water by IC							
Sulfate (SO4)	0.53		0.30	mg/L		30-OCT-20	R5272281
Total Dissolved Solids							
Total Dissolved Solids	808	DLHC	20	mg/L		02-NOV-20	R5276005
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-NOV-20	R5275800
Turbidity							
Turbidity	0.68		0.10	NTU		29-OCT-20	R5271405
pH							
pH	8.80		0.10	pH		30-OCT-20	R5272286
L2523142-2 CM_MW6-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 28-OCT-20 @ 13:25							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	233		5.0	mg/L		30-OCT-20	R5272286
Carbonate (CO3)	7.7		5.0	mg/L		30-OCT-20	R5272286
Dissolved Organic Carbon	1.82		0.50	mg/L		31-OCT-20	R5272465
Hydroxide (OH)	<5.0		5.0	mg/L		30-OCT-20	R5272286
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		30-OCT-20	R5271747
Total Organic Carbon	1.77		0.50	mg/L		31-OCT-20	R5272465
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523142-2 CM_MW6-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 28-OCT-20 @ 13:25							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-20	02-NOV-20	R5276568
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273496
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-NOV-20	03-NOV-20	R5274580
Dissolved Mercury Filtration Location	FIELD					03-NOV-20	R5274522
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273496
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-20	02-NOV-20	R5276568
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Arsenic (As)-Dissolved	0.00070		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Barium (Ba)-Dissolved	0.127		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Boron (B)-Dissolved	0.044		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-20	02-NOV-20	R5276568
Calcium (Ca)-Dissolved	19.8		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Cobalt (Co)-Dissolved	0.12		0.10	ug/L	02-NOV-20	02-NOV-20	R5276568
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-20	02-NOV-20	R5276568
Iron (Fe)-Dissolved	0.274		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Lithium (Li)-Dissolved	0.0417		0.0010	mg/L	02-NOV-20	02-NOV-20	R5276568
Magnesium (Mg)-Dissolved	7.00		0.10	mg/L	02-NOV-20	02-NOV-20	R5276568
Manganese (Mn)-Dissolved	0.259		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Molybdenum (Mo)-Dissolved	0.00576		0.000050	mg/L	02-NOV-20	02-NOV-20	R5276568
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	02-NOV-20	R5276568
Potassium (K)-Dissolved	0.329		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-NOV-20	03-NOV-20	R5276842
Silicon (Si)-Dissolved	3.41		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Sodium (Na)-Dissolved	76.3		0.050	mg/L	02-NOV-20	02-NOV-20	R5276568
Strontium (Sr)-Dissolved	0.218		0.00020	mg/L	02-NOV-20	02-NOV-20	R5276568
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	02-NOV-20	R5276568
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-20	02-NOV-20	R5276568
Uranium (U)-Dissolved	0.000476		0.000010	mg/L	02-NOV-20	02-NOV-20	R5276568
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	02-NOV-20	R5276568
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-20	02-NOV-20	R5276568
Hardness							
Hardness (as CaCO3)	78.3		0.50	mg/L		03-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		30-OCT-20	R5272188
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	191		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Carbonate (as CaCO3)	12.8		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-OCT-20	R5272286
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		30-OCT-20	R5272286
Ammonia, Total (as N)							
Ammonia as N	0.0297		0.0050	mg/L		02-NOV-20	R5272822
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.104		0.050	mg/L		30-OCT-20	R5272281
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523142-2 CM_MW6-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 28-OCT-20 @ 13:25							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	20.0		0.10	mg/L		30-OCT-20	R5272281
Electrical Conductivity (EC)							
Conductivity (@ 25C)	379		2.0	uS/cm		30-OCT-20	R5272286
Fluoride in Water by IC							
Fluoride (F)	1.65		0.020	mg/L		30-OCT-20	R5272281
Ion Balance Calculation							
Ion Balance	103		-100	%		03-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	1.4			%		03-NOV-20	
Anion Sum	4.78			meq/L		03-NOV-20	
Cation Sum	4.92			meq/L		03-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-OCT-20	R5272281
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-OCT-20	R5272281
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		29-OCT-20	R5271394
Oxidation redution potential by elect.							
ORP	304		-1000	mV		29-OCT-20	R5271401
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0047		0.0020	mg/L		30-OCT-20	R5271887
Sulfate in Water by IC							
Sulfate (SO4)	3.11		0.30	mg/L		30-OCT-20	R5272281
Total Dissolved Solids							
Total Dissolved Solids	283	DLHC	20	mg/L		02-NOV-20	R5276005
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		02-NOV-20	R5275800
Turbidity							
Turbidity	1.38		0.10	NTU		29-OCT-20	R5271405
pH							
pH	8.50		0.10	pH		30-OCT-20	R5272286

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

WG_Q4_20201028_MW6

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2523142

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5272188							
WG3436259-2	LCS							
Acidity (as CaCO3)			103.9		%		85-115	30-OCT-20
WG3436259-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	30-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5272286							
WG3436303-8	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	30-OCT-20
WG3436303-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5276568							
WG3437209-2	LCS							
Beryllium (Be)-Dissolved			102.0		%		80-120	02-NOV-20
WG3437209-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-NOV-20
BIC-CL								
	Water							
Batch	R5272286							
WG3436303-7	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	30-OCT-20
BR-L-IC-N-CL								
	Water							
Batch	R5272281							
WG3436324-3	DUP	L2523142-2						
Bromide (Br)		0.104	0.090		mg/L	14	20	30-OCT-20
WG3436324-2	LCS							
Bromide (Br)			103.9		%		85-115	30-OCT-20
WG3436324-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-OCT-20
WG3436324-4	MS	L2523142-2						
Bromide (Br)			91.3		%		75-125	30-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5272465							
WG3436488-18	LCS							
Dissolved Organic Carbon			93.0		%		80-120	31-OCT-20
WG3436488-17	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-OCT-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R5272465							
WG3436488-18	LCS							
Total Organic Carbon			93.6		%		80-120	31-OCT-20
WG3436488-17	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-OCT-20
CL-L-IC-N-CL Water								
Batch	R5272281							
WG3436324-3	DUP	L2523142-2						
Chloride (Cl)		20.0	20.1		mg/L	0.7	20	30-OCT-20
WG3436324-2	LCS							
Chloride (Cl)			104.8		%		85-115	30-OCT-20
WG3436324-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	30-OCT-20
WG3436324-4	MS	L2523142-2						
Chloride (Cl)			110.5		%		75-125	30-OCT-20
CO3-CL Water								
Batch	R5272286							
WG3436303-7	MB							
Carbonate (CO3)			<5.0		mg/L		5	30-OCT-20
EC-L-PCT-CL Water								
Batch	R5272286							
WG3436303-8	LCS							
Conductivity (@ 25C)			92.4		%		90-110	30-OCT-20
WG3436303-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-20
F-IC-N-CL Water								
Batch	R5272281							
WG3436324-3	DUP	L2523142-2						
Fluoride (F)		1.65	1.59		mg/L	3.6	20	30-OCT-20
WG3436324-2	LCS							
Fluoride (F)			101.3		%		90-110	30-OCT-20
WG3436324-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-OCT-20
WG3436324-4	MS	L2523142-2						
Fluoride (F)			N/A	MS-B	%		-	30-OCT-20
HG-D-CVAA-VA Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5274580							
WG3437464-2	LCS							
Mercury (Hg)-Dissolved			101.3		%		80-120	03-NOV-20
WG3437464-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5276568							
WG3437209-2	LCS							
Aluminum (Al)-Dissolved			107.7		%		80-120	02-NOV-20
Antimony (Sb)-Dissolved			99.5		%		80-120	02-NOV-20
Arsenic (As)-Dissolved			101.1		%		80-120	02-NOV-20
Barium (Ba)-Dissolved			101.5		%		80-120	02-NOV-20
Bismuth (Bi)-Dissolved			101.2		%		80-120	02-NOV-20
Boron (B)-Dissolved			103.3		%		80-120	02-NOV-20
Cadmium (Cd)-Dissolved			101.1		%		80-120	02-NOV-20
Calcium (Ca)-Dissolved			108.4		%		80-120	02-NOV-20
Chromium (Cr)-Dissolved			106.3		%		80-120	02-NOV-20
Cobalt (Co)-Dissolved			108.0		%		80-120	02-NOV-20
Copper (Cu)-Dissolved			104.7		%		80-120	02-NOV-20
Iron (Fe)-Dissolved			104.1		%		80-120	02-NOV-20
Lead (Pb)-Dissolved			102.1		%		80-120	02-NOV-20
Lithium (Li)-Dissolved			100.8		%		80-120	02-NOV-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	02-NOV-20
Manganese (Mn)-Dissolved			107.0		%		80-120	02-NOV-20
Molybdenum (Mo)-Dissolved			106.1		%		80-120	02-NOV-20
Nickel (Ni)-Dissolved			105.7		%		80-120	02-NOV-20
Potassium (K)-Dissolved			108.6		%		80-120	02-NOV-20
Selenium (Se)-Dissolved			104.9		%		80-120	02-NOV-20
Silicon (Si)-Dissolved			107.5		%		60-140	02-NOV-20
Silver (Ag)-Dissolved			106.1		%		80-120	02-NOV-20
Sodium (Na)-Dissolved			106.1		%		80-120	02-NOV-20
Strontium (Sr)-Dissolved			114.3		%		80-120	02-NOV-20
Thallium (Tl)-Dissolved			103.3		%		80-120	02-NOV-20
Tin (Sn)-Dissolved			103.2		%		80-120	02-NOV-20
Titanium (Ti)-Dissolved			100.7		%		80-120	02-NOV-20
Uranium (U)-Dissolved			112.6		%		80-120	02-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5276568							
WG3437209-2	LCS							
Vanadium (V)-Dissolved			105.2		%		80-120	02-NOV-20
Zinc (Zn)-Dissolved			107.3		%		80-120	02-NOV-20
WG3437209-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-NOV-20

NH3-L-F-CL

Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5272822								
WG3436584-6	LCS							
Ammonia as N			99.5		%		85-115	02-NOV-20
WG3436584-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5272281								
WG3436324-3	DUP	L2523142-2						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	30-OCT-20
WG3436324-2	LCS							
Nitrite (as N)			105.5		%		90-110	30-OCT-20
WG3436324-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-OCT-20
WG3436324-4	MS	L2523142-2						
Nitrite (as N)			108.3		%		75-125	30-OCT-20
NO3-L-IC-N-CL								
Water								
Batch R5272281								
WG3436324-3	DUP	L2523142-2						
Nitrate (as N)			<0.0050	RPD-NA	mg/L	N/A	20	30-OCT-20
WG3436324-2	LCS							
Nitrate (as N)			104.0		%		90-110	30-OCT-20
WG3436324-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-OCT-20
WG3436324-4	MS	L2523142-2						
Nitrate (as N)			109.6		%		75-125	30-OCT-20
OH-CL								
Water								
Batch R5272286								
WG3436303-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	30-OCT-20
ORP-CL								
Water								
Batch R5271401								
WG3435072-2	CRM	CL-ORP						
ORP			220		mV		210-230	29-OCT-20
WG3435072-1	DUP	L2523142-2						
ORP			305	J	mV	0.6	15	29-OCT-20
P-T-L-COL-CL								
Water								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch R5271887								
WG3435736-18 LCS								
Phosphorus (P)-Total			92.3		%		80-120	30-OCT-20
WG3435736-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-OCT-20
PH-CL								
Water								
Batch R5272286								
WG3436303-8 LCS								
pH			7.02		pH		6.9-7.1	30-OCT-20
PO4-DO-L-COL-CL								
Water								
Batch R5271394								
WG3435202-6 LCS								
Orthophosphate-Dissolved (as P)			99.0		%		80-120	29-OCT-20
WG3435202-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-OCT-20
SO4-IC-N-CL								
Water								
Batch R5272281								
WG3436324-3 DUP								
Sulfate (SO4)			L2523142-2 3.11	3.24	mg/L	4.1	20	30-OCT-20
WG3436324-2 LCS								
Sulfate (SO4)				104.0	%		90-110	30-OCT-20
WG3436324-1 MB								
Sulfate (SO4)				<0.30	mg/L		0.3	30-OCT-20
WG3436324-4 MS								
Sulfate (SO4)			L2523142-2	105.2	%		75-125	30-OCT-20
SOLIDS-TDS-CL								
Water								
Batch R5276005								
WG3436739-2 LCS								
Total Dissolved Solids				103.4	%		85-115	02-NOV-20
WG3436739-1 MB								
Total Dissolved Solids				<10	mg/L		10	02-NOV-20
TKN-L-F-CL								
Water								
Batch R5271747								
WG3435557-11 DUP								
Total Kjeldahl Nitrogen			L2523142-1 0.506	0.506	mg/L	0.0	20	30-OCT-20
WG3435557-5 DUP								
Total Kjeldahl Nitrogen			L2523142-1 0.506	0.570	mg/L	12	20	30-OCT-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5271747							
WG3435557-10	LCS							
Total Kjeldahl Nitrogen			90.4		%		75-125	30-OCT-20
WG3435557-14	LCS							
Total Kjeldahl Nitrogen			90.6		%		75-125	30-OCT-20
WG3435557-18	LCS							
Total Kjeldahl Nitrogen			90.7		%		75-125	30-OCT-20
WG3435557-2	LCS							
Total Kjeldahl Nitrogen			90.4		%		75-125	30-OCT-20
WG3435557-20	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	30-OCT-20
WG3435557-22	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-OCT-20
WG3435557-8	LCS							
Total Kjeldahl Nitrogen			90.7		%		75-125	30-OCT-20
WG3435557-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-19	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-OCT-20
WG3435557-12	MS	L2523142-1						
Total Kjeldahl Nitrogen			97.2		%		70-130	30-OCT-20
WG3435557-6	MS	L2523142-1						
Total Kjeldahl Nitrogen			97.2		%		70-130	30-OCT-20
TSS-L-CL								
Water								
Batch	R5275800							
WG3436736-2	LCS							
Total Suspended Solids			88.8		%		85-115	02-NOV-20
WG3436736-1	MB							
Total Suspended Solids			<1.0		mg/L		1	02-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5271405							
WG3435061-2	LCS							
Turbidity			97.4		%		85-115	29-OCT-20
WG3435061-3	MB							
Turbidity			<0.10		NTU		0.1	29-OCT-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	28-OCT-20 12:10	29-OCT-20 12:15	0.25	24	hours	EHTR-FM
	2	28-OCT-20 13:25	29-OCT-20 12:15	0.25	23	hours	EHTR-FM
pH	1	28-OCT-20 12:10	30-OCT-20 14:00	0.25	50	hours	EHTR-FM
	2	28-OCT-20 13:25	30-OCT-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2523142 were received on 29-OCT-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q4_20201028_MW6		TURNAROUND TIME:		REGULAR		RUSH: NO				
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jay Jones				Lab Contact Inayat Dhaliwal		Email 1: Victoria.Sharpe@teck.com		X	X	X
Email Jay.Jones@teck.com				Email Inayat.Dhaliwal@alsglobal.com		Email 2: teckcoal@equisonline.com				X
Address PO Box 3000				Address 2559 29th St. NE		Email 3: jay.jones@teck.com		X	X	X
City Sparwood Province BC				City Calgary Province AB		Email 4: don.sacino@teck.com		X	X	X
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada						
Phone Number 1-250-425-7321				Phone Number 403 407 1800		PO number		VPO00683186		

SAMPLE DETAILS **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2523142-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_MW6-DP_WG_2020-10-12_N	CM_MW6-DP	WG	No	2020/10/28	12:10	G	5	1	1	1	1	1								
CM_MW6-SH_WG_2020-10-12_N	CM_MW6-SH	WG	No	2020/10/28	13:25	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .			<i>[Signature]</i>	10/29 900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	JE/JD	Mobile #	250-425-7522
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>[Signature]</i>	Date/Time	October 28, 2020



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 30-OCT-20
Report Date: 05-NOV-20 14:09 (MT)
Version: FINAL

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2523824
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATION
C of C Numbers:
Legal Site Desc:

Inayat Dhaliwal
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523824-1 CM_MW7-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 29-OCT-20 @ 12:20							
Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-NOV-20	R5275023
Total Kjeldahl Nitrogen	0.261		0.050	mg/L		31-OCT-20	R5272310
Total Organic Carbon	0.52		0.50	mg/L		02-NOV-20	R5275023
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	02-NOV-20	03-NOV-20	R5276842
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-20	04-NOV-20	R5277005
Dissolved Mercury Filtration Location	FIELD					04-NOV-20	R5276874
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-20	03-NOV-20	R5276842
Antimony (Sb)-Dissolved	0.00024		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Barium (Ba)-Dissolved	0.0145		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Boron (B)-Dissolved	0.052		0.020	mg/L	02-NOV-20	03-NOV-20	R5276842
Cadmium (Cd)-Dissolved	0.088		0.010	ug/L	02-NOV-20	03-NOV-20	R5276842
Calcium (Ca)-Dissolved	346		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Chromium (Cr)-Dissolved	0.00036		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Cobalt (Co)-Dissolved	1.28		0.20	ug/L	02-NOV-20	03-NOV-20	R5276842
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	02-NOV-20	03-NOV-20	R5276842
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	02-NOV-20	03-NOV-20	R5276842
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Lithium (Li)-Dissolved	0.0521		0.0020	mg/L	02-NOV-20	03-NOV-20	R5276842
Magnesium (Mg)-Dissolved	128		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Manganese (Mn)-Dissolved	0.473		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Molybdenum (Mo)-Dissolved	0.00024		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Nickel (Ni)-Dissolved	0.0199		0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Potassium (K)-Dissolved	2.53		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Selenium (Se)-Dissolved	2.47		0.10	ug/L	02-NOV-20	03-NOV-20	R5276842
Silicon (Si)-Dissolved	2.68		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	02-NOV-20	03-NOV-20	R5276842
Sodium (Na)-Dissolved	23.3		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Strontium (Sr)-Dissolved	0.799		0.00040	mg/L	02-NOV-20	03-NOV-20	R5276842
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	02-NOV-20	03-NOV-20	R5276842
Tin (Sn)-Dissolved	0.00026		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Uranium (U)-Dissolved	0.00430		0.000020	mg/L	02-NOV-20	03-NOV-20	R5276842
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Zinc (Zn)-Dissolved	0.0261		0.0020	mg/L	02-NOV-20	03-NOV-20	R5276842
Hardness							
Hardness (as CaCO3)	1390		0.50	mg/L		04-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	13.8		1.0	mg/L		31-OCT-20	R5273159
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	369		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523824-1 CM_MW7-DP_WG_2020-10-12_N Sampled By: JE/JD on 29-OCT-20 @ 12:20 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Total (as CaCO3)	369		1.0	mg/L		03-NOV-20	R5275340
Ammonia, Total (as N)							
Ammonia as N	0.0082		0.0050	mg/L		02-NOV-20	R5272822
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-OCT-20	R5272281
Chloride in Water by IC							
Chloride (Cl)	2.56	DLHC	0.50	mg/L		30-OCT-20	R5272281
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2210		2.0	uS/cm		03-NOV-20	R5275340
Fluoride in Water by IC							
Fluoride (F)	0.10	DLHC	0.10	mg/L		30-OCT-20	R5272281
Ion Balance Calculation							
Ion Balance	92.7		-100	%		04-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.8			%		04-NOV-20	
Anion Sum	31.1			meq/L		04-NOV-20	
Cation Sum	28.9			meq/L		04-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	1.50	DLHC	0.025	mg/L		30-OCT-20	R5272281
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-OCT-20	R5272281
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-OCT-20	R5272140
Oxidation reduction potential by elect.							
ORP	406		-1000	mV		30-OCT-20	R5272133
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-NOV-20	R5272907
Sulfate in Water by IC							
Sulfate (SO4)	1130	DLHC	1.5	mg/L		30-OCT-20	R5272281
Total Dissolved Solids							
Total Dissolved Solids	2110	DLHC	40	mg/L		02-NOV-20	R5276005
Total Suspended Solids							
Total Suspended Solids	4.9		1.0	mg/L		02-NOV-20	R5275800
Turbidity							
Turbidity	2.40		0.10	NTU		30-OCT-20	R5272141
pH							
pH	7.81		0.10	pH		03-NOV-20	R5275340
L2523824-2 CM_MW7-SH_WG_2020-10-12_N Sampled By: JE/JD on 29-OCT-20 @ 12:10 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.97		0.50	mg/L		02-NOV-20	R5275023
Total Kjeldahl Nitrogen	0.171		0.050	mg/L		31-OCT-20	R5272310
Total Organic Carbon	3.07		0.50	mg/L		02-NOV-20	R5275023
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-20	03-NOV-20	R5276842
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-20	04-NOV-20	R5277005
Dissolved Mercury Filtration Location	FIELD					04-NOV-20	R5276874
Dissolved Metals in Water by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523824-2 CM_MW7-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 29-OCT-20 @ 12:10							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-20	03-NOV-20	R5276842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Arsenic (As)-Dissolved	0.00181		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Barium (Ba)-Dissolved	0.0305		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Boron (B)-Dissolved	0.018		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-20	03-NOV-20	R5276842
Calcium (Ca)-Dissolved	99.5		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Cobalt (Co)-Dissolved	0.33		0.10	ug/L	02-NOV-20	03-NOV-20	R5276842
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Iron (Fe)-Dissolved	2.04		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Lithium (Li)-Dissolved	0.0064		0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Magnesium (Mg)-Dissolved	31.8		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Manganese (Mn)-Dissolved	0.126		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Molybdenum (Mo)-Dissolved	0.00128		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Nickel (Ni)-Dissolved	0.00069		0.00050	mg/L	02-NOV-20	03-NOV-20	R5276842
Potassium (K)-Dissolved	1.66		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Selenium (Se)-Dissolved	0.072		0.050	ug/L	02-NOV-20	03-NOV-20	R5276842
Silicon (Si)-Dissolved	5.05		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Sodium (Na)-Dissolved	15.2		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Strontium (Sr)-Dissolved	0.409		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Uranium (U)-Dissolved	0.000587		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	03-NOV-20	R5276842
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Hardness							
Hardness (as CaCO3)	379		0.50	mg/L		04-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	3.2		1.0	mg/L		31-OCT-20	R5273159
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	273		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Total (as CaCO3)	273		1.0	mg/L		03-NOV-20	R5275340
Ammonia, Total (as N)							
Ammonia as N	0.107		0.0050	mg/L		02-NOV-20	R5272822
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		30-OCT-20	R5272281
Chloride in Water by IC							
Chloride (Cl)	13.4		0.10	mg/L		30-OCT-20	R5272281
Electrical Conductivity (EC)							
Conductivity (@ 25C)	735		2.0	uS/cm		03-NOV-20	R5275340
Fluoride in Water by IC							
Fluoride (F)	0.271		0.020	mg/L		30-OCT-20	R5272281
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523824-2 CM_MW7-SH_WG_2020-10-12_N Sampled By: JE/JD on 29-OCT-20 @ 12:10 Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	-1.2			%		04-NOV-20	
Anion Sum	8.61			meq/L		04-NOV-20	
Cation Sum	8.40			meq/L		04-NOV-20	
Ion Balance Calculation							
Ion Balance	97.6		-100	%		04-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0088		0.0050	mg/L		30-OCT-20	R5272281
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-OCT-20	R5272281
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-OCT-20	R5272140
Oxidation redution potential by elect.							
ORP	352		-1000	mV		30-OCT-20	R5272133
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0166		0.0020	mg/L		02-NOV-20	R5272907
Sulfate in Water by IC							
Sulfate (SO4)	133		0.30	mg/L		30-OCT-20	R5272281
Total Dissolved Solids							
Total Dissolved Solids	509	DLHC	20	mg/L		02-NOV-20	R5276005
Total Suspended Solids							
Total Suspended Solids	237		1.0	mg/L		02-NOV-20	R5275800
Turbidity							
Turbidity	112		0.10	NTU		30-OCT-20	R5272141
pH							
pH	7.97		0.10	pH		03-NOV-20	R5275340
L2523824-3 CM_MW8_WG_2020-10-12_N Sampled By: JE/JD on 29-OCT-20 @ 10:40 Matrix: WG							
Miscellaneous Parameters							
Dissolved Organic Carbon	1.35		0.50	mg/L		02-NOV-20	R5275016
Total Kjeldahl Nitrogen	0.825		0.050	mg/L		31-OCT-20	R5272310
Total Organic Carbon	1.50		0.50	mg/L		02-NOV-20	R5275016
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-20	03-NOV-20	R5276842
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-20	04-NOV-20	R5277005
Dissolved Mercury Filtration Location	FIELD					04-NOV-20	R5276874
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					02-NOV-20	R5273516
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-20	03-NOV-20	R5276842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Arsenic (As)-Dissolved	0.00037		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Barium (Ba)-Dissolved	0.119		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Boron (B)-Dissolved	0.290		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-20	03-NOV-20	R5276842
Calcium (Ca)-Dissolved	66.2		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Chromium (Cr)-Dissolved	0.00016		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Cobalt (Co)-Dissolved	0.56		0.10	ug/L	02-NOV-20	03-NOV-20	R5276842

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2523824-3 CM_MW8_WG_2020-10-12_N							
Sampled By: JE/JD on 29-OCT-20 @ 10:40							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Iron (Fe)-Dissolved	1.04		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Lithium (Li)-Dissolved	0.0713		0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Magnesium (Mg)-Dissolved	18.0		0.10	mg/L	02-NOV-20	03-NOV-20	R5276842
Manganese (Mn)-Dissolved	0.229		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Molybdenum (Mo)-Dissolved	0.000871		0.000050	mg/L	02-NOV-20	03-NOV-20	R5276842
Nickel (Ni)-Dissolved	0.00061		0.00050	mg/L	02-NOV-20	03-NOV-20	R5276842
Potassium (K)-Dissolved	2.85		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-NOV-20	03-NOV-20	R5276842
Silicon (Si)-Dissolved	6.29		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Sodium (Na)-Dissolved	51.3		0.050	mg/L	02-NOV-20	03-NOV-20	R5276842
Strontium (Sr)-Dissolved	5.11		0.00020	mg/L	02-NOV-20	03-NOV-20	R5276842
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Tin (Sn)-Dissolved	0.00013		0.00010	mg/L	02-NOV-20	03-NOV-20	R5276842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-20	03-NOV-20	R5276842
Uranium (U)-Dissolved	0.000466		0.000010	mg/L	02-NOV-20	03-NOV-20	R5276842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-20	03-NOV-20	R5276842
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-20	03-NOV-20	R5276842
Hardness							
Hardness (as CaCO3)	239		0.50	mg/L		04-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-OCT-20	R5273159
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	322		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-NOV-20	R5275340
Alkalinity, Total (as CaCO3)	322		1.0	mg/L		03-NOV-20	R5275340
Ammonia, Total (as N)							
Ammonia as N	0.747	DLHC	0.050	mg/L		02-NOV-20	R5272822
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		30-OCT-20	R5272281
Chloride in Water by IC							
Chloride (Cl)	2.16		0.10	mg/L		30-OCT-20	R5272281
Electrical Conductivity (EC)							
Conductivity (@ 25C)	644		2.0	uS/cm		03-NOV-20	R5275340
Fluoride in Water by IC							
Fluoride (F)	0.310		0.020	mg/L		30-OCT-20	R5272281
Ion Balance Calculation							
Ion Balance	95.8		-100	%		04-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-2.1			%		04-NOV-20	
Anion Sum	7.52			meq/L		04-NOV-20	
Cation Sum	7.20			meq/L		04-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-OCT-20	R5272281
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0017		0.0010	mg/L		30-OCT-20	R5272281
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-OCT-20	R5272140

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2523824

Report Date: 05-NOV-20

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5273159							
WG3437155-2	LCS							
Acidity (as CaCO3)			99.2		%		85-115	31-OCT-20
WG3437155-1	MB							
Acidity (as CaCO3)			1.9		mg/L		2	31-OCT-20
ALK-MAN-CL								
	Water							
Batch	R5275340							
WG3437831-14	LCS							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	03-NOV-20
WG3437831-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5276842							
WG3437206-2	LCS							
Beryllium (Be)-Dissolved			103.8		%		80-120	03-NOV-20
WG3437206-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5272281							
WG3436324-7	DUP	L2523824-3						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-OCT-20
WG3436324-6	LCS							
Bromide (Br)			103.3		%		85-115	30-OCT-20
WG3436324-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	30-OCT-20
WG3436324-8	MS	L2523824-3						
Bromide (Br)			106.1		%		75-125	30-OCT-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5275016							
WG3437574-2	LCS							
Dissolved Organic Carbon			92.9		%		80-120	02-NOV-20
WG3437574-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-NOV-20
Batch	R5275023							
WG3437575-6	LCS							
Dissolved Organic Carbon			94.5		%		80-120	02-NOV-20
WG3437575-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch R5275016								
WG3437574-2	LCS							
Total Organic Carbon			97.0		%		80-120	02-NOV-20
WG3437574-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-NOV-20
Batch R5275023								
WG3437575-6	LCS							
Total Organic Carbon			96.7		%		80-120	02-NOV-20
WG3437575-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-NOV-20
CL-L-IC-N-CL Water								
Batch R5272281								
WG3436324-7	DUP	L2523824-3						
Chloride (Cl)			2.16	2.21	mg/L	2.4	20	30-OCT-20
WG3436324-6	LCS							
Chloride (Cl)			104.5		%		85-115	30-OCT-20
WG3436324-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	30-OCT-20
WG3436324-8	MS	L2523824-3						
Chloride (Cl)			105.4		%		75-125	30-OCT-20
EC-L-PCT-CL Water								
Batch R5275340								
WG3437831-14	LCS							
Conductivity (@ 25C)			94.9		%		90-110	03-NOV-20
WG3437831-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-NOV-20
F-IC-N-CL Water								
Batch R5272281								
WG3436324-7	DUP	L2523824-3						
Fluoride (F)			0.310	0.310	mg/L	0.2	20	30-OCT-20
WG3436324-6	LCS							
Fluoride (F)			97.4		%		90-110	30-OCT-20
WG3436324-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-OCT-20
WG3436324-8	MS	L2523824-3						
Fluoride (F)			109.7		%		75-125	30-OCT-20
HG-D-CVAA-VA Water								



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5277005							
WG3438341-2	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	04-NOV-20
WG3438341-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5276842							
WG3437206-2	LCS							
Aluminum (Al)-Dissolved			100.9		%		80-120	03-NOV-20
Antimony (Sb)-Dissolved			99.1		%		80-120	03-NOV-20
Arsenic (As)-Dissolved			97.8		%		80-120	03-NOV-20
Barium (Ba)-Dissolved			102.6		%		80-120	03-NOV-20
Bismuth (Bi)-Dissolved			106.3		%		80-120	03-NOV-20
Boron (B)-Dissolved			97.1		%		80-120	03-NOV-20
Cadmium (Cd)-Dissolved			102.0		%		80-120	03-NOV-20
Calcium (Ca)-Dissolved			102.6		%		80-120	03-NOV-20
Chromium (Cr)-Dissolved			99.4		%		80-120	03-NOV-20
Cobalt (Co)-Dissolved			98.6		%		80-120	03-NOV-20
Copper (Cu)-Dissolved			98.9		%		80-120	03-NOV-20
Iron (Fe)-Dissolved			101.1		%		80-120	03-NOV-20
Lead (Pb)-Dissolved			107.6		%		80-120	03-NOV-20
Lithium (Li)-Dissolved			103.8		%		80-120	03-NOV-20
Magnesium (Mg)-Dissolved			98.4		%		80-120	03-NOV-20
Manganese (Mn)-Dissolved			100.6		%		80-120	03-NOV-20
Molybdenum (Mo)-Dissolved			105.1		%		80-120	03-NOV-20
Nickel (Ni)-Dissolved			99.7		%		80-120	03-NOV-20
Potassium (K)-Dissolved			98.4		%		80-120	03-NOV-20
Selenium (Se)-Dissolved			99.6		%		80-120	03-NOV-20
Silicon (Si)-Dissolved			101.1		%		60-140	03-NOV-20
Silver (Ag)-Dissolved			107.5		%		80-120	03-NOV-20
Sodium (Na)-Dissolved			97.2		%		80-120	03-NOV-20
Strontium (Sr)-Dissolved			105.6		%		80-120	03-NOV-20
Thallium (Tl)-Dissolved			109.0		%		80-120	03-NOV-20
Tin (Sn)-Dissolved			102.7		%		80-120	03-NOV-20
Titanium (Ti)-Dissolved			100.5		%		80-120	03-NOV-20
Uranium (U)-Dissolved			112.6		%		80-120	03-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5276842							
WG3437206-2	LCS							
Vanadium (V)-Dissolved			100.9		%		80-120	03-NOV-20
Zinc (Zn)-Dissolved			98.7		%		80-120	03-NOV-20
WG3437206-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-NOV-20

NH3-L-F-CL

Water



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL								
Water								
Batch R5272822								
WG3436584-14	LCS							
Ammonia as N			100.4		%		85-115	02-NOV-20
WG3436584-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-20
NO2-L-IC-N-CL								
Water								
Batch R5272281								
WG3436324-7	DUP	L2523824-3						
Nitrite (as N)		0.0017	<0.0010	RPD-NA	mg/L	N/A	20	30-OCT-20
WG3436324-6	LCS							
Nitrite (as N)			104.4		%		90-110	30-OCT-20
WG3436324-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-OCT-20
WG3436324-8	MS	L2523824-3						
Nitrite (as N)			104.1		%		75-125	30-OCT-20
NO3-L-IC-N-CL								
Water								
Batch R5272281								
WG3436324-7	DUP	L2523824-3						
Nitrate (as N)		<0.0050	0.0086	RPD-NA	mg/L	N/A	20	30-OCT-20
WG3436324-6	LCS							
Nitrate (as N)			103.9		%		90-110	30-OCT-20
WG3436324-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-OCT-20
WG3436324-8	MS	L2523824-3						
Nitrate (as N)			105.5		%		75-125	30-OCT-20
ORP-CL								
Water								
Batch R5272133								
WG3436148-2	CRM	CL-ORP						
ORP			222		mV		210-230	30-OCT-20
WG3436148-4	CRM	CL-ORP						
ORP			225		mV		210-230	30-OCT-20
WG3436148-3	DUP	L2523824-3						
ORP		406	399	J	mV	7.9	15	30-OCT-20
P-T-L-COL-CL								
Water								
Batch R5272907								
WG3436866-10	LCS							
Phosphorus (P)-Total			96.0		%		80-120	02-NOV-20
WG3436866-9	MB							



Quality Control Report

Workorder: L2523824

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
	Water							
Batch	R5272310							
WG3436180-4	LCS							
Total Kjeldahl Nitrogen			97.1		%		75-125	31-OCT-20
WG3436180-8	LCS							
Total Kjeldahl Nitrogen			95.7		%		75-125	31-OCT-20
WG3436180-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-20
WG3436180-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-20
WG3436180-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-20
WG3436180-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-20
TSS-L-CL								
	Water							
Batch	R5275800							
WG3436736-6	LCS							
Total Suspended Solids			92.5		%		85-115	02-NOV-20
WG3436736-5	MB							
Total Suspended Solids			<1.0		mg/L		1	02-NOV-20
TURBIDITY-CL								
	Water							
Batch	R5272141							
WG3436116-10	DUP	L2523824-3						
Turbidity		28.2	27.3		NTU	3.2	15	30-OCT-20
WG3436116-11	LCS							
Turbidity			95.4		%		85-115	30-OCT-20
WG3436116-12	MB							
Turbidity			<0.10		NTU		0.1	30-OCT-20

Quality Control Report

Workorder: L2523824

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2523824

Report Date: 05-NOV-20

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	29-OCT-20 12:20	30-OCT-20 16:30	0.25	28	hours	EHTR-FM
	2	29-OCT-20 12:10	30-OCT-20 16:30	0.25	28	hours	EHTR-FM
	3	29-OCT-20 10:40	30-OCT-20 16:30	0.25	30	hours	EHTR-FM
pH	1	29-OCT-20 12:20	03-NOV-20 14:00	0.25	122	hours	EHTR-FM
	2	29-OCT-20 12:10	03-NOV-20 14:00	0.25	122	hours	EHTR-FM
	3	29-OCT-20 10:40	03-NOV-20 14:00	0.25	123	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2523824 were received on 30-OCT-20 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 04-NOV-20
Report Date: 04-FEB-21 11:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2525931
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q4_20201103
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:48
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2525931-1 CM_MW4-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 03-NOV-20 @ 13:50							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	1030		5.0	mg/L		05-NOV-20	R5280678
Carbonate (CO3)	41.9		5.0	mg/L		05-NOV-20	R5280678
Dissolved Organic Carbon	<0.50		0.50	mg/L		07-NOV-20	R5282475
Hydroxide (OH)	<5.0		5.0	mg/L		05-NOV-20	R5280678
Total Kjeldahl Nitrogen	0.977		0.050	mg/L		06-NOV-20	R5281698
Total Organic Carbon	<0.50		0.50	mg/L		07-NOV-20	R5282475
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	06-NOV-20	07-NOV-20	R5282108
Dissolved Metals Filtration Location	FIELD					06-NOV-20	R5282052
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-NOV-20	09-NOV-20	R5282940
Dissolved Mercury Filtration Location	FIELD					08-NOV-20	R5282434
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-NOV-20	R5282052
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-NOV-20	07-NOV-20	R5282108
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Barium (Ba)-Dissolved	0.634		0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Boron (B)-Dissolved	0.409		0.020	mg/L	06-NOV-20	07-NOV-20	R5282108
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	06-NOV-20	07-NOV-20	R5282108
Calcium (Ca)-Dissolved	9.42		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	06-NOV-20	07-NOV-20	R5282108
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	06-NOV-20	07-NOV-20	R5282108
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	06-NOV-20	07-NOV-20	R5282108
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Lithium (Li)-Dissolved	1.21		0.0020	mg/L	06-NOV-20	07-NOV-20	R5282108
Magnesium (Mg)-Dissolved	2.32		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Manganese (Mn)-Dissolved	0.00363		0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Molybdenum (Mo)-Dissolved	0.00029		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	06-NOV-20	07-NOV-20	R5282108
Potassium (K)-Dissolved	1.48		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	06-NOV-20	07-NOV-20	R5282108
Silicon (Si)-Dissolved	3.87		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-NOV-20	07-NOV-20	R5282108
Sodium (Na)-Dissolved	794		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Strontium (Sr)-Dissolved	1.38		0.00040	mg/L	06-NOV-20	07-NOV-20	R5282108
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-NOV-20	07-NOV-20	R5282108
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-NOV-20	07-NOV-20	R5282108
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-NOV-20	07-NOV-20	R5282108
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	06-NOV-20	07-NOV-20	R5282108
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	06-NOV-20	07-NOV-20	R5282108
Hardness							
Hardness (as CaCO3)	33.1		0.50	mg/L		09-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		05-NOV-20	R5280636
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2525931-1 CM_MW4-SH_WG_2020-10-12_N Sampled By: JE/JD on 03-NOV-20 @ 13:50 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	848		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Carbonate (as CaCO3)	69.8		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Total (as CaCO3)	918		1.0	mg/L		05-NOV-20	R5280678
Ammonia, Total (as N)							
Ammonia as N	0.712	DLHC	0.050	mg/L		05-NOV-20	R5281406
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.14	DLHC	0.25	mg/L		06-NOV-20	R5282275
Chloride in Water by IC							
Chloride (Cl)	559	DLHC	0.50	mg/L		06-NOV-20	R5282275
Electrical Conductivity (EC)							
Conductivity (@ 25C)	3300		2.0	uS/cm		05-NOV-20	R5280678
Fluoride in Water by IC							
Fluoride (F)	0.46	DLHC	0.10	mg/L		06-NOV-20	R5282275
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		09-NOV-20	
Anion Sum	34.1			meq/L		09-NOV-20	
Cation Sum	35.3			meq/L		09-NOV-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		09-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		06-NOV-20	R5282275
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		06-NOV-20	R5282275
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0099		0.0010	mg/L		04-NOV-20	R5279363
Oxidation redution potential by elect.							
ORP	232		-1000	mV		09-NOV-20	R5283052
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.018	DLM	0.010	mg/L		07-NOV-20	R5282330
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		06-NOV-20	R5282275
Total Dissolved Solids							
Total Dissolved Solids	1790	DLHC	40	mg/L		08-NOV-20	R5282990
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		09-NOV-20	R5283492
Turbidity							
Turbidity	5.25		0.10	NTU		05-NOV-20	R5281271
pH							
pH	8.67		0.10	pH		05-NOV-20	R5280678
L2525931-2 CM_MW4-DP_WG_2020-10-12_N Sampled By: JE/JD on 03-NOV-20 @ 13:50 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	687		5.0	mg/L		05-NOV-20	R5280678
Carbonate (CO3)	24.0		5.0	mg/L		05-NOV-20	R5280678
Dissolved Organic Carbon	<0.50		0.50	mg/L		07-NOV-20	R5282475
Hydroxide (OH)	<5.0		5.0	mg/L		05-NOV-20	R5280678
Total Kjeldahl Nitrogen	0.403		0.050	mg/L		06-NOV-20	R5281698
Total Organic Carbon	<0.50		0.50	mg/L		07-NOV-20	R5282475
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2525931-2 CM_MW4-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 03-NOV-20 @ 13:50							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-NOV-20	07-NOV-20	R5282108
Dissolved Metals Filtration Location	FIELD					06-NOV-20	R5282052
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	08-NOV-20	09-NOV-20	R5282940
Dissolved Mercury Filtration Location	FIELD					08-NOV-20	R5282434
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					06-NOV-20	R5282052
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-NOV-20	07-NOV-20	R5282108
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Barium (Ba)-Dissolved	0.344		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-NOV-20	07-NOV-20	R5282108
Boron (B)-Dissolved	0.371		0.010	mg/L	06-NOV-20	07-NOV-20	R5282108
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-NOV-20	07-NOV-20	R5282108
Calcium (Ca)-Dissolved	7.83		0.050	mg/L	06-NOV-20	07-NOV-20	R5282108
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-NOV-20	07-NOV-20	R5282108
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Iron (Fe)-Dissolved	0.031		0.010	mg/L	06-NOV-20	07-NOV-20	R5282108
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-NOV-20	07-NOV-20	R5282108
Lithium (Li)-Dissolved	0.527		0.0010	mg/L	06-NOV-20	07-NOV-20	R5282108
Magnesium (Mg)-Dissolved	2.66		0.10	mg/L	06-NOV-20	07-NOV-20	R5282108
Manganese (Mn)-Dissolved	0.00482		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Molybdenum (Mo)-Dissolved	0.000723		0.000050	mg/L	06-NOV-20	07-NOV-20	R5282108
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-NOV-20	07-NOV-20	R5282108
Potassium (K)-Dissolved	1.14		0.050	mg/L	06-NOV-20	07-NOV-20	R5282108
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-NOV-20	07-NOV-20	R5282108
Silicon (Si)-Dissolved	3.96		0.050	mg/L	06-NOV-20	07-NOV-20	R5282108
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-NOV-20	07-NOV-20	R5282108
Sodium (Na)-Dissolved	399		0.050	mg/L	06-NOV-20	07-NOV-20	R5282108
Strontium (Sr)-Dissolved	0.895		0.00020	mg/L	06-NOV-20	07-NOV-20	R5282108
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-NOV-20	07-NOV-20	R5282108
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-20	07-NOV-20	R5282108
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-NOV-20	07-NOV-20	R5282108
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	06-NOV-20	07-NOV-20	R5282108
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-NOV-20	07-NOV-20	R5282108
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-NOV-20	07-NOV-20	R5282108
Hardness							
Hardness (as CaCO3)	30.5		0.50	mg/L		09-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		05-NOV-20	R5280636
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	563		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Carbonate (as CaCO3)	40.0		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		05-NOV-20	R5280678
Alkalinity, Total (as CaCO3)	603		1.0	mg/L		05-NOV-20	R5280678
Ammonia, Total (as N)							
Ammonia as N	0.477		0.0050	mg/L		05-NOV-20	R5281406
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.50	DLHC	0.25	mg/L		06-NOV-20	R5282275
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2525931-2 CM_MW4-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 03-NOV-20 @ 13:50							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	175	DLHC	0.50	mg/L		06-NOV-20	R5282275
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1590		2.0	uS/cm		05-NOV-20	R5280678
Fluoride in Water by IC							
Fluoride (F)	0.44	DLHC	0.10	mg/L		06-NOV-20	R5282275
Ion Balance Calculation							
Cation - Anion Balance	3.0			%		09-NOV-20	
Anion Sum	17.0			meq/L		09-NOV-20	
Cation Sum	18.0			meq/L		09-NOV-20	
Ion Balance Calculation							
Ion Balance	106		-100	%		09-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		06-NOV-20	R5282275
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		06-NOV-20	R5282275
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0102		0.0010	mg/L		04-NOV-20	R5279363
Oxidation redution potential by elect.							
ORP	163		-1000	mV		09-NOV-20	R5283052
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.014	DLM	0.010	mg/L		07-NOV-20	R5282330
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		06-NOV-20	R5282275
Total Dissolved Solids							
Total Dissolved Solids	919	DLHC	20	mg/L		08-NOV-20	R5282990
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		09-NOV-20	R5283492
Turbidity							
Turbidity	0.77		0.10	NTU		05-NOV-20	R5281271
pH							
pH	8.65		0.10	pH		05-NOV-20	R5280678

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q4_20201103

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2525931

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5280636							
WG3439685-11	LCS							
Acidity (as CaCO3)			106.0		%		85-115	05-NOV-20
WG3439685-10	MB							
Acidity (as CaCO3)			1.3		mg/L		2	05-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5280678							
WG3439688-17	LCS							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	05-NOV-20
WG3439688-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5282108							
WG3440965-2	LCS							
Beryllium (Be)-Dissolved			98.3		%		80-120	07-NOV-20
WG3440965-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-NOV-20
BIC-CL								
	Water							
Batch	R5280678							
WG3439688-16	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	05-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5282275							
WG3441261-2	LCS							
Bromide (Br)			101.2		%		85-115	06-NOV-20
WG3441261-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	06-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5282475							
WG3441471-3	DUP	L2525931-2						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-NOV-20
WG3441471-2	LCS							
Dissolved Organic Carbon			97.3		%		80-120	07-NOV-20
WG3441471-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-NOV-20
WG3441471-4	MS	L2525931-2						
Dissolved Organic Carbon			108.5		%		70-130	07-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL								
Water								
Batch	R5282475							
WG3441471-3	DUP	L2525931-2						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-NOV-20
WG3441471-2	LCS							
Total Organic Carbon			94.1		%		80-120	07-NOV-20
WG3441471-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	07-NOV-20
WG3441471-4	MS	L2525931-2						
Total Organic Carbon			105.1		%		70-130	07-NOV-20
CL-L-IC-N-CL								
Water								
Batch	R5282275							
WG3441261-2	LCS							
Chloride (Cl)			102.7		%		85-115	06-NOV-20
WG3441261-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	06-NOV-20
CO3-CL								
Water								
Batch	R5280678							
WG3439688-16	MB							
Carbonate (CO3)			<5.0		mg/L		5	05-NOV-20
EC-L-PCT-CL								
Water								
Batch	R5280678							
WG3439688-17	LCS							
Conductivity (@ 25C)			100.0		%		90-110	05-NOV-20
WG3439688-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-NOV-20
F-IC-N-CL								
Water								
Batch	R5282275							
WG3441261-2	LCS							
Fluoride (F)			106.9		%		90-110	06-NOV-20
WG3441261-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	06-NOV-20
HG-D-CVAA-VA								
Water								
Batch	R5282940							
WG3441439-2	LCS							
Mercury (Hg)-Dissolved			109.2		%		80-120	09-NOV-20
WG3441439-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5282108							
WG3440965-2	LCS							
Aluminum (Al)-Dissolved			102.6		%		80-120	07-NOV-20
Antimony (Sb)-Dissolved			100.7		%		80-120	07-NOV-20
Arsenic (As)-Dissolved			106.2		%		80-120	07-NOV-20
Barium (Ba)-Dissolved			105.3		%		80-120	07-NOV-20
Bismuth (Bi)-Dissolved			95.8		%		80-120	07-NOV-20
Boron (B)-Dissolved			105.4		%		80-120	07-NOV-20
Cadmium (Cd)-Dissolved			105.1		%		80-120	07-NOV-20
Calcium (Ca)-Dissolved			101.8		%		80-120	07-NOV-20
Chromium (Cr)-Dissolved			105.6		%		80-120	07-NOV-20
Cobalt (Co)-Dissolved			107.1		%		80-120	07-NOV-20
Copper (Cu)-Dissolved			101.6		%		80-120	07-NOV-20
Iron (Fe)-Dissolved			97.4		%		80-120	07-NOV-20
Lead (Pb)-Dissolved			95.2		%		80-120	07-NOV-20
Lithium (Li)-Dissolved			103.4		%		80-120	07-NOV-20
Magnesium (Mg)-Dissolved			103.1		%		80-120	07-NOV-20
Manganese (Mn)-Dissolved			103.4		%		80-120	07-NOV-20
Molybdenum (Mo)-Dissolved			102.7		%		80-120	07-NOV-20
Nickel (Ni)-Dissolved			103.5		%		80-120	07-NOV-20
Potassium (K)-Dissolved			108.6		%		80-120	07-NOV-20
Selenium (Se)-Dissolved			99.7		%		80-120	07-NOV-20
Silicon (Si)-Dissolved			98.1		%		60-140	07-NOV-20
Silver (Ag)-Dissolved			104.7		%		80-120	07-NOV-20
Sodium (Na)-Dissolved			117.3		%		80-120	07-NOV-20
Strontium (Sr)-Dissolved			109.3		%		80-120	07-NOV-20
Thallium (Tl)-Dissolved			96.4		%		80-120	07-NOV-20
Tin (Sn)-Dissolved			100.4		%		80-120	07-NOV-20
Titanium (Ti)-Dissolved			99.1		%		80-120	07-NOV-20
Uranium (U)-Dissolved			102.8		%		80-120	07-NOV-20
Vanadium (V)-Dissolved			105.6		%		80-120	07-NOV-20
Zinc (Zn)-Dissolved			100.8		%		80-120	07-NOV-20
WG3440965-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5282108							
WG3440965-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5281406							
WG3439699-38	LCS							
Ammonia as N			100.2		%		85-115	05-NOV-20
WG3439699-37	MB							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-20
NO2-L-IC-N-CL								
	Water							



Quality Control Report

Workorder: L2525931

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5282275							
WG3441261-2	LCS							
Nitrite (as N)			102.9		%		90-110	06-NOV-20
WG3441261-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	06-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5282275							
WG3441261-2	LCS							
Nitrate (as N)			103.6		%		90-110	06-NOV-20
WG3441261-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	06-NOV-20
OH-CL	Water							
Batch	R5280678							
WG3439688-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	05-NOV-20
ORP-CL	Water							
Batch	R5283052							
WG3442182-7	CRM	CL-ORP						
ORP			226		mV		210-230	09-NOV-20
P-T-L-COL-CL	Water							
Batch	R5282330							
WG3441168-22	LCS							
Phosphorus (P)-Total			100.8		%		80-120	07-NOV-20
WG3441168-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-NOV-20
PH-CL	Water							
Batch	R5280678							
WG3439688-17	LCS							
pH			7.02		pH		6.9-7.1	05-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5279363							
WG3439017-18	LCS							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	05-NOV-20
WG3439017-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-NOV-20



Quality Control Report

Workorder: L2525931

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL								
Batch R5282275								
WG3441261-2	LCS							
Sulfate (SO4)			99.0		%		90-110	06-NOV-20
WG3441261-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	06-NOV-20
SOLIDS-TDS-CL								
Batch R5282990								
WG3441386-9	DUP	L2525931-1						
Total Dissolved Solids		1790	1750		mg/L	2.1	20	08-NOV-20
WG3441386-8	LCS							
Total Dissolved Solids			98.5		%		85-115	08-NOV-20
WG3441386-7	MB							
Total Dissolved Solids			<10		mg/L		10	08-NOV-20
TKN-L-F-CL								
Batch R5281698								
WG3440342-10	LCS							
Total Kjeldahl Nitrogen			96.6		%		75-125	06-NOV-20
WG3440342-15	LCS							
Total Kjeldahl Nitrogen			96.0		%		75-125	06-NOV-20
WG3440342-19	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	06-NOV-20
WG3440342-2	LCS							
Total Kjeldahl Nitrogen			85.9		%		75-125	06-NOV-20
WG3440342-23	LCS							
Total Kjeldahl Nitrogen			87.0		%		75-125	06-NOV-20
WG3440342-27	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	06-NOV-20
WG3440342-29	LCS							
Total Kjeldahl Nitrogen			91.0		%		75-125	06-NOV-20
WG3440342-4	LCS							
Total Kjeldahl Nitrogen			102.7		%		75-125	06-NOV-20
WG3440342-6	LCS							
Total Kjeldahl Nitrogen			105.7		%		75-125	06-NOV-20
WG3440342-8	LCS							
Total Kjeldahl Nitrogen			102.7		%		75-125	06-NOV-20
WG3440342-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-14	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5281698							
WG3440342-18	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-22	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-26	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-28	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
WG3440342-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-20
TSS-L-CL		Water						
Batch	R5283492							
WG3441458-6	LCS							
Total Suspended Solids			94.8		%		85-115	09-NOV-20
WG3441458-5	MB							
Total Suspended Solids			<1.0		mg/L		1	09-NOV-20
TURBIDITY-CL		Water						
Batch	R5281271							
WG3439581-5	LCS							
Turbidity			96.9		%		85-115	05-NOV-20
WG3439581-4	MB							
Turbidity			<0.10		NTU		0.1	05-NOV-20

Quality Control Report

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2525931

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	03-NOV-20 13:50	09-NOV-20 16:45	0.25	147	hours	EHTR-FM
	2	03-NOV-20 13:50	09-NOV-20 16:45	0.25	147	hours	EHTR-FM
pH	1	03-NOV-20 13:50	05-NOV-20 14:00	0.25	48	hours	EHTR-FM
	2	03-NOV-20 13:50	05-NOV-20 14:00	0.25	48	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2525931 were received on 04-NOV-20 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 13-NOV-20
Report Date: 04-FEB-21 11:02 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2529304
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:50
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-1 CM_MW1-OB_WG_2020-10-12_N							
Sampled By: JE on 12-NOV-20 @ 12:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	341		5.0	mg/L		17-NOV-20	R5286834
Carbonate (CO3)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Hydroxide (OH)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Total Kjeldahl Nitrogen	0.128		0.050	mg/L		14-NOV-20	R5285582
Total Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-NOV-20	17-NOV-20	R5287087
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286379
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	FIELD					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286379
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-NOV-20	17-NOV-20	R5287087
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Barium (Ba)-Dissolved	0.0794		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Boron (B)-Dissolved	0.040		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cadmium (Cd)-Dissolved	0.0573		0.0050	ug/L	16-NOV-20	17-NOV-20	R5287087
Calcium (Ca)-Dissolved	129		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Chromium (Cr)-Dissolved	0.00048		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-NOV-20	17-NOV-20	R5287087
Copper (Cu)-Dissolved	0.00150		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Lead (Pb)-Dissolved	0.000091		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Lithium (Li)-Dissolved	0.0200		0.0010	mg/L	16-NOV-20	17-NOV-20	R5287087
Magnesium (Mg)-Dissolved	39.3		0.10	mg/L	16-NOV-20	17-NOV-20	R5287087
Manganese (Mn)-Dissolved	0.00019		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Molybdenum (Mo)-Dissolved	0.000254		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Potassium (K)-Dissolved	2.04		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Selenium (Se)-Dissolved	4.04		0.050	ug/L	16-NOV-20	17-NOV-20	R5287087
Silicon (Si)-Dissolved	3.74		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Sodium (Na)-Dissolved	75.0		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Strontium (Sr)-Dissolved	0.340		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Thallium (Tl)-Dissolved	0.000015		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Uranium (U)-Dissolved	0.00120		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Zinc (Zn)-Dissolved	0.0336		0.0010	mg/L	16-NOV-20	17-NOV-20	R5287087
Hardness							
Hardness (as CaCO3)	485		0.50	mg/L		17-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	4.7		1.0	mg/L		14-NOV-20	R5286547
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-1 CM_MW1-OB_WG_2020-10-12_N Sampled By: JE on 12-NOV-20 @ 12:00 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	280		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Total (as CaCO3)	280		1.0	mg/L		17-NOV-20	R5286834
Ammonia, Total (as N)							
Ammonia as N	0.0517		0.0050	mg/L		14-NOV-20	R5285720
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		13-NOV-20	R5285612
Chloride in Water by IC							
Chloride (Cl)	89.2	DLHC	0.50	mg/L		13-NOV-20	R5285612
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1100		2.0	uS/cm		17-NOV-20	R5286834
Fluoride in Water by IC							
Fluoride (F)	0.13	DLHC	0.10	mg/L		13-NOV-20	R5285612
Ion Balance Calculation							
Cation - Anion Balance	1.7			%		18-NOV-20	
Anion Sum	12.6			meq/L		18-NOV-20	
Cation Sum	13.0			meq/L		18-NOV-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		18-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.686	DLHC	0.025	mg/L		13-NOV-20	R5285612
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-NOV-20	R5285612
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0039		0.0010	mg/L		13-NOV-20	R5285438
Oxidation redution potential by elect.							
ORP	463		-1000	mV		13-NOV-20	R5285434
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0046		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	211	DLHC	1.5	mg/L		13-NOV-20	R5285612
Total Dissolved Solids							
Total Dissolved Solids	741	DLHC	20	mg/L		17-NOV-20	R5287526
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-NOV-20	R5287371
Turbidity							
Turbidity	<0.10		0.10	NTU		13-NOV-20	R5285439
pH							
pH	8.20		0.10	pH		17-NOV-20	R5286834
L2529304-2 CM_MW1-SH_WG_2020-10-12_N Sampled By: JE on 12-NOV-20 @ 12:15 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	246		5.0	mg/L		17-NOV-20	R5286834
Carbonate (CO3)	7.9		5.0	mg/L		17-NOV-20	R5286834
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Hydroxide (OH)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		14-NOV-20	R5285582
Total Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-2 CM_MW1-SH_WG_2020-10-12_N							
Sampled By: JE on 12-NOV-20 @ 12:15							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-NOV-20	17-NOV-20	R5287087
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286379
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	FIELD					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286379
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-NOV-20	17-NOV-20	R5287087
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Arsenic (As)-Dissolved	0.00227		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Barium (Ba)-Dissolved	0.386		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Boron (B)-Dissolved	0.063		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cadmium (Cd)-Dissolved	<0.010	DLM	0.010	ug/L	16-NOV-20	17-NOV-20	R5287087
Calcium (Ca)-Dissolved	28.2		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cobalt (Co)-Dissolved	0.12		0.10	ug/L	16-NOV-20	17-NOV-20	R5287087
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Iron (Fe)-Dissolved	0.555		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Lithium (Li)-Dissolved	0.0219		0.0010	mg/L	16-NOV-20	17-NOV-20	R5287087
Magnesium (Mg)-Dissolved	10.2		0.10	mg/L	16-NOV-20	17-NOV-20	R5287087
Manganese (Mn)-Dissolved	0.146		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Molybdenum (Mo)-Dissolved	0.0490		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Potassium (K)-Dissolved	1.01		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Selenium (Se)-Dissolved	1.07		0.050	ug/L	16-NOV-20	17-NOV-20	R5287087
Silicon (Si)-Dissolved	4.07		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Sodium (Na)-Dissolved	172		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Strontium (Sr)-Dissolved	0.306		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Uranium (U)-Dissolved	0.000610		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	16-NOV-20	17-NOV-20	R5287087
Hardness							
Hardness (as CaCO3)	113		0.50	mg/L		17-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		14-NOV-20	R5286547
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Carbonate (as CaCO3)	13.2		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Total (as CaCO3)	215		1.0	mg/L		17-NOV-20	R5286834
Ammonia, Total (as N)							
Ammonia as N	0.0520		0.0050	mg/L		14-NOV-20	R5285720
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.75	DLHC	0.25	mg/L		13-NOV-20	R5285612
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-2 CM_MW1-SH_WG_2020-10-12_N Sampled By: JE on 12-NOV-20 @ 12:15 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	211	DLHC	0.50	mg/L		13-NOV-20	R5285612
Electrical Conductivity (EC) Conductivity (@ 25C)	1000		2.0	uS/cm		17-NOV-20	R5286834
Fluoride in Water by IC Fluoride (F)	0.88	DLHC	0.10	mg/L		13-NOV-20	R5285612
Ion Balance Calculation Ion Balance	94.3		-100	%		18-NOV-20	
Ion Balance Calculation Cation - Anion Balance	-2.9			%		18-NOV-20	
Anion Sum	10.4			meq/L		18-NOV-20	
Cation Sum	9.81			meq/L		18-NOV-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.035	DLHC	0.025	mg/L		13-NOV-20	R5285612
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		13-NOV-20	R5285612
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		13-NOV-20	R5285438
Oxidation redution potential by elect. ORP	312		-1000	mV		13-NOV-20	R5285434
Phosphorus (P)-Total Phosphorus (P)-Total	0.0057		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC Sulfate (SO4)	5.1	DLHC	1.5	mg/L		13-NOV-20	R5285612
Total Dissolved Solids Total Dissolved Solids	519	DLHC	20	mg/L		17-NOV-20	R5287526
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		17-NOV-20	R5287371
Turbidity Turbidity	3.56		0.10	NTU		13-NOV-20	R5285439
pH pH	8.47		0.10	pH		17-NOV-20	R5286834
L2529304-3 CM_TRP_WS_2020-10-12_N Sampled By: JE on 12-NOV-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Carbonate (CO3)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Hydroxide (OH)	<5.0		5.0	mg/L		17-NOV-20	R5286834
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		14-NOV-20	R5285582
Total Organic Carbon	<0.50		0.50	mg/L		16-NOV-20	R5286879
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	16-NOV-20	17-NOV-20	R5287087
Dissolved Metals Filtration Location	FIELD					16-NOV-20	R5286379
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	19-NOV-20	19-NOV-20	R5288056
Dissolved Mercury Filtration Location	NA					19-NOV-20	R5287943
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287131
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	16-NOV-20	17-NOV-20	R5287087

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-3 CM_TRP_WS_2020-10-12_N							
Sampled By: JE on 12-NOV-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Boron (B)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	16-NOV-20	17-NOV-20	R5287087
Calcium (Ca)-Dissolved	0.111	RRV	0.050	mg/L	17-NOV-20	18-NOV-20	R5286993
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	16-NOV-20	17-NOV-20	R5287087
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	16-NOV-20	17-NOV-20	R5287087
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	16-NOV-20	17-NOV-20	R5287087
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	16-NOV-20	17-NOV-20	R5287087
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Potassium (K)-Dissolved	<0.050		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	16-NOV-20	17-NOV-20	R5287087
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	16-NOV-20	17-NOV-20	R5287087
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	16-NOV-20	17-NOV-20	R5287087
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-NOV-20	17-NOV-20	R5287087
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	16-NOV-20	17-NOV-20	R5287087
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	16-NOV-20	17-NOV-20	R5287087
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-NOV-20	17-NOV-20	R5287087
Zinc (Zn)-Dissolved	0.0085	RRV	0.0010	mg/L	17-NOV-20	18-NOV-20	R5286993
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		18-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.5		1.0	mg/L		14-NOV-20	R5286547
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5286834
Ammonia, Total (as N)							
Ammonia as N	<0.0050		0.0050	mg/L		14-NOV-20	R5285720
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		13-NOV-20	R5285612
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		13-NOV-20	R5285612
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		17-NOV-20	R5286834
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		13-NOV-20	R5285612
Ion Balance Calculation							
Ion Balance	0.0		-100	%		18-NOV-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529304-3 CM_TRP_WS_2020-10-12_N							
Sampled By: JE on 12-NOV-20 @ 12:00							
Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		18-NOV-20	
Anion Sum	<0.10			meq/L		18-NOV-20	
Cation Sum	<0.10			meq/L		18-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		13-NOV-20	R5285612
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-NOV-20	R5285612
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-NOV-20	R5285438
Oxidation redution potential by elect.							
ORP	409		-1000	mV		13-NOV-20	R5285434
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		13-NOV-20	R5285612
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		17-NOV-20	R5287526
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		17-NOV-20	R5287371
Turbidity							
Turbidity	<0.10		0.10	NTU		13-NOV-20	R5285439
pH							
pH	5.57		0.10	pH		17-NOV-20	R5286834

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2529304

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5286547							
WG3446219-6	DUP	L2529304-2						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	14-NOV-20
WG3446219-5	LCS							
Acidity (as CaCO3)			99.4		%		85-115	14-NOV-20
WG3446219-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	14-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5286834							
WG3446541-14	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	17-NOV-20
WG3446541-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5287087							
WG3445944-2	LCS							
Beryllium (Be)-Dissolved			103.6		%		80-120	17-NOV-20
WG3445944-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-NOV-20
BIC-CL								
	Water							
Batch	R5286834							
WG3446541-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	17-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5285612							
WG3445144-2	LCS							
Bromide (Br)			104.7		%		85-115	13-NOV-20
WG3445144-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	13-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5286879							
WG3446466-8	LCS							
Dissolved Organic Carbon			105.0		%		80-120	16-NOV-20
WG3446466-7	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2529304

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5286879							
WG3446466-8	LCS							
Total Organic Carbon			104.9		%		80-120	16-NOV-20
WG3446466-7	MB							
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5285612							
WG3445144-2	LCS							
Chloride (Cl)			102.2		%		85-115	13-NOV-20
WG3445144-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	13-NOV-20
CO3-CL	Water							
Batch	R5286834							
WG3446541-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	17-NOV-20
EC-L-PCT-CL	Water							
Batch	R5286834							
WG3446541-14	LCS							
Conductivity (@ 25C)			97.6		%		90-110	17-NOV-20
WG3446541-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-NOV-20
F-IC-N-CL	Water							
Batch	R5285612							
WG3445144-2	LCS							
Fluoride (F)			98.5		%		90-110	13-NOV-20
WG3445144-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	13-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5288056							
WG3447828-2	LCS							
Mercury (Hg)-Dissolved			97.2		%		80-120	19-NOV-20
WG3447828-6	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	19-NOV-20
WG3447828-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-20
WG3447828-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5286993							
WG3446899-2	LCS							
Aluminum (Al)-Dissolved			100.6		%		80-120	18-NOV-20
Antimony (Sb)-Dissolved			99.9		%		80-120	18-NOV-20
Arsenic (As)-Dissolved			103.3		%		80-120	18-NOV-20
Barium (Ba)-Dissolved			102.9		%		80-120	18-NOV-20
Bismuth (Bi)-Dissolved			105.1		%		80-120	18-NOV-20
Boron (B)-Dissolved			95.1		%		80-120	18-NOV-20
Cadmium (Cd)-Dissolved			106.3		%		80-120	18-NOV-20
Calcium (Ca)-Dissolved			98.8		%		80-120	18-NOV-20
Chromium (Cr)-Dissolved			99.1		%		80-120	18-NOV-20
Cobalt (Co)-Dissolved			99.4		%		80-120	18-NOV-20
Copper (Cu)-Dissolved			99.96		%		80-120	18-NOV-20
Iron (Fe)-Dissolved			96.9		%		80-120	18-NOV-20
Lead (Pb)-Dissolved			102.8		%		80-120	18-NOV-20
Lithium (Li)-Dissolved			100.5		%		80-120	18-NOV-20
Magnesium (Mg)-Dissolved			100.1		%		80-120	18-NOV-20
Manganese (Mn)-Dissolved			98.9		%		80-120	18-NOV-20
Molybdenum (Mo)-Dissolved			101.4		%		80-120	18-NOV-20
Nickel (Ni)-Dissolved			98.6		%		80-120	18-NOV-20
Potassium (K)-Dissolved			98.1		%		80-120	18-NOV-20
Selenium (Se)-Dissolved			109.6		%		80-120	18-NOV-20
Silicon (Si)-Dissolved			99.9		%		60-140	18-NOV-20
Silver (Ag)-Dissolved			100.8		%		80-120	18-NOV-20
Sodium (Na)-Dissolved			100.9		%		80-120	18-NOV-20
Strontium (Sr)-Dissolved			102.2		%		80-120	18-NOV-20
Thallium (Tl)-Dissolved			102.0		%		80-120	18-NOV-20
Tin (Sn)-Dissolved			96.2		%		80-120	18-NOV-20
Titanium (Ti)-Dissolved			94.6		%		80-120	18-NOV-20
Uranium (U)-Dissolved			104.6		%		80-120	18-NOV-20
Vanadium (V)-Dissolved			101.3		%		80-120	18-NOV-20
Zinc (Zn)-Dissolved			107.0		%		80-120	18-NOV-20
WG3446899-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5286993							
WG3446899-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Batch	R5287087							
WG3445944-2	LCS							
Aluminum (Al)-Dissolved			99.1		%		80-120	17-NOV-20
Antimony (Sb)-Dissolved			98.5		%		80-120	17-NOV-20
Arsenic (As)-Dissolved			102.4		%		80-120	17-NOV-20
Barium (Ba)-Dissolved			96.7		%		80-120	17-NOV-20
Bismuth (Bi)-Dissolved			95.1		%		80-120	17-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287087							
WG3445944-2	LCS							
Boron (B)-Dissolved			114.0		%		80-120	17-NOV-20
Cadmium (Cd)-Dissolved			101.8		%		80-120	17-NOV-20
Calcium (Ca)-Dissolved			104.4		%		80-120	17-NOV-20
Chromium (Cr)-Dissolved			95.7		%		80-120	17-NOV-20
Cobalt (Co)-Dissolved			100.4		%		80-120	17-NOV-20
Copper (Cu)-Dissolved			96.9		%		80-120	17-NOV-20
Iron (Fe)-Dissolved			98.7		%		80-120	17-NOV-20
Lead (Pb)-Dissolved			98.3		%		80-120	17-NOV-20
Lithium (Li)-Dissolved			102.9		%		80-120	17-NOV-20
Magnesium (Mg)-Dissolved			93.8		%		80-120	17-NOV-20
Manganese (Mn)-Dissolved			96.6		%		80-120	17-NOV-20
Molybdenum (Mo)-Dissolved			100.4		%		80-120	17-NOV-20
Nickel (Ni)-Dissolved			98.8		%		80-120	17-NOV-20
Potassium (K)-Dissolved			97.4		%		80-120	17-NOV-20
Selenium (Se)-Dissolved			108.5		%		80-120	17-NOV-20
Silicon (Si)-Dissolved			106.6		%		60-140	17-NOV-20
Silver (Ag)-Dissolved			105.5		%		80-120	17-NOV-20
Sodium (Na)-Dissolved			100.5		%		80-120	17-NOV-20
Strontium (Sr)-Dissolved			104.0		%		80-120	17-NOV-20
Thallium (Tl)-Dissolved			96.7		%		80-120	17-NOV-20
Tin (Sn)-Dissolved			98.9		%		80-120	17-NOV-20
Titanium (Ti)-Dissolved			89.3		%		80-120	17-NOV-20
Uranium (U)-Dissolved			104.4		%		80-120	17-NOV-20
Vanadium (V)-Dissolved			99.3		%		80-120	17-NOV-20
Zinc (Zn)-Dissolved			107.8		%		80-120	17-NOV-20
WG3445944-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287087							
WG3445944-1	MB	NP						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5285720							
WG3445226-10	LCS							
Ammonia as N			101.4		%		85-115	14-NOV-20
WG3445226-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-20
NO2-L-IC-N-CL								
	Water							
Batch	R5285612							
WG3445144-2	LCS							
Nitrite (as N)			98.3		%		90-110	13-NOV-20
WG3445144-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	13-NOV-20
NO3-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-CL	Water							
Batch	R5285612							
WG3445144-2	LCS							
Nitrate (as N)			103.2		%		90-110	13-NOV-20
WG3445144-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-NOV-20
OH-CL	Water							
Batch	R5286834							
WG3446541-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	17-NOV-20
ORP-CL	Water							
Batch	R5285434							
WG3444909-3	CRM	CL-ORP						
ORP			227		mV		210-230	13-NOV-20
P-T-L-COL-CL	Water							
Batch	R5286966							
WG3446486-30	LCS							
Phosphorus (P)-Total			98.5		%		80-120	17-NOV-20
WG3446486-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-20
PH-CL	Water							
Batch	R5286834							
WG3446541-14	LCS							
pH			7.01		pH		6.9-7.1	17-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5285438							
WG3444888-6	LCS							
Orthophosphate-Dissolved (as P)			95.7		%		80-120	13-NOV-20
WG3444888-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-NOV-20
SO4-IC-N-CL	Water							
Batch	R5285612							
WG3445144-2	LCS							
Sulfate (SO4)			105.6		%		90-110	13-NOV-20
WG3445144-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-CL								
	Water							
Batch	R5287526							
WG3446690-5	LCS							
Total Dissolved Solids			98.6		%		85-115	17-NOV-20
WG3446690-4	MB							
Total Dissolved Solids			<10		mg/L		10	17-NOV-20
TKN-L-F-CL								
	Water							
Batch	R5285582							
WG3444973-15	DUP	L2529304-3						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	14-NOV-20
WG3444973-10	LCS							
Total Kjeldahl Nitrogen			86.3		%		75-125	14-NOV-20
WG3444973-14	LCS							
Total Kjeldahl Nitrogen			87.6		%		75-125	14-NOV-20
WG3444973-18	LCS							
Total Kjeldahl Nitrogen			94.8		%		75-125	14-NOV-20
WG3444973-2	LCS							
Total Kjeldahl Nitrogen			89.8		%		75-125	14-NOV-20
WG3444973-4	LCS							
Total Kjeldahl Nitrogen			90.0		%		75-125	14-NOV-20
WG3444973-6	LCS							
Total Kjeldahl Nitrogen			88.0		%		75-125	14-NOV-20
WG3444973-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-NOV-20
WG3444973-16	MS	L2529304-3						
Total Kjeldahl Nitrogen			96.6		%		70-130	14-NOV-20
TSS-L-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-L-CL	Water							
Batch	R5287371							
WG3446033-4	LCS							
Total Suspended Solids			100.5		%		85-115	17-NOV-20
WG3446033-3	MB							
Total Suspended Solids			<1.0		mg/L		1	17-NOV-20
TURBIDITY-CL	Water							
Batch	R5285439							
WG3444656-23	DUP	L2529304-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	13-NOV-20
WG3444656-8	LCS							
Turbidity			96.4		%		85-115	13-NOV-20
WG3444656-7	MB							
Turbidity			<0.10		NTU		0.1	13-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	12-NOV-20 12:00	13-NOV-20 13:00	0.25	25	hours	EHTR-FM
	2	12-NOV-20 12:15	13-NOV-20 13:00	0.25	25	hours	EHTR-FM
	3	12-NOV-20 12:00	13-NOV-20 13:00	0.25	25	hours	EHTR-FM
pH	1	12-NOV-20 12:00	17-NOV-20 14:00	0.25	122	hours	EHTR-FM
	2	12-NOV-20 12:15	17-NOV-20 14:00	0.25	122	hours	EHTR-FM
	3	12-NOV-20 12:00	17-NOV-20 14:00	0.25	122	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2529304 were received on 13-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q4_20201112_MW1		TURNAROUND TIME:		REGULAR		RUSH: NO						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary				Report Format / Distribution		Excel	PDF	EDD
Project Manager Jay Jones				Lab Contact Inayat Dhaliwal				Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email Jay.Jones@teck.com				Email Inayat.Dhaliwal@alsglobal.com				Email 2:	teckcoal@equisonline.com			X
Address PO Box 3000				Address 2559 29th St. NE				Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City Sparwood		Province BC		City Calgary		Province AB						
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada						
Phone Number 1-250-425-7321				Phone Number 403 407 1800				PO number	VPO00683186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2529304-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	F	N	F	F	N						
CM_MW1-OB_WG_2020-10-12_N	CM_MW1-OB	WG	No	2020/11/12	12:00	G	5	ALS_Package-DOC	H2SO4	1	1	1	1	1						
CM_MW1-SH_WG_2020-10-12_N	CM_MW1-SH	WG	No	2020/11/12	12:15	G	5	ALS_Package-TKN/TOC	H2SO4	1	1	1	1	1						
CM_TRP_WS_2020-10-12_N	CM_TRP	WG	No	2020/11/12	-	G	5	HG-D-CVAF-VA	HCL	1	1	1	1	1						
								TECKCOAL-MET-D-VA	HNO3											
								TECKCOAL-ROUTINE-VA	NONE											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.			<i>[Signature]</i>	11/13 8:40

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) X	Priority (2-3 business days) - 50% surcharge	JE	250-425-7522
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	Date/Time
			November 12, 2020



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 14-NOV-20
Report Date: 04-FEB-21 11:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2529540
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q4_20201113
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:51
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529540-1 CM_MW1-DP_WG_2020-10-12_N							
Sampled By: VS on 13-NOV-20 @ 10:39							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	400		5.0	mg/L		18-NOV-20	R5288182
Carbonate (CO3)	12.6		5.0	mg/L		18-NOV-20	R5288182
Dissolved Organic Carbon	0.76		0.50	mg/L		16-NOV-20	R5286879
Hydroxide (OH)	<5.0		5.0	mg/L		18-NOV-20	R5288182
Total Kjeldahl Nitrogen	0.745		0.050	mg/L		16-NOV-20	R5286419
Total Organic Carbon	0.71		0.50	mg/L		16-NOV-20	R5286879
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-20	18-NOV-20	R5287141
Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-NOV-20	20-NOV-20	R5290762
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5290558
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					17-NOV-20	R5287081
Aluminum (Al)-Dissolved	0.0035		0.0030	mg/L	17-NOV-20	18-NOV-20	R5287141
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Arsenic (As)-Dissolved	0.00198		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Barium (Ba)-Dissolved	10.6		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Boron (B)-Dissolved	0.240		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-NOV-20	18-NOV-20	R5287141
Calcium (Ca)-Dissolved	30.5		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Cobalt (Co)-Dissolved	0.12		0.10	ug/L	17-NOV-20	18-NOV-20	R5287141
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Iron (Fe)-Dissolved	0.802		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Lithium (Li)-Dissolved	0.744		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Magnesium (Mg)-Dissolved	15.4		0.10	mg/L	17-NOV-20	18-NOV-20	R5287141
Manganese (Mn)-Dissolved	0.0941		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Molybdenum (Mo)-Dissolved	0.00389		0.000050	mg/L	17-NOV-20	18-NOV-20	R5287141
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141
Potassium (K)-Dissolved	4.97		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Selenium (Se)-Dissolved	0.176		0.050	ug/L	17-NOV-20	18-NOV-20	R5287141
Silicon (Si)-Dissolved	4.85		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Sodium (Na)-Dissolved	222		0.050	mg/L	17-NOV-20	18-NOV-20	R5287141
Strontium (Sr)-Dissolved	2.47		0.00020	mg/L	17-NOV-20	18-NOV-20	R5287141
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-20	18-NOV-20	R5287141
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-20	18-NOV-20	R5287141
Uranium (U)-Dissolved	0.000378		0.000010	mg/L	17-NOV-20	18-NOV-20	R5287141
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-20	18-NOV-20	R5287141
Zinc (Zn)-Dissolved	0.0064		0.0010	mg/L	17-NOV-20	18-NOV-20	R5287141
Hardness							
Hardness (as CaCO3)	140		0.50	mg/L		18-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		17-NOV-20	R5287217
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2529540-1 CM_MW1-DP_WG_2020-10-12_N							
Sampled By: VS on 13-NOV-20 @ 10:39							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	328		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Carbonate (as CaCO3)	21.6		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-NOV-20	R5288182
Alkalinity, Total (as CaCO3)	349		1.0	mg/L		18-NOV-20	R5288182
Ammonia, Total (as N)							
Ammonia as N	0.600	DLHC	0.050	mg/L		15-NOV-20	R5285889
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.91	DLHC	0.25	mg/L		14-NOV-20	R5286248
Chloride in Water by IC							
Chloride (Cl)	235	DLHC	0.50	mg/L		14-NOV-20	R5286248
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1330		2.0	uS/cm		18-NOV-20	R5288182
Fluoride in Water by IC							
Fluoride (F)	0.15	DLHC	0.10	mg/L		14-NOV-20	R5286248
Ion Balance Calculation							
Ion Balance	92.8		-100	%		19-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.7			%		19-NOV-20	
Anion Sum	13.6			meq/L		19-NOV-20	
Cation Sum	12.7			meq/L		19-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.029	DLHC	0.025	mg/L		14-NOV-20	R5286248
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		14-NOV-20	R5286248
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0374		0.0010	mg/L		14-NOV-20	R5285809
Oxidation redution potential by elect.							
ORP	206		-1000	mV		16-NOV-20	R5286416
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0700		0.0020	mg/L		17-NOV-20	R5286966
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		14-NOV-20	R5286248
Total Dissolved Solids							
Total Dissolved Solids	710	DLHC	20	mg/L		18-NOV-20	R5288416
Total Suspended Solids							
Total Suspended Solids	55.3		1.0	mg/L		18-NOV-20	R5288178
Turbidity							
Turbidity	40.0		0.10	NTU		14-NOV-20	R5285700
pH							
pH	8.48		0.10	pH		18-NOV-20	R5288182

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q4_20201113

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2529540

Report Date: 04-FEB-21

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5287217							
WG3447068-14	LCS							
Acidity (as CaCO3)			110.7		%		85-115	17-NOV-20
WG3447068-13	MB							
Acidity (as CaCO3)			1.8		mg/L		2	17-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5288182							
WG3447920-11	LCS							
Alkalinity, Total (as CaCO3)			99.98		%		85-115	18-NOV-20
WG3447920-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-2	LCS							
Beryllium (Be)-Dissolved			94.6		%		80-120	18-NOV-20
WG3446853-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-20
BIC-CL								
	Water							
Batch	R5288182							
WG3447920-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	18-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5286248							
WG3445842-2	LCS							
Bromide (Br)			102.2		%		85-115	14-NOV-20
WG3445842-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	14-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5286879							
WG3446466-12	LCS							
Dissolved Organic Carbon			107.1		%		80-120	16-NOV-20
WG3446466-11	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2529540

Report Date: 04-FEB-21

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5286879							
WG3446466-12 LCS								
Total Organic Carbon			113.7		%		80-120	16-NOV-20
WG3446466-11 MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Chloride (Cl)			99.9		%		85-115	14-NOV-20
WG3445842-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	14-NOV-20
CO3-CL	Water							
Batch	R5288182							
WG3447920-10 MB								
Carbonate (CO3)			<5.0		mg/L		5	18-NOV-20
EC-L-PCT-CL	Water							
Batch	R5288182							
WG3447920-11 LCS								
Conductivity (@ 25C)			96.0		%		90-110	18-NOV-20
WG3447920-10 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-NOV-20
F-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2 LCS								
Fluoride (F)			95.6		%		90-110	14-NOV-20
WG3445842-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	14-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5290762							
WG3448574-2 LCS								
Mercury (Hg)-Dissolved			98.1		%		80-120	20-NOV-20
WG3448574-1 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-NOV-20
MET-D-CCMS-VA	Water							



Quality Control Report

Workorder: L2529540

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-2	LCS							
Aluminum (Al)-Dissolved			93.9		%		80-120	18-NOV-20
Antimony (Sb)-Dissolved			98.8		%		80-120	18-NOV-20
Arsenic (As)-Dissolved			95.0		%		80-120	18-NOV-20
Barium (Ba)-Dissolved			96.2		%		80-120	18-NOV-20
Bismuth (Bi)-Dissolved			98.4		%		80-120	18-NOV-20
Boron (B)-Dissolved			91.4		%		80-120	18-NOV-20
Cadmium (Cd)-Dissolved			96.4		%		80-120	18-NOV-20
Calcium (Ca)-Dissolved			99.3		%		80-120	18-NOV-20
Chromium (Cr)-Dissolved			94.0		%		80-120	18-NOV-20
Cobalt (Co)-Dissolved			94.8		%		80-120	18-NOV-20
Copper (Cu)-Dissolved			92.8		%		80-120	18-NOV-20
Iron (Fe)-Dissolved			94.2		%		80-120	18-NOV-20
Lead (Pb)-Dissolved			97.4		%		80-120	18-NOV-20
Lithium (Li)-Dissolved			93.4		%		80-120	18-NOV-20
Magnesium (Mg)-Dissolved			90.2		%		80-120	18-NOV-20
Manganese (Mn)-Dissolved			93.1		%		80-120	18-NOV-20
Molybdenum (Mo)-Dissolved			97.7		%		80-120	18-NOV-20
Nickel (Ni)-Dissolved			93.5		%		80-120	18-NOV-20
Potassium (K)-Dissolved			94.4		%		80-120	18-NOV-20
Selenium (Se)-Dissolved			93.7		%		80-120	18-NOV-20
Silicon (Si)-Dissolved			104.8		%		60-140	18-NOV-20
Silver (Ag)-Dissolved			97.4		%		80-120	18-NOV-20
Sodium (Na)-Dissolved			94.4		%		80-120	18-NOV-20
Strontium (Sr)-Dissolved			99.6		%		80-120	18-NOV-20
Thallium (Tl)-Dissolved			97.9		%		80-120	18-NOV-20
Tin (Sn)-Dissolved			95.0		%		80-120	18-NOV-20
Titanium (Ti)-Dissolved			91.7		%		80-120	18-NOV-20
Uranium (U)-Dissolved			102.4		%		80-120	18-NOV-20
Vanadium (V)-Dissolved			96.7		%		80-120	18-NOV-20
Zinc (Zn)-Dissolved			94.9		%		80-120	18-NOV-20
WG3446853-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5287141							
WG3446853-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5285889							
WG3445309-14	LCS							
Ammonia as N			100.5		%		85-115	15-NOV-20
WG3445309-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	15-NOV-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2	LCS							
Nitrite (as N)			98.8		%		90-110	14-NOV-20
WG3445842-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2	LCS							
Nitrate (as N)			101.3		%		90-110	14-NOV-20
WG3445842-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-NOV-20
OH-CL	Water							
Batch	R5288182							
WG3447920-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	18-NOV-20
ORP-CL	Water							
Batch	R5286416							
WG3445933-3	CRM	CL-ORP						
ORP			226		mV		210-230	16-NOV-20
P-T-L-COL-CL	Water							
Batch	R5286966							
WG3446486-34	LCS							
Phosphorus (P)-Total			97.2		%		80-120	17-NOV-20
WG3446486-33	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-20
PH-CL	Water							
Batch	R5288182							
WG3447920-11	LCS							
pH			7.02		pH		6.9-7.1	18-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5285809							
WG3445320-6	LCS							
Orthophosphate-Dissolved (as P)			96.6		%		80-120	14-NOV-20
WG3445320-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5286248							
WG3445842-2	LCS							
Sulfate (SO4)			100.9		%		90-110	14-NOV-20
WG3445842-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5288416							
WG3447406-8	LCS							
Total Dissolved Solids			99.9		%		85-115	18-NOV-20
WG3447406-7	MB							
Total Dissolved Solids			<10		mg/L		10	18-NOV-20
TKN-L-F-CL	Water							
Batch	R5286419							
WG3445930-13	LCS							
Total Kjeldahl Nitrogen			91.2		%		75-125	16-NOV-20
WG3445930-2	LCS							
Total Kjeldahl Nitrogen			95.4		%		75-125	16-NOV-20
WG3445930-5	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	16-NOV-20
WG3445930-9	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	16-NOV-20
WG3445930-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-12	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
WG3445930-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-20
TSS-L-CL	Water							
Batch	R5288178							
WG3447395-6	LCS							
Total Suspended Solids			100.5		%		85-115	18-NOV-20
WG3447395-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5285700							
WG3445126-5	LCS							
Turbidity			94.9		%		85-115	14-NOV-20
WG3445126-4	MB							
Turbidity			<0.10		NTU		0.1	14-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	13-NOV-20 10:39	16-NOV-20 14:00	0.25	75	hours	EHTR-FM
pH	1	13-NOV-20 10:39	18-NOV-20 14:00	0.25	123	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2529540 were received on 14-NOV-20 09:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q4_20201113_MW1-DP TURNAROUND TIME: REGULAR RUSH/NO

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
								Email 4:	don.sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	VPO00683186			

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Y	N	Y	Y	N								
								PRESERV	H2SO4	H2SO4	HCL	HNO3	NONE								
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_MW1-DP_WG_2020-10-12_N	CM_MW1-DP	WG	No	2020/11/13	10:39	G	5		1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.			<i>DK</i>	11/14 09:50

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	VS	Mobile #	250-425-7522
Sampler's Signature	<i>D. Sharpe</i>	Date/Time	November 13, 2020

30



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 19-NOV-20
Report Date: 04-FEB-21 11:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2531396
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q4_20201118
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:53
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-1 CM_MW3-DP_WG_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:25							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	246		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	0.552		0.050	mg/L		20-NOV-20	R5291038
Total Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	20-NOV-20	21-NOV-20	R5293119
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Aluminum (Al)-Dissolved	0.0077		0.0030	mg/L	20-NOV-20	21-NOV-20	R5293119
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Arsenic (As)-Dissolved	0.00056		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Barium (Ba)-Dissolved	0.764		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Boron (B)-Dissolved	0.513		0.020	mg/L	20-NOV-20	21-NOV-20	R5293119
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	20-NOV-20	21-NOV-20	R5293119
Calcium (Ca)-Dissolved	12.3		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	20-NOV-20	21-NOV-20	R5293119
Copper (Cu)-Dissolved	0.00167		0.00040	mg/L	20-NOV-20	21-NOV-20	R5293119
Iron (Fe)-Dissolved	0.040		0.020	mg/L	20-NOV-20	21-NOV-20	R5293119
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Lithium (Li)-Dissolved	1.40		0.0020	mg/L	20-NOV-20	21-NOV-20	R5293119
Magnesium (Mg)-Dissolved	4.40		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Manganese (Mn)-Dissolved	0.0270		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Molybdenum (Mo)-Dissolved	0.00159		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Potassium (K)-Dissolved	2.08		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	20-NOV-20	21-NOV-20	R5293119
Silicon (Si)-Dissolved	2.98		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	20-NOV-20	21-NOV-20	R5293119
Sodium (Na)-Dissolved	551		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Strontium (Sr)-Dissolved	1.06		0.00040	mg/L	20-NOV-20	21-NOV-20	R5293119
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	20-NOV-20	21-NOV-20	R5293119
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Uranium (U)-Dissolved	0.000312		0.000020	mg/L	20-NOV-20	21-NOV-20	R5293119
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	20-NOV-20	21-NOV-20	R5293119
Hardness							
Hardness (as CaCO3)	48.9		0.50	mg/L		21-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		20-NOV-20	R5293017
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-1 CM_MW3-DP_WG_2020-10-12_N Sampled By: JE/JD on 18-NOV-20 @ 12:25 Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.645	DLHC	0.050	mg/L		20-NOV-20	R5291004
Bromide in Water by IC (Low Level)							
Bromide (Br)	2.57	DLHC	0.25	mg/L		19-NOV-20	R5290899
Chloride in Water by IC							
Chloride (Cl)	810	DLHC	0.50	mg/L		19-NOV-20	R5290899
Electrical Conductivity (EC)							
Conductivity (@ 25C)	2550		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC							
Fluoride (F)	0.53	DLHC	0.10	mg/L		19-NOV-20	R5290899
Ion Balance Calculation							
Ion Balance	93.2		-100	%		23-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	-3.5			%		23-NOV-20	
Anion Sum	26.9			meq/L		23-NOV-20	
Cation Sum	25.1			meq/L		23-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		19-NOV-20	R5290899
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		19-NOV-20	R5290899
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0042		0.0010	mg/L		19-NOV-20	R5290364
Oxidation redution potential by elect.							
ORP	345		-1000	mV		19-NOV-20	R5290318
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.028	DLM	0.020	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		19-NOV-20	R5290899
Total Dissolved Solids							
Total Dissolved Solids	1460	DLHC	20	mg/L		23-NOV-20	R5296912
Total Suspended Solids							
Total Suspended Solids	1.4		1.0	mg/L		23-NOV-20	R5296877
Turbidity							
Turbidity	1.41		0.10	NTU		19-NOV-20	R5290322
pH							
pH	8.27		0.10	pH		21-NOV-20	R5295078
L2531396-2 CM_MW3-SH_WG_2020-10-12_N Sampled By: JE/JD on 18-NOV-20 @ 11:20 Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	214		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		20-NOV-20	R5291038
Total Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-2 CM_MW3-SH_WG_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 11:20							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-NOV-20	21-NOV-20	R5293119
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-NOV-20	21-NOV-20	R5293119
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Barium (Ba)-Dissolved	0.0879		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Boron (B)-Dissolved	0.026		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Cadmium (Cd)-Dissolved	0.0077		0.0050	ug/L	20-NOV-20	21-NOV-20	R5293119
Calcium (Ca)-Dissolved	59.0		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Chromium (Cr)-Dissolved	0.00024		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-NOV-20	21-NOV-20	R5293119
Copper (Cu)-Dissolved	0.00048		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Lithium (Li)-Dissolved	0.0086		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Magnesium (Mg)-Dissolved	11.2		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Manganese (Mn)-Dissolved	0.00364		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Molybdenum (Mo)-Dissolved	0.000644		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Potassium (K)-Dissolved	0.647		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Selenium (Se)-Dissolved	0.233		0.050	ug/L	20-NOV-20	21-NOV-20	R5293119
Silicon (Si)-Dissolved	2.38		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Sodium (Na)-Dissolved	3.64		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Strontium (Sr)-Dissolved	0.283		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Uranium (U)-Dissolved	0.000204		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Hardness							
Hardness (as CaCO3)	193		0.50	mg/L		21-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.4		1.0	mg/L		20-NOV-20	R5293017
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	175		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.0191		0.0050	mg/L		19-NOV-20	R5291004
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-NOV-20	R5290899
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-2 CM_MW3-SH_WG_2020-10-12_N Sampled By: JE/JD on 18-NOV-20 @ 11:20 Matrix: WG							
Chloride in Water by IC Chloride (Cl)	1.06		0.10	mg/L		19-NOV-20	R5290899
Electrical Conductivity (EC) Conductivity (@ 25C)	327		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC Fluoride (F)	0.118		0.020	mg/L		19-NOV-20	R5290899
Ion Balance Calculation Ion Balance	104		-100	%		23-NOV-20	
Ion Balance Calculation Cation - Anion Balance	1.9			%		23-NOV-20	
Anion Sum	3.89			meq/L		23-NOV-20	
Cation Sum	4.04			meq/L		23-NOV-20	
Nitrate in Water by IC (Low Level) Nitrate (as N)	0.0141		0.0050	mg/L		19-NOV-20	R5290899
Nitrite in Water by IC (Low Level) Nitrite (as N)	<0.0010		0.0010	mg/L		19-NOV-20	R5290899
Orthophosphate-Dissolved (as P) Orthophosphate-Dissolved (as P)	0.0035		0.0010	mg/L		19-NOV-20	R5290364
Oxidation redution potential by elect. ORP	371		-1000	mV		19-NOV-20	R5290318
Phosphorus (P)-Total Phosphorus (P)-Total	0.0080	DLM	0.0050	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC Sulfate (SO4)	16.7		0.30	mg/L		19-NOV-20	R5290899
Total Dissolved Solids Total Dissolved Solids	219	DLHC	20	mg/L		23-NOV-20	R5296912
Total Suspended Solids Total Suspended Solids	<1.0		1.0	mg/L		23-NOV-20	R5296877
Turbidity Turbidity	0.17		0.10	NTU		19-NOV-20	R5290322
pH pH	8.25		0.10	pH		21-NOV-20	R5295078
L2531396-3 CM_NNP_WS_2020-10-12_N Sampled By: JE/JD on 18-NOV-20 @ 12:00 Matrix: WG							
Miscellaneous Parameters Bicarbonate (HCO3)	214		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	0.070		0.050	mg/L		20-NOV-20	R5291038
Total Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Dissolved Metals in Water Diss. Be (low) in Water by CRC ICPMS Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-NOV-20	21-NOV-20	R5293119
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Diss. Mercury in Water by CVAAS or CVAFS Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-NOV-20	21-NOV-20	R5293119

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-3 CM_NNP_WS_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Barium (Ba)-Dissolved	0.0844		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Boron (B)-Dissolved	0.022		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Cadmium (Cd)-Dissolved	0.0095		0.0050	ug/L	20-NOV-20	21-NOV-20	R5293119
Calcium (Ca)-Dissolved	55.3		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-NOV-20	21-NOV-20	R5293119
Copper (Cu)-Dissolved	0.00048		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Lithium (Li)-Dissolved	0.0077		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Magnesium (Mg)-Dissolved	11.6		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Manganese (Mn)-Dissolved	0.00405		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Molybdenum (Mo)-Dissolved	0.000664		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Potassium (K)-Dissolved	0.674		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Selenium (Se)-Dissolved	0.312		0.050	ug/L	20-NOV-20	21-NOV-20	R5293119
Silicon (Si)-Dissolved	2.45		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Sodium (Na)-Dissolved	3.75		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Strontium (Sr)-Dissolved	0.288		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Uranium (U)-Dissolved	0.000206		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Hardness							
Hardness (as CaCO3)	186		0.50	mg/L		21-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.0		1.0	mg/L		20-NOV-20	R5293017
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	175		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	175		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.0140		0.0050	mg/L		19-NOV-20	R5291004
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-NOV-20	R5290899
Chloride in Water by IC							
Chloride (Cl)	1.06		0.10	mg/L		19-NOV-20	R5290899
Electrical Conductivity (EC)							
Conductivity (@ 25C)	331		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC							
Fluoride (F)	0.112		0.020	mg/L		19-NOV-20	R5290899
Ion Balance Calculation							
Ion Balance	100		-100	%		23-NOV-20	
Ion Balance Calculation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-3 CM_NNP_WS_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:00							
Matrix: WG							
Ion Balance Calculation							
Cation - Anion Balance	0.1			%		23-NOV-20	
Anion Sum	3.88			meq/L		23-NOV-20	
Cation Sum	3.89			meq/L		23-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0111		0.0050	mg/L		19-NOV-20	R5290899
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		19-NOV-20	R5290899
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0033		0.0010	mg/L		19-NOV-20	R5290364
Oxidation redution potential by elect.							
ORP	343		-1000	mV		19-NOV-20	R5290318
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0035		0.0020	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC							
Sulfate (SO4)	16.7		0.30	mg/L		19-NOV-20	R5290899
Total Dissolved Solids							
Total Dissolved Solids	213	DLHC	20	mg/L		23-NOV-20	R5296912
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-NOV-20	R5296877
Turbidity							
Turbidity	0.11		0.10	NTU		19-NOV-20	R5290322
pH							
pH	8.27		0.10	pH		21-NOV-20	R5295078
L2531396-4 CM_NNT_WS_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:00							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		20-NOV-20	R5291038
Total Organic Carbon	<0.50		0.50	mg/L		19-NOV-20	R5290898
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-NOV-20	21-NOV-20	R5293119
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					20-NOV-20	R5292808
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-NOV-20	21-NOV-20	R5293119
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	20-NOV-20	21-NOV-20	R5293119
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-4 CM_NNT_WS_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:00							
Matrix: WG							
Dissolved Metals in Water by CRC ICPMS							
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-NOV-20	21-NOV-20	R5293119
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	20-NOV-20	21-NOV-20	R5293119
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-20	21-NOV-20	R5293119
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Potassium (K)-Dissolved	<0.050		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	20-NOV-20	21-NOV-20	R5293119
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	20-NOV-20	21-NOV-20	R5293119
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-20	21-NOV-20	R5293119
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-20	21-NOV-20	R5293119
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-NOV-20	21-NOV-20	R5293119
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-20	21-NOV-20	R5293119
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-20	21-NOV-20	R5293119
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-20	21-NOV-20	R5293119
Hardness							
Hardness (as CaCO3)	<0.50		0.50	mg/L		21-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	1.7		1.0	mg/L		20-NOV-20	R5293017
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.0141	RRV	0.0050	mg/L		20-NOV-20	R5291004
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		19-NOV-20	R5290899
Chloride in Water by IC							
Chloride (Cl)	<0.10		0.10	mg/L		19-NOV-20	R5290899
Electrical Conductivity (EC)							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC							
Fluoride (F)	<0.020		0.020	mg/L		19-NOV-20	R5290899
Ion Balance Calculation							
Ion Balance	0.0		-100	%		27-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	0.0			%		27-NOV-20	
Anion Sum	<0.10			meq/L		27-NOV-20	
Cation Sum	<0.10			meq/L		27-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		19-NOV-20	R5290899
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		19-NOV-20	R5290899
Orthophosphate-Dissolved (as P)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531396-4 CM_NNT_WS_2020-10-12_N							
Sampled By: JE/JD on 18-NOV-20 @ 12:00							
Matrix: WG							
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		19-NOV-20	R5290364
Oxidation redution potential by elect.							
ORP	484		-1000	mV		19-NOV-20	R5290318
Phosphorus (P)-Total							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		19-NOV-20	R5290899
Total Dissolved Solids							
Total Dissolved Solids	<10		10	mg/L		23-NOV-20	R5296912
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		23-NOV-20	R5296877
Turbidity							
Turbidity	<0.10		0.10	NTU		19-NOV-20	R5290322
pH							
pH	5.55		0.10	pH		21-NOV-20	R5295078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q4_20201118

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5293017							
WG3449330-2	LCS							
Acidity (as CaCO3)			105.6		%		85-115	20-NOV-20
WG3449330-1	MB							
Acidity (as CaCO3)			1.8		mg/L		2	20-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-6	DUP	L2531396-3						
Alkalinity, Total (as CaCO3)		175	174		mg/L	0.7	20	21-NOV-20
WG3449971-5	LCS							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	21-NOV-20
WG3449971-4	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5293119							
WG3449266-2	LCS							
Beryllium (Be)-Dissolved			102.3		%		80-120	21-NOV-20
WG3449266-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-NOV-20
BIC-CL								
	Water							
Batch	R5295078							
WG3449971-6	DUP	L2531396-3						
Bicarbonate (HCO3)		214	212		mg/L	0.7	20	21-NOV-20
WG3449971-4	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5290899							
WG3448694-2	LCS							
Bromide (Br)			107.3		%		85-115	19-NOV-20
WG3448694-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	19-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5290898							
WG3448716-6	LCS							
Dissolved Organic Carbon			91.7		%		80-120	19-NOV-20
WG3448716-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL Water								
Batch	R5290898							
WG3448716-6	LCS							
Total Organic Carbon			97.2		%		80-120	19-NOV-20
WG3448716-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-NOV-20
CL-L-IC-N-CL Water								
Batch	R5290899							
WG3448694-2	LCS							
Chloride (Cl)			102.8		%		85-115	19-NOV-20
WG3448694-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	19-NOV-20
CO3-CL Water								
Batch	R5295078							
WG3449971-6	DUP	L2531396-3						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	21-NOV-20
WG3449971-4	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL Water								
Batch	R5295078							
WG3449971-6	DUP	L2531396-3						
Conductivity (@ 25C)		331	337		uS/cm	1.8	10	21-NOV-20
WG3449971-5	LCS							
Conductivity (@ 25C)			92.9		%		90-110	21-NOV-20
WG3449971-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL Water								
Batch	R5290899							
WG3448694-2	LCS							
Fluoride (F)			95.9		%		90-110	19-NOV-20
WG3448694-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	19-NOV-20
HG-D-CVAA-VA Water								
Batch	R5296453							
WG3450136-10	LCS							
Mercury (Hg)-Dissolved			98.4		%		80-120	24-NOV-20
WG3450136-6	LCS							
Mercury (Hg)-Dissolved			98.3		%		80-120	24-NOV-20
WG3450136-5	MB	NP						



Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5296453							
WG3450136-5 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20
WG3450136-9 MB		NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5293119							
WG3449266-2 LCS								
Aluminum (Al)-Dissolved			98.4		%		80-120	21-NOV-20
Antimony (Sb)-Dissolved			103.1		%		80-120	21-NOV-20
Arsenic (As)-Dissolved			103.3		%		80-120	21-NOV-20
Barium (Ba)-Dissolved			99.95		%		80-120	21-NOV-20
Bismuth (Bi)-Dissolved			106.6		%		80-120	21-NOV-20
Boron (B)-Dissolved			98.3		%		80-120	21-NOV-20
Cadmium (Cd)-Dissolved			107.3		%		80-120	21-NOV-20
Calcium (Ca)-Dissolved			104.9		%		80-120	21-NOV-20
Chromium (Cr)-Dissolved			101.2		%		80-120	21-NOV-20
Cobalt (Co)-Dissolved			100.4		%		80-120	21-NOV-20
Copper (Cu)-Dissolved			101.4		%		80-120	21-NOV-20
Iron (Fe)-Dissolved			89.5		%		80-120	21-NOV-20
Lead (Pb)-Dissolved			105.6		%		80-120	21-NOV-20
Lithium (Li)-Dissolved			101.9		%		80-120	21-NOV-20
Magnesium (Mg)-Dissolved			101.8		%		80-120	21-NOV-20
Manganese (Mn)-Dissolved			103.8		%		80-120	21-NOV-20
Molybdenum (Mo)-Dissolved			102.2		%		80-120	21-NOV-20
Nickel (Ni)-Dissolved			97.7		%		80-120	21-NOV-20
Potassium (K)-Dissolved			101.6		%		80-120	21-NOV-20
Selenium (Se)-Dissolved			98.6		%		80-120	21-NOV-20
Silicon (Si)-Dissolved			96.7		%		60-140	21-NOV-20
Silver (Ag)-Dissolved			103.6		%		80-120	21-NOV-20
Sodium (Na)-Dissolved			105.1		%		80-120	21-NOV-20
Strontium (Sr)-Dissolved			98.6		%		80-120	21-NOV-20
Thallium (Tl)-Dissolved			106.7		%		80-120	21-NOV-20
Tin (Sn)-Dissolved			102.6		%		80-120	21-NOV-20
Titanium (Ti)-Dissolved			103.0		%		80-120	21-NOV-20
Uranium (U)-Dissolved			102.4		%		80-120	21-NOV-20



Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5293119							
WG3449266-2	LCS							
Vanadium (V)-Dissolved			105.3		%		80-120	21-NOV-20
Zinc (Zn)-Dissolved			97.7		%		80-120	21-NOV-20
WG3449266-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-NOV-20

NH3-L-F-CL

Water



Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-CL								
Water								
Batch	R5293365							
WG3449476-14	LCS							
Phosphorus (P)-Total			97.1		%		80-120	21-NOV-20
WG3449476-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
WG3449476-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
WG3449476-16	MS	L2531396-1						
Phosphorus (P)-Total			129.6		%		70-130	21-NOV-20
PH-CL								
Water								
Batch	R5295078							
WG3449971-6	DUP	L2531396-3						
pH		8.27	8.27	J	pH	0.00	0.2	21-NOV-20
WG3449971-5	LCS							
pH			7.03		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL								
Water								
Batch	R5290364							
WG3448407-3	LCS							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	19-NOV-20
WG3448407-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-NOV-20
SO4-IC-N-CL								
Water								
Batch	R5290899							
WG3448694-2	LCS							
Sulfate (SO4)			105.4		%		90-110	19-NOV-20
WG3448694-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	19-NOV-20
SOLIDS-TDS-CL								
Water								
Batch	R5296912							
WG3449735-3	DUP	L2531396-1						
Total Dissolved Solids		1460	1450		mg/L	0.7	20	23-NOV-20
WG3449735-2	LCS							
Total Dissolved Solids			101.1		%		85-115	23-NOV-20
WG3449735-1	MB							
Total Dissolved Solids			<10		mg/L		10	23-NOV-20
TKN-L-F-CL								
Water								



Quality Control Report

Workorder: L2531396

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL								
Water								
Batch	R5291038							
WG3448736-25	DUP	L2531396-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-NOV-20
WG3448736-2	LCS							
Total Kjeldahl Nitrogen			87.5		%		75-125	20-NOV-20
WG3448736-22	LCS							
Total Kjeldahl Nitrogen			83.9		%		75-125	20-NOV-20
WG3448736-24	LCS							
Total Kjeldahl Nitrogen			81.0		%		75-125	20-NOV-20
WG3448736-6	LCS							
Total Kjeldahl Nitrogen			87.1		%		75-125	20-NOV-20
WG3448736-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-21	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-23	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-NOV-20
WG3448736-26	MS	L2531396-4						
Total Kjeldahl Nitrogen			110.3		%		70-130	20-NOV-20
TSS-L-CL								
Water								
Batch	R5296877							
WG3449736-2	LCS							
Total Suspended Solids			93.8		%		85-115	23-NOV-20
WG3449736-1	MB							
Total Suspended Solids			<1.0		mg/L		1	23-NOV-20
TURBIDITY-CL								
Water								
Batch	R5290322							
WG3448286-2	LCS							
Turbidity			97.9		%		85-115	19-NOV-20
WG3448286-1	MB							
Turbidity			<0.10		NTU		0.1	19-NOV-20

Quality Control Report

Workorder: L2531396

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Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2531396

Report Date: 04-FEB-21

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.							
	1	18-NOV-20 12:25	19-NOV-20 12:45	0.25	24	hours	EHTR-FM
	2	18-NOV-20 11:20	19-NOV-20 12:45	0.25	25	hours	EHTR-FM
	3	18-NOV-20 12:00	19-NOV-20 12:45	0.25	25	hours	EHTR-FM
	4	18-NOV-20 12:00	19-NOV-20 12:45	0.25	25	hours	EHTR-FM
pH							
	1	18-NOV-20 12:25	21-NOV-20 13:00	0.25	72	hours	EHTR-FM
	2	18-NOV-20 11:20	21-NOV-20 13:00	0.25	74	hours	EHTR-FM
	3	18-NOV-20 12:00	21-NOV-20 13:00	0.25	73	hours	EHTR-FM
	4	18-NOV-20 12:00	21-NOV-20 13:00	0.25	73	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531396 were received on 19-NOV-20 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC_WG_Q4_20201118_MW3** TURNAROUND TIME: **REGULAR** RUSH: **NO**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Inayat Dhaliwal			Email 1:	Victoria.Sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Inayat.Dhaliwal@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	YPO00683186			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2531396-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERV.	ANALYSIS									
								H2SO4	H2SO4	HCL	HNO3	NONE						
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						
CM_MW3-DP_WG_2020-10-12_N	CM_MW3-DP	WG	No	2020/11/18	12:25	G	5	1	1	1	1	1						
CM_MW3-SH_WG_2020-10-12_N	CM_MW3-SH	WG	No	2020/11/18	11:20	G	5	1	1	1	1	1						
CM_NNP_WS_2020-10-12_N	CM_NNP	WG	No	2020/11/18	-	G	5	1	1	1	1	1						
CM_NNT_WS_2020-10-12_N	CM_NNT	WG	No	2020/11/18	-	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Request analyses of bicarbonate and HCO ₃ , hydroxide as OH and carbonate as CO ₃ rather than bicarbonate as CaCO ₃ , Carbonate as CaCO ₃ and hydroxide as CaCO ₃ .			<i>[Signature]</i>	11/19 890

SERVICE REQUEST (rush - subject to availability)				
Regular (default)	X	Sampler's Name	JE/JD	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	250-425-7522
Emergency (1 Business Day) - 100% surcharge		Date/Time	November 18, 2020	
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 20-NOV-20
Report Date: 04-FEB-21 11:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2531916
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q4_20201119
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:54
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531916-1 CM_MW5-DP_WG_2020-10-12_N							
Sampled By: VS/JD on 19-NOV-20 @ 12:53							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	444		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	7.2		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		21-NOV-20	R5293818
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	0.580		0.050	mg/L		21-NOV-20	R5293398
Total Organic Carbon	<0.50		0.50	mg/L		21-NOV-20	R5293818
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-20	23-NOV-20	R5296257
Dissolved Metals Filtration Location	FIELD					22-NOV-20	R5293842
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-NOV-20	R5293842
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-20	23-NOV-20	R5296257
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Barium (Ba)-Dissolved	1.20		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Boron (B)-Dissolved	0.111		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	22-NOV-20	23-NOV-20	R5296257
Calcium (Ca)-Dissolved	66.1		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-NOV-20	23-NOV-20	R5296257
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-20	23-NOV-20	R5296257
Iron (Fe)-Dissolved	1.27		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Lithium (Li)-Dissolved	0.0576		0.0010	mg/L	22-NOV-20	23-NOV-20	R5296257
Magnesium (Mg)-Dissolved	23.7		0.10	mg/L	22-NOV-20	23-NOV-20	R5296257
Manganese (Mn)-Dissolved	0.0709		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Molybdenum (Mo)-Dissolved	0.00125		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Nickel (Ni)-Dissolved	0.00134		0.00050	mg/L	22-NOV-20	23-NOV-20	R5296257
Potassium (K)-Dissolved	3.45		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Selenium (Se)-Dissolved	0.052		0.050	ug/L	22-NOV-20	23-NOV-20	R5296257
Silicon (Si)-Dissolved	6.59		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Sodium (Na)-Dissolved	59.1		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Strontium (Sr)-Dissolved	2.00		0.00020	mg/L	22-NOV-20	23-NOV-20	R5296257
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Uranium (U)-Dissolved	0.000115		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-20	23-NOV-20	R5296257
Zinc (Zn)-Dissolved	0.0014		0.0010	mg/L	22-NOV-20	23-NOV-20	R5296257
Hardness							
Hardness (as CaCO3)	263		0.50	mg/L		23-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295116
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531916-1 CM_MW5-DP_WG_2020-10-12_N							
Sampled By: VS/JD on 19-NOV-20 @ 12:53							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	364		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	12.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	376		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.696	DLHC	0.050	mg/L		20-NOV-20	R5292801
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		20-NOV-20	R5293237
Chloride in Water by IC							
Chloride (Cl)	10.8		0.10	mg/L		20-NOV-20	R5293237
Electrical Conductivity (EC)							
Conductivity (@ 25C)	660		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC							
Fluoride (F)	0.341		0.020	mg/L		20-NOV-20	R5293237
Ion Balance Calculation							
Ion Balance	102		-100	%		23-NOV-20	
Ion Balance Calculation							
Cation - Anion Balance	1.2			%		23-NOV-20	
Anion Sum	7.84			meq/L		23-NOV-20	
Cation Sum	8.03			meq/L		23-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		20-NOV-20	R5293237
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		20-NOV-20	R5293237
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		20-NOV-20	R5292676
Oxidation redution potential by elect.							
ORP	141		-1000	mV		20-NOV-20	R5292776
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0108	DLM	0.0050	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC							
Sulfate (SO4)	0.45		0.30	mg/L		20-NOV-20	R5293237
Total Dissolved Solids							
Total Dissolved Solids	410	DLHC	20	mg/L		24-NOV-20	R5297512
Total Suspended Solids							
Total Suspended Solids	1.1		1.0	mg/L		24-NOV-20	R5297482
Turbidity							
Turbidity	16.3		0.10	NTU		20-NOV-20	R5292817
pH							
pH	8.33		0.10	pH		21-NOV-20	R5295078
L2531916-2 CM_MW5-SH_WG_2020-10-12_N							
Sampled By: VS/JD on 19-NOV-20 @ 11:24							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	316		5.0	mg/L		21-NOV-20	R5295078
Carbonate (CO3)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Dissolved Organic Carbon	<0.50		0.50	mg/L		21-NOV-20	R5293818
Hydroxide (OH)	<5.0		5.0	mg/L		21-NOV-20	R5295078
Total Kjeldahl Nitrogen	0.351		0.050	mg/L		21-NOV-20	R5293398
Total Organic Carbon	<0.50		0.50	mg/L		21-NOV-20	R5293818
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531916-2 CM_MW5-SH_WG_2020-10-12_N							
Sampled By: VS/JD on 19-NOV-20 @ 11:24							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-20	23-NOV-20	R5296257
Dissolved Metals Filtration Location	FIELD					22-NOV-20	R5293842
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-NOV-20	24-NOV-20	R5296453
Dissolved Mercury Filtration Location	FIELD					23-NOV-20	R5295776
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					22-NOV-20	R5293842
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-20	23-NOV-20	R5296257
Antimony (Sb)-Dissolved	0.00035		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Arsenic (As)-Dissolved	0.00022		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Barium (Ba)-Dissolved	0.0888		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Boron (B)-Dissolved	0.048		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Cadmium (Cd)-Dissolved	0.0407		0.0050	ug/L	22-NOV-20	23-NOV-20	R5296257
Calcium (Ca)-Dissolved	158		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Chromium (Cr)-Dissolved	0.00029		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-NOV-20	23-NOV-20	R5296257
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-20	23-NOV-20	R5296257
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Lithium (Li)-Dissolved	0.0332		0.0010	mg/L	22-NOV-20	23-NOV-20	R5296257
Magnesium (Mg)-Dissolved	68.6		0.10	mg/L	22-NOV-20	23-NOV-20	R5296257
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Molybdenum (Mo)-Dissolved	0.00222		0.000050	mg/L	22-NOV-20	23-NOV-20	R5296257
Nickel (Ni)-Dissolved	0.00208		0.00050	mg/L	22-NOV-20	23-NOV-20	R5296257
Potassium (K)-Dissolved	2.69		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Selenium (Se)-Dissolved	10.9		0.050	ug/L	22-NOV-20	23-NOV-20	R5296257
Silicon (Si)-Dissolved	2.55		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Sodium (Na)-Dissolved	35.3		0.050	mg/L	22-NOV-20	23-NOV-20	R5296257
Strontium (Sr)-Dissolved	0.529		0.00020	mg/L	22-NOV-20	23-NOV-20	R5296257
Thallium (Tl)-Dissolved	0.000059		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-20	23-NOV-20	R5296257
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-20	23-NOV-20	R5296257
Uranium (U)-Dissolved	0.00403		0.000010	mg/L	22-NOV-20	23-NOV-20	R5296257
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-20	23-NOV-20	R5296257
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	22-NOV-20	23-NOV-20	R5296257
Hardness							
Hardness (as CaCO3)	677		0.50	mg/L		23-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.6		1.0	mg/L		21-NOV-20	R5295116
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	259		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-NOV-20	R5295078
Alkalinity, Total (as CaCO3)	259		1.0	mg/L		21-NOV-20	R5295078
Ammonia, Total (as N)							
Ammonia as N	0.0781		0.0050	mg/L		20-NOV-20	R5292801
Bromide in Water by IC (Low Level)							
Bromide (Br)	0.057		0.050	mg/L		20-NOV-20	R5293237
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2531916-2 CM_MW5-SH_WG_2020-10-12_N							
Sampled By: VS/JD on 19-NOV-20 @ 11:24							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	7.04		0.10	mg/L		20-NOV-20	R5293237
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1260		2.0	uS/cm		21-NOV-20	R5295078
Fluoride in Water by IC							
Fluoride (F)	0.202		0.020	mg/L		20-NOV-20	R5293237
Ion Balance Calculation							
Cation - Anion Balance	-0.8			%		23-NOV-20	
Anion Sum	15.4			meq/L		23-NOV-20	
Cation Sum	15.1			meq/L		23-NOV-20	
Ion Balance Calculation							
Ion Balance	98.4		-100	%		23-NOV-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	3.31		0.0050	mg/L		20-NOV-20	R5293237
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		20-NOV-20	R5293237
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0063		0.0010	mg/L		20-NOV-20	R5292676
Oxidation redution potential by elect.							
ORP	407		-1000	mV		20-NOV-20	R5292776
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0073	DLM	0.0050	mg/L		21-NOV-20	R5293365
Sulfate in Water by IC							
Sulfate (SO4)	470		0.30	mg/L		20-NOV-20	R5293237
Total Dissolved Solids							
Total Dissolved Solids	1010	DLHC	20	mg/L		24-NOV-20	R5297512
Total Suspended Solids							
Total Suspended Solids	<1.0		1.0	mg/L		24-NOV-20	R5297482
Turbidity							
Turbidity	<0.10		0.10	NTU		20-NOV-20	R5292817
pH							
pH	8.28		0.10	pH		21-NOV-20	R5295078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q4_20201119

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

*mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.*

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2531916

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5295116							
WG3449989-5	LCS							
Acidity (as CaCO3)			104.3		%		85-115	21-NOV-20
WG3449989-4	MB							
Acidity (as CaCO3)			1.5		mg/L		2	21-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5295078							
WG3449971-11	LCS							
Alkalinity, Total (as CaCO3)			95.3		%		85-115	21-NOV-20
WG3449971-14	LCS							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	21-NOV-20
WG3449971-10	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
WG3449971-13	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5296257							
WG3449581-2	LCS							
Beryllium (Be)-Dissolved			96.7		%		80-120	23-NOV-20
WG3449581-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-20
BIC-CL								
	Water							
Batch	R5295078							
WG3449971-10	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
WG3449971-13	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5293237							
WG3449430-6	LCS							
Bromide (Br)			107.1		%		85-115	20-NOV-20
WG3449430-5	MB							
Bromide (Br)			<0.050		mg/L		0.05	20-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5293818							
WG3449497-2	LCS							
Dissolved Organic Carbon			99.5		%		80-120	21-NOV-20
WG3449497-1	MB							



Quality Control Report

Workorder: L2531916

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-LOW-CL Water								
Batch	R5293818							
WG3449497-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-NOV-20
C-TOT-ORG-LOW-CL Water								
Batch	R5293818							
WG3449497-2	LCS							
Total Organic Carbon			105.4		%		80-120	21-NOV-20
WG3449497-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	21-NOV-20
CL-L-IC-N-CL Water								
Batch	R5293237							
WG3449430-6	LCS							
Chloride (Cl)			102.6		%		85-115	20-NOV-20
WG3449430-5	MB							
Chloride (Cl)			<0.10		mg/L		0.1	20-NOV-20
CO3-CL Water								
Batch	R5295078							
WG3449971-10	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
WG3449971-13	MB							
Carbonate (CO3)			<5.0		mg/L		5	21-NOV-20
EC-L-PCT-CL Water								
Batch	R5295078							
WG3449971-11	LCS							
Conductivity (@ 25C)			94.8		%		90-110	21-NOV-20
WG3449971-14	LCS							
Conductivity (@ 25C)			96.6		%		90-110	21-NOV-20
WG3449971-10	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
WG3449971-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-20
F-IC-N-CL Water								
Batch	R5293237							
WG3449430-6	LCS							
Fluoride (F)			107.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-20



Quality Control Report

Workorder: L2531916

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-CVAA-VA								
	Water							
Batch	R5296453							
WG3450136-14	LCS							
Mercury (Hg)-Dissolved			97.7		%		80-120	24-NOV-20
WG3450136-13	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-20
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449581-2	LCS							
Aluminum (Al)-Dissolved			99.5		%		80-120	23-NOV-20
Antimony (Sb)-Dissolved			109.1		%		80-120	23-NOV-20
Arsenic (As)-Dissolved			99.7		%		80-120	23-NOV-20
Barium (Ba)-Dissolved			110.1		%		80-120	23-NOV-20
Bismuth (Bi)-Dissolved			101.6		%		80-120	23-NOV-20
Boron (B)-Dissolved			90.9		%		80-120	23-NOV-20
Cadmium (Cd)-Dissolved			100.7		%		80-120	23-NOV-20
Calcium (Ca)-Dissolved			99.4		%		80-120	23-NOV-20
Chromium (Cr)-Dissolved			98.9		%		80-120	23-NOV-20
Cobalt (Co)-Dissolved			101.3		%		80-120	23-NOV-20
Copper (Cu)-Dissolved			97.4		%		80-120	23-NOV-20
Iron (Fe)-Dissolved			97.7		%		80-120	23-NOV-20
Lead (Pb)-Dissolved			102.1		%		80-120	23-NOV-20
Lithium (Li)-Dissolved			94.9		%		80-120	23-NOV-20
Magnesium (Mg)-Dissolved			95.8		%		80-120	23-NOV-20
Manganese (Mn)-Dissolved			96.0		%		80-120	23-NOV-20
Molybdenum (Mo)-Dissolved			111.6		%		80-120	23-NOV-20
Nickel (Ni)-Dissolved			97.9		%		80-120	23-NOV-20
Potassium (K)-Dissolved			101.8		%		80-120	23-NOV-20
Selenium (Se)-Dissolved			98.8		%		80-120	23-NOV-20
Silicon (Si)-Dissolved			101.7		%		60-140	23-NOV-20
Silver (Ag)-Dissolved			108.6		%		80-120	23-NOV-20
Sodium (Na)-Dissolved			99.2		%		80-120	23-NOV-20
Strontium (Sr)-Dissolved			110.0		%		80-120	23-NOV-20
Thallium (Tl)-Dissolved			100.6		%		80-120	23-NOV-20
Tin (Sn)-Dissolved			101.0		%		80-120	23-NOV-20
Titanium (Ti)-Dissolved			97.3		%		80-120	23-NOV-20
Uranium (U)-Dissolved			99.1		%		80-120	23-NOV-20



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5296257							
WG3449581-2	LCS							
Vanadium (V)-Dissolved			102.7		%		80-120	23-NOV-20
Zinc (Zn)-Dissolved			104.9		%		80-120	23-NOV-20
WG3449581-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-20

NH3-L-F-CL

Water



Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-L-F-CL	Water							
Batch	R5292801							
WG3449219-6	LCS							
Ammonia as N			105.6		%		85-115	20-NOV-20
WG3449219-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	20-NOV-20
NO2-L-IC-N-CL	Water							
Batch	R5293237							
WG3449430-6	LCS							
Nitrite (as N)			100.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5293237							
WG3449430-6	LCS							
Nitrate (as N)			102.7		%		90-110	20-NOV-20
WG3449430-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-20
OH-CL	Water							
Batch	R5295078							
WG3449971-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
WG3449971-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-NOV-20
ORP-CL	Water							
Batch	R5292776							
WG3449231-2	CRM	CL-ORP						
ORP			224		mV		210-230	20-NOV-20
P-T-L-COL-CL	Water							
Batch	R5293365							
WG3449476-26	LCS							
Phosphorus (P)-Total			93.4		%		80-120	21-NOV-20
WG3449476-25	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-NOV-20
PH-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-CL	Water							
Batch	R5295078							
WG3449971-11	LCS							
pH			7.01		pH		6.9-7.1	21-NOV-20
WG3449971-14	LCS							
pH			7.03		pH		6.9-7.1	21-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5292676							
WG3449133-6	LCS							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	20-NOV-20
WG3449133-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-20
SO4-IC-N-CL	Water							
Batch	R5293237							
WG3449430-6	LCS							
Sulfate (SO4)			104.2		%		90-110	20-NOV-20
WG3449430-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5297512							
WG3450511-2	LCS							
Total Dissolved Solids			100.2		%		85-115	24-NOV-20
WG3450511-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-NOV-20
TKN-L-F-CL	Water							
Batch	R5293398							
WG3449360-10	LCS							
Total Kjeldahl Nitrogen			93.7		%		75-125	21-NOV-20
WG3449360-2	LCS							
Total Kjeldahl Nitrogen			96.9		%		75-125	21-NOV-20
WG3449360-4	LCS							
Total Kjeldahl Nitrogen			94.2		%		75-125	21-NOV-20
WG3449360-6	LCS							
Total Kjeldahl Nitrogen			92.4		%		75-125	21-NOV-20
WG3449360-8	LCS							
Total Kjeldahl Nitrogen			103.5		%		75-125	21-NOV-20
WG3449360-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-3	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-L-F-CL		Water						
Batch	R5293398							
WG3449360-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-7	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
WG3449360-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-20
TSS-L-CL		Water						
Batch	R5297482							
WG3450509-2	LCS							
Total Suspended Solids			92.6		%		85-115	24-NOV-20
WG3450509-1	MB							
Total Suspended Solids			<1.0		mg/L		1	24-NOV-20
TURBIDITY-CL		Water						
Batch	R5292817							
WG3449232-6	LCS							
Turbidity			96.9		%		85-115	20-NOV-20
WG3449232-5	MB							
Turbidity			<0.10		NTU		0.1	20-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation reduction potential by elect.	1	19-NOV-20 12:53	20-NOV-20 12:30	0.25	24	hours	EHTR-FM
	2	19-NOV-20 11:24	20-NOV-20 12:30	0.25	25	hours	EHTR-FM
pH	1	19-NOV-20 12:53	21-NOV-20 13:00	0.25	48	hours	EHTR-FM
	2	19-NOV-20 11:24	21-NOV-20 13:00	0.25	50	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2531916 were received on 20-NOV-20 08:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC_WG_Q4_20201119_MW5		TURNAROUND TIME:		REGULAR			RUSH/NO						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary				Report Format / Distribution			Excel	PDF	EDD
Project Manager Jay Jones				Lab Contact Inayat Dhaliwal				Email 1: Victoria.Sharpe@teck.com			X	X	X
Email Jay.Jones@teck.com				Email Inayat.Dhaliwal@alsglobal.com				Email 2: teckcoal@equisonline.com					X
Address PO Box 3000				Address 2559 29th St. NE				Email 3: jay.jones@teck.com			X	X	X
								Email 4: don.sacino@teck.com			X	X	X
City Sparwood		Province BC	City Calgary		Province AB								
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5		Country Canada								
Phone Number 1-250-425-7321		Phone Number 403 407 1800				PO number		VPO00683186					

SAMPLE DETAILS

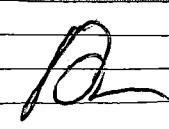

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2531916-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	Y	N	Y	Y	N							
										ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA							
CM_MW5-DP_WG_2020-10-12_N	CM_MW5-DP	WG	No	2020/11/19	12:53	G	5		H2SO4			HCL	HNO3	NONE							
CM_MW5-SH_WG_2020-10-12_N	CM_MW5-SH	WG	No	2020/11/19	11:24	G	5		H2SO4			HCL	HNO3	NONE							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
Request analyses of bicarbonate and HCO3, hydroxide as OH and carbonate as CO3 rather than bicarbonate as CaCO3, Carbonate as CaCO3 and hydroxide as CaCO3.								11/20/20	
SERVICE REQUEST (rush - subject to availability)									
Regular (default) X		Sampler's Name		VS/JD		Mobile #		250-425-7522	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature				Date/Time		November 19, 2020	
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS									



TECK COAL LIMITED (COAL MOUNTAIN)
ATTN: Jay Jones
PO BOX 3000 - 2261 Corbin Road
SPARWOOD BC V0B 2G0

Date Received: 26-NOV-20
Report Date: 04-FEB-21 11:03 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-6111

Certificate of Analysis

Lab Work Order #: L2533856
Project P.O. #: VPO00683186
Job Reference: COAL MOUNTAIN OPERATIONS
C of C Numbers: COC_WG_Q4_20201125
Legal Site Desc:

Comments: ADDITIONAL 26-JAN-21 16:56
4-FEB-2021 BIC, CO3, OH added.

Inayat Dhaliwal
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533856-1 CM_MW10_WG_2020-10-12_N							
Sampled By: JD/JE on 25-NOV-20 @ 13:45							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	322		5.0	mg/L		27-NOV-20	R5299383
Carbonate (CO3)	<5.0		5.0	mg/L		27-NOV-20	R5299383
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-NOV-20	R5299247
Hydroxide (OH)	<5.0		5.0	mg/L		27-NOV-20	R5299383
Total Kjeldahl Nitrogen	0.076		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	0.85		0.50	mg/L		27-NOV-20	R5299247
Dissolved Metals in Water							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	0.00210		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.163		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.021		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	87.2		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	0.40		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	2.09		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0119		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	22.0		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	0.0904		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.00389		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	0.795		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	0.106		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.67		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	28.1		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.256		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000370		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	308		0.50	mg/L		28-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	2.3		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533856-1 CM_MW10_WG_2020-10-12_N							
Sampled By: JD/JE on 25-NOV-20 @ 13:45							
Matrix: WG							
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	264		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	264		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.0407		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-20	R5298892
Chloride in Water by IC							
Chloride (Cl)	0.49		0.10	mg/L		26-NOV-20	R5298892
Electrical Conductivity (EC)							
Conductivity (@ 25C)	580		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	0.924		0.020	mg/L		26-NOV-20	R5298892
Ion Balance Calculation							
Cation - Anion Balance	1.9			%		02-DEC-20	
Anion Sum	7.23			meq/L		02-DEC-20	
Cation Sum	7.52			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	104		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-20	R5298892
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-20	R5298892
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	423		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0079		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	90.7		0.30	mg/L		26-NOV-20	R5298892
Total Dissolved Solids							
Total Dissolved Solids	383	DLHC	20	mg/L		02-DEC-20	R5304888
Total Suspended Solids							
Total Suspended Solids	6.3		1.0	mg/L		02-DEC-20	R5304350
Turbidity							
Turbidity	19.6		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.95		0.10	pH		27-NOV-20	R5299383
L2533856-2 CM_MW2-SH_WG_2020-10-12_N							
Sampled By: JD/JE on 25-NOV-20 @ 10:40							
Matrix: WG							
Miscellaneous Parameters							
Bicarbonate (HCO3)	491		5.0	mg/L		27-NOV-20	R5299383
Carbonate (CO3)	<5.0		5.0	mg/L		27-NOV-20	R5299383
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-NOV-20	R5299247
Hydroxide (OH)	<5.0		5.0	mg/L		27-NOV-20	R5299383
Total Kjeldahl Nitrogen	0.139		0.050	mg/L		27-NOV-20	R5298937
Total Organic Carbon	<0.50		0.50	mg/L		27-NOV-20	R5299247
Dissolved Metals in Water							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533856-2 CM_MW2-SH_WG_2020-10-12_N							
Sampled By: JD/JE on 25-NOV-20 @ 10:40							
Matrix: WG							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-NOV-20	27-NOV-20	R5299174
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-20	28-NOV-20	R5299206
Dissolved Mercury Filtration Location	FIELD					28-NOV-20	R5299195
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-NOV-20	R5299097
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-NOV-20	27-NOV-20	R5299174
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Barium (Ba)-Dissolved	0.100		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Boron (B)-Dissolved	0.046		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cadmium (Cd)-Dissolved	0.119		0.0050	ug/L	27-NOV-20	27-NOV-20	R5299174
Calcium (Ca)-Dissolved	183		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-NOV-20	27-NOV-20	R5299174
Copper (Cu)-Dissolved	0.00110		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Lithium (Li)-Dissolved	0.0315		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Magnesium (Mg)-Dissolved	45.6		0.10	mg/L	27-NOV-20	27-NOV-20	R5299174
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Molybdenum (Mo)-Dissolved	0.000146		0.000050	mg/L	27-NOV-20	27-NOV-20	R5299174
Nickel (Ni)-Dissolved	0.00051		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Potassium (K)-Dissolved	1.55		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Selenium (Se)-Dissolved	0.395		0.050	ug/L	27-NOV-20	27-NOV-20	R5299174
Silicon (Si)-Dissolved	4.99		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Sodium (Na)-Dissolved	43.1		0.050	mg/L	27-NOV-20	27-NOV-20	R5299174
Strontium (Sr)-Dissolved	0.532		0.00020	mg/L	27-NOV-20	27-NOV-20	R5299174
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-NOV-20	27-NOV-20	R5299174
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-NOV-20	27-NOV-20	R5299174
Uranium (U)-Dissolved	0.000191		0.000010	mg/L	27-NOV-20	27-NOV-20	R5299174
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-NOV-20	27-NOV-20	R5299174
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	27-NOV-20	27-NOV-20	R5299174
Hardness							
Hardness (as CaCO3)	645		0.50	mg/L		28-NOV-20	
Routine for Teck Coal							
Acidity by Automatic Titration							
Acidity (as CaCO3)	11.7		1.0	mg/L		27-NOV-20	R5299380
Alkalinity (Species) by Manual Titration							
Alkalinity, Bicarbonate (as CaCO3)	403		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-20	R5299383
Alkalinity, Total (as CaCO3)	403		1.0	mg/L		27-NOV-20	R5299383
Ammonia, Total (as N)							
Ammonia as N	0.102		0.0050	mg/L		26-NOV-20	R5298936
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-NOV-20	R5298892
Chloride in Water by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2533856-2 CM_MW2-SH_WG_2020-10-12_N							
Sampled By: JD/JE on 25-NOV-20 @ 10:40							
Matrix: WG							
Chloride in Water by IC							
Chloride (Cl)	1.75	DLHC	0.50	mg/L		26-NOV-20	R5298892
Electrical Conductivity (EC)							
Conductivity (@ 25C)	1050		2.0	uS/cm		27-NOV-20	R5299383
Fluoride in Water by IC							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		26-NOV-20	R5298892
Ion Balance Calculation							
Cation - Anion Balance	1.4			%		02-DEC-20	
Anion Sum	14.4			meq/L		02-DEC-20	
Cation Sum	14.8			meq/L		02-DEC-20	
Ion Balance Calculation							
Ion Balance	103		-100	%		02-DEC-20	
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.328	DLHC	0.025	mg/L		26-NOV-20	R5298892
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-NOV-20	R5298892
Orthophosphate-Dissolved (as P)							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		26-NOV-20	R5298450
Oxidation redution potential by elect.							
ORP	425		-1000	mV		26-NOV-20	R5298490
Phosphorus (P)-Total							
Phosphorus (P)-Total	0.0038		0.0020	mg/L		27-NOV-20	R5298968
Sulfate in Water by IC							
Sulfate (SO4)	302	DLHC	1.5	mg/L		26-NOV-20	R5298892
Total Dissolved Solids							
Total Dissolved Solids	788	DLHC	20	mg/L		02-DEC-20	R5304888
Total Suspended Solids							
Total Suspended Solids	2.0		1.0	mg/L		02-DEC-20	R5304350
Turbidity							
Turbidity	2.43		0.10	NTU		26-NOV-20	R5298493
pH							
pH	7.70		0.10	pH		27-NOV-20	R5299383

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO ₃)	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-L-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO ₃)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

COC_WG_Q4_20201125

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2533856

Report Date: 04-FEB-21

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Client: TECK COAL LIMITED (COAL MOUNTAIN)
 PO BOX 3000 - 2261 Corbin Road
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-PCT-CL								
	Water							
Batch	R5299380							
WG3453663-2	LCS							
Acidity (as CaCO3)			110.2		%		85-115	27-NOV-20
WG3453663-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	27-NOV-20
ALK-MAN-CL								
	Water							
Batch	R5299383							
WG3453669-2	LCS							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	27-NOV-20
WG3453669-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-20
BE-D-L-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-2	LCS							
Beryllium (Be)-Dissolved			107.4		%		80-120	27-NOV-20
WG3453347-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-NOV-20
BIC-CL								
	Water							
Batch	R5299383							
WG3453669-1	MB							
Bicarbonate (HCO3)			<5.0		mg/L		5	27-NOV-20
BR-L-IC-N-CL								
	Water							
Batch	R5298892							
WG3453144-2	LCS							
Bromide (Br)			106.5		%		85-115	26-NOV-20
WG3453144-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-20
C-DIS-ORG-LOW-CL								
	Water							
Batch	R5299247							
WG3453529-6	LCS							
Dissolved Organic Carbon			93.8		%		80-120	27-NOV-20
WG3453529-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-NOV-20
C-TOT-ORG-LOW-CL								
	Water							



Quality Control Report

Workorder: L2533856

Report Date: 04-FEB-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-LOW-CL	Water							
Batch	R5299247							
WG3453529-6	LCS							
Total Organic Carbon			96.9		%		80-120	27-NOV-20
WG3453529-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-NOV-20
CL-L-IC-N-CL	Water							
Batch	R5298892							
WG3453144-2	LCS							
Chloride (Cl)			102.4		%		85-115	26-NOV-20
WG3453144-1	MB							
Chloride (Cl)			<0.10		mg/L		0.1	26-NOV-20
CO3-CL	Water							
Batch	R5299383							
WG3453669-1	MB							
Carbonate (CO3)			<5.0		mg/L		5	27-NOV-20
EC-L-PCT-CL	Water							
Batch	R5299383							
WG3453669-2	LCS							
Conductivity (@ 25C)			97.7		%		90-110	27-NOV-20
WG3453669-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-20
F-IC-N-CL	Water							
Batch	R5298892							
WG3453144-2	LCS							
Fluoride (F)			98.3		%		90-110	26-NOV-20
WG3453144-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-20
HG-D-CVAA-VA	Water							
Batch	R5299206							
WG3453482-6	LCS							
Mercury (Hg)-Dissolved			97.3		%		80-120	28-NOV-20
WG3453482-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-20
MET-D-CCMS-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-2	LCS							
Aluminum (Al)-Dissolved			100.8		%		80-120	27-NOV-20
Antimony (Sb)-Dissolved			107.3		%		80-120	27-NOV-20
Arsenic (As)-Dissolved			103.2		%		80-120	27-NOV-20
Barium (Ba)-Dissolved			107.3		%		80-120	27-NOV-20
Bismuth (Bi)-Dissolved			96.7		%		80-120	27-NOV-20
Boron (B)-Dissolved			102.3		%		80-120	27-NOV-20
Cadmium (Cd)-Dissolved			101.5		%		80-120	27-NOV-20
Calcium (Ca)-Dissolved			105.0		%		80-120	27-NOV-20
Chromium (Cr)-Dissolved			101.4		%		80-120	27-NOV-20
Cobalt (Co)-Dissolved			102.2		%		80-120	27-NOV-20
Copper (Cu)-Dissolved			100.5		%		80-120	27-NOV-20
Iron (Fe)-Dissolved			96.2		%		80-120	27-NOV-20
Lead (Pb)-Dissolved			98.2		%		80-120	27-NOV-20
Lithium (Li)-Dissolved			107.9		%		80-120	27-NOV-20
Magnesium (Mg)-Dissolved			102.1		%		80-120	27-NOV-20
Manganese (Mn)-Dissolved			103.4		%		80-120	27-NOV-20
Molybdenum (Mo)-Dissolved			108.3		%		80-120	27-NOV-20
Nickel (Ni)-Dissolved			101.8		%		80-120	27-NOV-20
Potassium (K)-Dissolved			105.8		%		80-120	27-NOV-20
Selenium (Se)-Dissolved			101.9		%		80-120	27-NOV-20
Silicon (Si)-Dissolved			96.8		%		60-140	27-NOV-20
Silver (Ag)-Dissolved			105.5		%		80-120	27-NOV-20
Sodium (Na)-Dissolved			104.5		%		80-120	27-NOV-20
Strontium (Sr)-Dissolved			104.2		%		80-120	27-NOV-20
Thallium (Tl)-Dissolved			102.9		%		80-120	27-NOV-20
Tin (Sn)-Dissolved			102.9		%		80-120	27-NOV-20
Titanium (Ti)-Dissolved			100.8		%		80-120	27-NOV-20
Uranium (U)-Dissolved			95.3		%		80-120	27-NOV-20
Vanadium (V)-Dissolved			105.4		%		80-120	27-NOV-20
Zinc (Zn)-Dissolved			106.5		%		80-120	27-NOV-20
WG3453347-1	MB	NP						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
	Water							
Batch	R5299174							
WG3453347-1	MB	NP						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-NOV-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-NOV-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-NOV-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-NOV-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-NOV-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-NOV-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-NOV-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-NOV-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-NOV-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-NOV-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-NOV-20
NH3-L-F-CL								
	Water							
Batch	R5298936							
WG3452713-2	LCS							
Ammonia as N			101.0		%		85-115	26-NOV-20
WG3452713-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-20
NO2-L-IC-N-CL								
	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-CL	Water							
Batch	R5298892							
WG3453144-2	LCS							
Nitrite (as N)			107.2		%		90-110	26-NOV-20
WG3453144-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-20
NO3-L-IC-N-CL	Water							
Batch	R5298892							
WG3453144-2	LCS							
Nitrate (as N)			103.3		%		90-110	26-NOV-20
WG3453144-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-20
OH-CL	Water							
Batch	R5299383							
WG3453669-1	MB							
Hydroxide (OH)			<5.0		mg/L		5	27-NOV-20
ORP-CL	Water							
Batch	R5298490							
WG3452546-1	CRM	CL-ORP						
ORP			227		mV		210-230	26-NOV-20
P-T-L-COL-CL	Water							
Batch	R5298968							
WG3453126-6	LCS							
Phosphorus (P)-Total			94.7		%		80-120	27-NOV-20
WG3453126-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-NOV-20
PH-CL	Water							
Batch	R5299383							
WG3453669-2	LCS							
pH			7.04		pH		6.9-7.1	27-NOV-20
PO4-DO-L-COL-CL	Water							
Batch	R5298450							
WG3452559-2	LCS							
Orthophosphate-Dissolved (as P)			100.2		%		80-120	26-NOV-20
WG3452559-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-20



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-CL	Water							
Batch	R5298892							
WG3453144-2	LCS							
Sulfate (SO4)			103.5		%		90-110	26-NOV-20
WG3453144-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-20
SOLIDS-TDS-CL	Water							
Batch	R5304888							
WG3455281-2	LCS							
Total Dissolved Solids			86.0		%		85-115	02-DEC-20
WG3455281-1	MB							
Total Dissolved Solids			<10		mg/L		10	02-DEC-20
TKN-L-F-CL	Water							
Batch	R5298937							
WG3452899-10	LCS							
Total Kjeldahl Nitrogen			110.0		%		75-125	27-NOV-20
WG3452899-12	LCS							
Total Kjeldahl Nitrogen			112.0		%		75-125	27-NOV-20
WG3452899-2	LCS							
Total Kjeldahl Nitrogen			115.0		%		75-125	27-NOV-20
WG3452899-6	LCS							
Total Kjeldahl Nitrogen			117.0		%		75-125	27-NOV-20
WG3452899-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-11	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
WG3452899-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-20
TSS-L-CL	Water							
Batch	R5304350							
WG3455278-2	LCS							
Total Suspended Solids			97.1		%		85-115	02-DEC-20
WG3455278-1	MB							
Total Suspended Solids			<1.0		mg/L		1	02-DEC-20
TURBIDITY-CL	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R5298493							
WG3452472-2	LCS							
Turbidity			96.4		%		85-115	26-NOV-20
WG3452472-1	MB							
Turbidity			<0.10		NTU		0.1	26-NOV-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Oxidation redution potential by elect.	1	25-NOV-20 13:45	26-NOV-20 12:00	0.25	22	hours	EHTR-FM
	2	25-NOV-20 10:40	26-NOV-20 12:00	0.25	25	hours	EHTR-FM
pH	1	25-NOV-20 13:45	27-NOV-20 12:00	0.25	46	hours	EHTR-FM
	2	25-NOV-20 10:40	27-NOV-20 12:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2533856 were received on 26-NOV-20 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Volume III – Qualification Statements



Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals¹, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

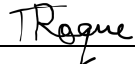
1. Name of Qualified Professional Michael Brewster
Title Senior Hydrogeologist
2. Are you a registered member of a professional association in B.C.? Yes No
Name of Association: EGBC Registration # 28289
3. Brief description of professional services:
Environmental consulting for the 2020 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

This declaration of competency is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: 
X _____
Print Name: Michael Brewster

Witnessed by:
X 
Print Name: Teresa Roque

Date signed: March 24, 2021

¹Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

Conflict of Interest Disclosure Statement

A qualified professional ¹ providing services to either the Ministry of Environment and Climate Change Strategy (“ministry”), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person’s business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Michael Brewster, as a member of EGBC
declare

Select one of the following:

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project subject/work/etc..

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.

Real or perceived conflict of interest

Description and nature of conflict(s):

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

x 

Print name: Michael Brewster

Date: March 24, 2021

Witnessed by:

x 

Print name: Teresa Roque

¹Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who

- is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
- through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.



Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals¹, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Katrina Cheung
Title Project Hydrogeologist

2. Are you a registered member of a professional association in B.C.? [X] Yes [] No

Name of Association: EGBC Registration # 182022

3. Brief description of professional services:

Environmental consulting for the 2020 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

This declaration of competency is collected under section 26(c) of the Freedom of Information and Protection of Privacy Act for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]
Print Name: Katrina Cheung

Witnessed by: [Handwritten Signature]
Print Name: Kelly Wilkinson

Date signed: March 29, 2021

1 Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who
a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

Conflict of Interest Disclosure Statement

A qualified professional ¹ providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person's business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Katrina Cheung, as a member of EGBC
declare

Select one of the following:

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project on/project/work/etc.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to

Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.



Real or perceived conflict of interest

Description and nature of conflict(s):

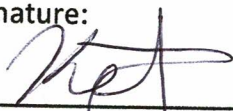
I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

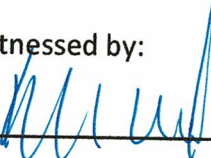
This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X  _____

Print name: Katrina Cheung

Witnessed by:

X  _____

Print name: Kelly Wilkinson

Date: March 29, 2021

¹Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who
a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.



Declaration of Competency

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1. Name of Qualified Professional Stefan Humphries
Title Senior Hydrogeologist

2. Are you a registered member of a professional association in B.C.? [X] Yes [] No
Name of Association: EGBC Registration # 31909

3. Brief description of professional services:
Environmental consulting for the 2021 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]
Print Name: Stefan Humphries
Date signed: March 29/2021

Witnessed by: [Handwritten Signature]
Print Name: Gavin Grundy

1 Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who
a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and
b) through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.

Conflict of Interest Disclosure Statement

A qualified professional ¹ providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act*, the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

- a) an ownership interest in the regulated person's business;
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- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Stefan Humphries Print First and Last Name, as a member of EGBC Print Name of Professional Association
declare

Select one of the following:

- Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Annual Report application/project/work/etc.

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to

Douglas Hill Insert Ministry Contact Name, erring on the side of caution.



Real or perceived conflict of interest

Description and nature of conflict(s):

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X 

Print name: Stefan Humphries

Date: March 29/2021

Witnessed by:

X 

Print name: Garin Grundy

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Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals¹, under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional: Genevieve Pomerleau
Title: Senior Hydrogeologist

2. Are you a registered member of a professional association in B.C.? [X] Yes [] No
Name of Association: EGBC Registration #: 29857

3. Brief description of professional services:
Environmental consulting for the 2020 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: [Handwritten Signature]
Print Name: Genevieve Pomerleau

Witnessed by: [Handwritten Signature]
Print Name: Cameron Shute

Date signed: March 29, 2021

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Declaration

I Genevieve Pomerleau, as a member of EGBC
declare

Select one of the following:

Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this Report/Project.

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Douglas Hill, Regional Operations Director - Mines, erring on the side of caution.



Real or perceived conflict of interest

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Signature:

X

Print name: Genevieve Pomerleau

Date: March 29, 2021

Witnessed by:

X

Print name: ~~Stefan Humphries~~

Cameron Shute

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1. Name of Qualified Professional William Wilmot
Title Senior Project Hydrogeologist

2. Are you a registered member of a professional association in B.C.? Yes No

Name of Association: Engineers & Geoscientists BC Registration # 158648

3. Brief description of professional services:

Environmental consulting for the 2020 Annual Report for the Elk Valley Regional and Site-Specific Groundwater Monitoring Programs for Teck Coal Mines

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

X 

Print Name: William Wilmot

Date signed: March 24/21

Witnessed by:

X 

Print Name: Jenny Wilmot

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Declaration

I William Wilmot, as a member of Engineers & Geoscientists British Columbia declare

Select one of the following:

X Absence from conflict of interest

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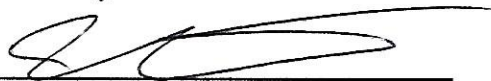
Signature:

X 

Print name: William Wilmot

Date: March 24, 2021

Witnessed by:

X 

Print name: Jenny Wilmot

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